CHEMISTRY

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A) 3
B) 7

INTRODUCTION TO FUNDAMENTAL CONCEPTS OF CHEMISTRY

Q.1 Decimal atomic masses ar due to mixture of?
A) isomers
B) Impurities
C) Allotropes
D) Isotopes

Q.2 One mole of SO2 contains:
A) 4 gram atom of SO_2
B) 6.022×10^{23} atoms of sulphur
C) 1.81×10^{23} molecules of SO_2
D) 6.02×10^{23} atoms of oxygen

Q.3 One mole of carbon 12 has mass:
A) 0.012 kg
B) 1 kg
C) 0.0224 kg
D) 12 kg

Q.4 One mole of ethane (C_2H_6) and one mole of ethanol (C_2H_5OH) have an equal:
A) Number of molecules
B) Number of atoms
C) Number of electrons
D) Masses

Q.5 Which will weigh more?
A) 2 mol CO_2
B) 2 mol O_2
C) 2 mol N_2
D) 1 mol O_3

Q.6 A volume of ethane C_2H_6 at r.t.p has a mass of 20 g. What is the mass of an equal volume of propene C_3H_6 at r.t.p?
A) 20g
B) 21g
C) 28g
D) 42g

Q.7 What is the mass of oxygen contained in 72g of pure water? (H =1, O = 16)
A) 16 g
B) 32 g
C) 64 g
D) 70 g

Q.8 What is the ratio of the volume of 2 g of hydrogen to the volume of 16 g of methane, both volume at r.t.p?
A) 1 to 1
B) 1 to 2
C) 1 to 8
D) 2 to 1

Q.9 Natural chlorine occur as a mixture of isotopes. If a mixture contains 75% $^{35}_{17}Cl$ and 25% $^{37}_{17}Cl$, determine its molecular weight:
A) 34.50
B) 35.50
C) 72.50
D) 72.10

Q.10 How many atoms are there in 0.65g of gold?
A) 196.9665 (0.65)
B) $\frac{0.65}{196.9665} \times 6.02 \times 10^{23}$
C) $\frac{0.65}{196.9665}$
D) $\frac{196.9665}{0.65 \times 6.02 \times 10^{23}}$

Q.11 How many molecules are present in 0.20g of hydrogen gas? (1 mole of H = 1008 g)
A) $\frac{0.20}{1.008} 6.02 \times 10^{23}$
B) $\frac{0.20}{2.016} \times 6.02 \times 10^{23}$
C) 0.20(1.008)
D) None of these

Q.12 When the following reaction equation is properly balanced, the number of moles of O_2 will be.... $C_3H_8 + O_2 \rightarrow CO_2 + H_2O$
A) 1.5 moles
B) 3.5 moles
C) 3 moles
D) 5 moles

Q.13 When the following reaction equation is properly balanced, the number of moles of O_2 will be... $C_6H_{14} + O_2 \rightarrow CO_2 + H_2O$
A) 1.5 moles
B) 13 moles
C) 19 moles
D) 38 moles

Q.14 How many moles of CO_2 are present in 220 mg?
A) 5 moles
B) 13 moles
C) 5000 moles
D) 10 moles

Q.15 How many grams of HF are needed to react completely with 29g of $Mg(OH)_2$? The molecular mass of $Mg(OH)_2$ = 58amu and HF = 20 amu. The balanced chemical reaction is... $Mg(OH)_2 + 2\ HF \rightarrow MgF_2 + 2\ H_2O$
A) 10 grams of HF
B) 20 grams of HF
C) 40 grams of HF
D) 80 grams of HF

Q.16 When the following chemical reaction is balanced, the number of moles of O_2 will be...
$C_4H_{10} + O_2 \rightarrow CO_2 + H_2O$
A) 3
B) 7
C) 9
D) 13

Q.17 If 16 grams of O_2 react with excess C_2H_6, how many grams of CO_2 will be formed? The formula mass of O_2 =32 amu and CO_2 = 44 amu. $2C_2H_6 + 7O_2 \rightarrow 4CO_2 + 6H_2O$
A) 3.1g
B) 13g
C) 22g
D) 88g

Q.18 How many grams of CO_2 will be produced if 45 g of C_2H_6 react with 32 grams of O_2? The formula mass of C_2H_6 = 20 amu, H_2O = 18 amu and O_2 = 32 amu
$2C_2H_6 + 7O_2 \rightarrow 4CO_2 + 6H_2O$
A) 26 g
B) 44 g
C) 66 g
D) 132 g

Q.19 Isotopes of an element are recorded separately in:
A) Mass spectrometer
B) Spectrophotometer
C) Calorimeter
D) I.R. Spectrophotometer

Q.20 Isotopes have same position in Periodic table because:
A) They have different mass
B) They have same atomic mass
C) They have same atomic number
D) All are true

Q.21 The properties of an element correspond to the properties of that isotope which is the most:
A) Unsuitable
B) Least table
C) Abundant
D) Stable enough

Q.22 In combustion analysis of glucòse, % of oxygen is calculated by subtracting the percentages of which elements from 100?
A) Carbon
B) Carbon and hydrogen
C) Nitrogen
D) Carbon and Nitrogen

Q.23 Which element cannot be analyzed directly by combustion analysis?
A) Oxygen
B) Carbon
C) Sulphur
D) Hydrogen

Q.24 A limiting reactant is one:
A) Which produces minimum number of moles of product?
B) Which produces maximum number of moles of product?
C) Does not affect the amount of product.
D) Present in excessive?

Q.25 Efficiency of a chemical reaction can be checked by calculating:
A) Amount of reactant left unused
B) Amount of product formed
C) Amount of reactant in excess
D) Amount of limiting reactant

Q.26 More is the percentage yield higher will be the:
A) Entropy of reaction
B) Efficiency of reaction
C) Ineffeciency of reaction
D) Theoretical yeild

Q.27 One mole of SO2 contains:
A) 4 gram atom of SO_2
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C) 1.81×10^{23} molecules of SO_2
D) 6.02×10^{23} atoms of oxygen

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A) Number of molecules
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C) Number of electrons
D) Masses

Q.30 Which will weigh more?
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B) 2 mol O_2
C) 2 mol N_2
D) 1 mol O_3

Q.31 A volume of ethane C_2H_6 at r.t.p has a mass of 20 g. What is the mass of an equal volume of propene C_3H_6 at r.t.p?
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C) 28g
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B) 3.5 moles
C) 3 moles
D) 5 moles

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D) 80 grams of HF

Q.41 When the following chemical reaction is balanced, the number of moles of O_2 will be... $C_4H_{10} + O_2 \rightarrow CO_2 + H_2O$
A) 3
B) 7
C) 9
D) 13

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C) 22g
D) 88g

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B) They have same atomic mass
C) They have same atomic number
D) All are true

Q.46 The properties of an element correspond to the properties of that isotope which is the most:
A) Unsuitable
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C) Abundant
D) Stable enough

Q.47 In combustion analysis of glucose, % of oxygen is calculated by subtracting the percentages of which elements from 100?
A) Carbon
B) Carbon and hydrogen
C) Nitrogen
D) Carbon and Nitrogen

Q.48 Which element cannot be analyzed directly by combustion analysis?
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C) Sulphur
D) Hydrogen

Q.49 Efficiency of a chemical reaction can be checked by calculating:
A) Amount of reactant left unused
B) Amount of product formed
C) Amount of reactant in excess
D) Amount of limiting reactant

Q.50 **A limiting reactant is one:**
A) Which produces minimum number of moles of product?
B) Which produces maximum number of moles of product?
C) Does not affect the amount of product.
D) Present in excessive?

Q.51 **More is the percentage yield higher will be the:**
A) Entropy of reaction
B) Efficiency of reaction
C) Ineffeciency of reaction
D) Theoretical yeild

Q.52 **The weight of naturally occuring sample of chlorine was measured and resulted to be 35.5g mole. An atom, if chosen at random, from such a sample is most likely to weigh:**
A) 34 amu
B) 35 amu
C) 35.5 amu
D) 36 amu
E) 37 amu

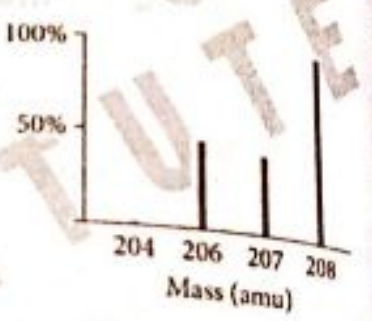
Q.53 **Which of the following will have the maximum radius of curvature in the mass spectrometer?**
A) $^{20}Ne^{+}$
B) $^{21}Ne^{+}$
C) $^{22}Ne^{+}$
D) $^{12}C^{+}$

Q.54 **In mass spectrometer, detector or collector measure the:** (2011)
A) masses of isotopes
B) percentages of isotopes
C) relative abundance of isotopes
D) mass number of isotopes same

Q.55 **Which of the following statements about 12 g sample of C-12 is incorrect?**
A) The number of C-atoms is 6.022×10^{23}
B) The number of C-atoms is the same as number of the atoms in 4.0 g of $^{4}_{3}He$
C) The number of C-atoms is the same as electrons in 1.0 g of H_2
D) The number of C-atoms is the same as electrons in 16.0 g of $^{32}_{10}S$

Q.56 **The mass spectrum of lead is shown**
What quantities are represented by x-axis and y-axis?

Options	x-axis	y-axis
A)	Mass number	Relative abundance
B)	Mass number	Atomic number
C)	Atomic number	Height of peak
D)	Atomic number	Mass number



Q.57 **N-14 and C-13 are _____ of each other.**
A) Isobars
B) Isotones
C) Isotopes
D) Iso-electrons

Q.58 **What will be the amount of glucose dissolved in it 10 ml to make its one molar solution?**
A) 1 gm
B) 200 gm
C) 1.8 gm
D) 900 gm

Q.59 **Mark the incorrect statement about the function of Dempster mass spectrometer:**
A) Greater is the strength of electric current shown by ion collector, greater is the relative abundance of isotopes
B) Greater is the strength of electric field, greater is the deflection of positive ions
C) Greater is the strength of magnetic field, greater is the deflection of positive ions
D) $m/e = \frac{H^2r^2}{2E}$

Q.60 **20g of aluminum reacts with 106.5g of HCl**
$2Al + 6HCl \rightarrow 2AlCl_3 + 3H_2$
Then, the amount of hydrogen produce will be controlled by:
A) Al
B) HCl
C) Al, HCl
D) $AlCl_3$

Q.61 **Which occupies more total volume for the same substance?**
A) 1 M solution
B) 1 N solution
C) 1 m solution
D) None of these

Q.62 **Which of the following samples contain the largest number of atoms?**
A) 1g of Ni (s)
B) 1g of Ca (s)
C) 1g of N_2
D) 1g of B

Q.63 When lime stone ($CaCO_3$) is roasted, quicklime (CaO) is produced according to the following equation. The actual yield of CaO is 0.5kg when 1kg of limestone is roasted) What is the percentage yield of this reaction? $CaCO_{3(s)} \longrightarrow CaO_{(s)} + CO_{2(g)}$
A) 89.3%
B)80.1%
C) 85.2%
D) 87.3%

Q.64 Two elements X (atomic mass = 50) and Y (atomic mass = 16) combine to give a compound having 32% Y. The formula of the compound is:
A) X_2Y_3
B) XY_2
C) XY
D) X_3Y_4

Q.65 A metal "M" reacts with "S" to form "MS". If 3.6g of M reacts with 0.09 mole of Sulphur. Then what is name of metal "M".
A) Cr
B) Ca
C) Mg
D) Mn

Q.66 The number of moles of CO which contain 8.0g of oxygen
A) 0.25
B) 0.75
C) 0.5
D) 1.0

Q.67 The charge on one mole of proton
A) 2.4×10^4 columbs
B) 7.237×10^4 columbs
C) 4.825×10^4 columbs
D) 9.65×10^4 columbs

Q.68 The limiting reactant is the reactant which
A) Consumed earlier
B) Control the reaction
C) Gave least no. of mole of product
D) All of these

Q.69 Mg metal reacts with HCl to give hydrogen gas. What is minimum weight of HCl required to produced 12g of H_2.
A) 428g
B) 448g
C) 438g
D) 458g

Q.70 The number of molecules in one dm^3 of N_2 at STP
A) $6.023\times10^{23}/22.414$
B) $6.023\times10^{-23}/22.414$
C) $22.414\times10^{23}/6.023$
D) $22.414\times10^{-23}/6.023$

Q.71 The number of moles of 0.1kg of calcium
A) 0.0025 mole
B) 0.25 mole
C) 0.025 mole
D) 2.5 mole

Q.72 Combustion analysis is the example of analysis
A) Volumetric
B) Quantitative
C) Qualitative
D) Element detection analysis

Q.73 Which of the following statement is correct:
A) The no. of negative ions having group of atoms is less common
B) The properties of an element mostly corresponded to the most abundant isotope of that element
C) Elements with odd atomic number process more than two isotopes
D) The current strength of each isotope of an element gives mass no.

Q.74 9.8 grams of aqueous solution of H_2SO_4 contains moles of total ions after complete ionization.
A) 0.1
B) 0.4
C) 0.3
D) 0.01

Q.75 A sample in the ionization chamber of mass spectrometer is ionized by:
A) Electrons
B) neutron
C) Proton
D) nucleus

Q.76 $CH_4 + 2H_2O \rightarrow CO_2 + 4H_2$, what would be the amount of hydrogen produced, if 16g of methane reacts completely with 18g of water
A) 2g
B) 4g
C) 8g
D) 10g

Q.77 One mole of C_2H_5OH contains no. of H-atoms.
A) 6.02×10^{23}
B) 1.81×10^{24}
C) 3.61×10^{24}
D) 6.02×10^{24}

Q.78 One mole of CO_2 contains:
A) 6.022×10^{23} atoms of oxygen
B) 6.022×10^{23} atoms of carbon
C) 22-gram electrons
D) Both b and c

Q.79 Which of the following pair have equal number of ions(when dissociated completely)?
A) 1 mole of NaCl and ½ mole of $MgCl_2$
B) 2/3 mole of NaCl and 4/9 mole of $MgCl_2$
C) ½ mole of NaCl and 2/3 mole of $MgCl_2$
D) 3/2 mole of NaCl and 2/3 mole of $MgCl_2$

Q.80 Ascorbic acid is also called
A) Vitamin A
B) Vitamin-C
C) Vitamin B-5
D) Vitamin E

Q.81 In mass-spectrometer the method used for separation of isotopes is
A) Ultracentrifuge
B) Electromagnetic separation
C) Laser separation
D) Thermal diffusion

Q.82 The no. of moles of CO_2 which contain 8.0g of oxygen
A) 0.25
B) 1.0
C) 0.50
D) 1.50

Q.83 The largest number of molecules are present in
A) 3.6g H_2O
B) 2.8g of CO
C) 4.8g of C_2H_5OH
D) 5.4g of N_2O_5

Q.84 In the reaction, $4NH_3 + 5O_2 \rightarrow 4NO + 6H_2O$ when one mole of ammonia and one mole of oxygen are made to react completely then
A) 1.0 mole of H_2O is produced
B) 1.0 mole of NO is formed
C) All oxygen is consumed
D) All ammonia is consumed

Q.85 Which of the following elements belongs to mono-isotopic:
A) F_2, I_2, Au, Ag
B) F_2, Cl_2, I_2, Au
C) F_2, I_2, Au, As
D) As, Au, Ag, Cl_2

Q.86 Which ion would be deflected most by the field in a mass spectrometer?
A) $^4_2He^{2+}$
B) $^{14}_6C^{4+}$
C) $^{14}_7N^{2+}$
D) $^3_1H^{+}s$

Q.87 Mass spectrometer helps in the detection of isotopes because they
A) Have the same atomic number
B) Have different atomic weights
C) Have the same atomic weight
D) Undergo fragmentation easily

Q.88 A polymer of empirical formula CH_2 has a molar mass of 28000gmol^{-1}. What is its molecular formula?
A) $(CH_2)_{1400}$
B) $(CH_2)_{2000}$
C) $(CH_2)_{2800}$
D) $(CH_2)_{2500}$

Q.89 The number of moles of NO_2 which contains 16g of oxygen
A) 0.25
B) 1.0
C) 0.50
D) 1.50

Q.90 CH_4 gas occupied a volume of 22.414 dm^3 at STP conditions. The mass of H-atoms will be
A) 6.02 X 10^{23} g
B) 8g
C) 4g
D) 1g

Q.91 Total number of atoms present in 49.0g H_2SO_4 are:
A) 7 x 6.022 x 10^{23} number of atoms
B) It contains 1g molecules of H_2SO_4
C) 7x3.011 x 10^{23} number of atoms
D) It contains 0.6g atoms of H_2SO_4

Q.92 The number of atoms of carbon in 90g of glucose are _____, when (C = 12, H = 1, O = 16)
A) 3.011 ×10^{23}
B) 6.02 ×10^{23}
C) 18 ×10^{23}
D) 6.02 ×10^{23}

Q.93 An organic compound has empirical formula C_3H_3O, if molar mass of the compound is 110.15gm molecular formula of this organic compound is (A, of C = 12, H = 1.008 and O = 16): (2012)
A) $C_6H_6O_2$
B) $C_9H_9O_3$
C) C_3H_3O
D) $C_6H_6O_3$

Q.94 An element has three peaks of equal length in mass spectrum what is correct for it.
A) It is most abundant element
B) Three isotopes with 33% R.A
C) Relative abundance of each isotope is 50%
D) Odd mass number

Q.95 Which of the following is termed as secret unit of chemist?
A) Gram
B) Kilogram
C) Milligram
D) Mole

Q.96 Atomicity of hemoglobin is almost how many times greater than atomicity of hydrogen gas?
A) 10000 atoms
B) 68000 atoms
C) 5000 atoms
D) 6800 atoms

Q.97 The volume occupied by 2.0g of Ne at STP
A) 2.24dm^3
B) 1.12dm^3
C) 22.4dm^3
D) 112cm^3

Q.98 A sample in the ionization chamber of mass spectrometer is ionized by
A) Electrons
B) X-rays
C) Nucleus of Helium atom
D) d-particles

Q.99 The mass of H-atom is 1.008 a.m.u. its mass in kg is
A) $1.008\times1.661\times10^{-23}$kg
B) $1.008\times1.661\times10^{-27}$kg
C) $\frac{1.008}{1.661\times10^{-27}}$kg
D) 1.661×10^{-27}kg

Q.100 Signature of the person with lead pencil increased the weight of the paper by 1.2grams. How many atoms of carbon are present?
A) 6.02×10^{22}
B) 6.0×10^{23}
C) 3.6×10^{23}
D) 3.6×10^{24}

Q.101 18g glucose is dissolved in 90g of water. The mole fraction of water is:
A) 1/5
B) 50/51
C) 1/51
D) 5.1

Q.102 Which one of the following is not generally same for one mole of different gases at STP?
A) Volume
B) Molecular mass
C)) Number of molecules
D) all of them.

Q.103 A limiting reactant is the one which
A) Is mostly a cheaper substance and taken in larger quantity
B) Is consumed earlier and controls the amount of product formed in a chemical reaction
C) Gives greatest number of moles of products
D) Is left behind after the completion of reaction

Q.104 22.414 dm^3 is the molar volume of .....
A) Ideal gas at RTP
B) Real gas at every temp
C) Ideal gas at STP
D) Real Gas at STP

Q.105 During isotopic analysis, the pressure of the vapours of the ions maintained in the ionization chamber of mass spectrometer is
A) Around 10^{-7}torr
B) Around 10^{-3}torr
C) 1 torr
D) 10^{-2}torr

Q.106 How many number of gram – Ions present in 98 g H_2SO_4?
A) 1 g ion
B) 2 g ion
C) 3 g ion
D) 8 moles

Q.107 Consider the following reaction $Ca + 2HCl_{(dil)} \longrightarrow CaCl_2 + H_2$ When 20 g Ca is heated with excess of HCl? The volume of H_2 gas obtained at STP is
A) $22.4dm^3$
B) $11.2dm^3$
C) $24.0dm^3$
D) $1.12dm^3$

Q.108 4g H_2 reacts with 32.0g O_2 to produce water. Which of the following statements is correct?
A) H_2-limiting reactant
B) 2.0 mole water is produced
C) O_2-non-limiting reactant
D) 1 mole water is produced.

Q.109 Which of the following is correct sequence of processes involved in modern mass spectrometer?
A) Vaporization, ionization, electric field, amplification, recording, ion collector, magnetic field.
B) Ionization, electric field, ion collector, vaporization ion collector, recording, amplification.
C) Vaporization, -ionization, electric field , magnetic field, ion collector, amplification and recording.
D) all of them

Q.110 N_A is the number of
A) Atom in 1 g of He gas
B) Electron needed to deposit 24.0 g Mg
C) Molecule in 35.5 g of chlorine gas
D) Atoms in 24.0 g of Mg

Q.111 A 500g tooth paste sample has 0.2g fluoride concentration. What is conc. of fluoride in terms of ppm level?
A) 2525
B) 400
C) 200
D) 1000

Q.112 40 moles of Aluminum and oxygen react to produce alumina, then the correct pair of limiting reactant and non-limiting reactant $4Al_{(s)} + 3O_{2(g)} \longrightarrow 2Al_2O_{3(s)}$
A) Al, O_2
B) O_2, Al
C) Al, Al_2O_3
D) O_2, Al_2O_3

Q.113 When 8 grams (4 moles) of H_2 react with 2 moles of O_2, how many moles of water will be formed? (2012)
A) five
B) six
C) four
D) three

Q.114 The volume occupied by 1.6g of O_2 at STP is:
A) $2.24dm^3$
B) $1.12dm^3$
C) $22.4dm^3$
D) $112dm^3$

Q.115 Which of the following statements is incorrect for isotopes of an element?
A) They have different position in the modern periodic table
B) They have different mass number
C) They have different physical properties
D) They have different half-life

Q.116 The Limiting reactant is that .....
A) Maximum amount of products
B) Consumes in the last
C) Minimum Amount of Products
D) Both B and C

Q.117 The electrometer is also called as:
A) Ion producer
B) ion collector
C) ion separator
D) All of given

Q.118 Which of followings are more abundant molecular ions?
A) Cations
B) Radical Cations
C) Anions
D) Radical anions

Q.119 Indicate which one weigh more for its 1 mole
A) He
B) Se
C) CO
D) P_4

Q.120 Which information obtained from electrometer gives the relative abundance of Ions of a definite m/e value?
A) Direction of flow of electric current
B) Strength of electric current
C) Both strength and direction of flow of electric current
D) All of given

Q.121 Molecular mass of Sulphuric acid and phosphoric acid is same therefore, these are....
A) Isomers of each other
B) Isobars of each other
C) Isotones of each other
D) Same atomicity

Q.122 Molecular formula = n (empirical formula), where 'n' is the ratio b/w .....
A) Molecular mass and molar mass
B) Molecular mass and empirical formula mass
C) Molecular mass and atomic mass
D) Atomic mass and molar mass

Q.123 The number of molecules in 22.4 dm^3 of H_2 gas at 0°C and 1 atm are: (2012)
A) 60.2×10^{23}
B) 60.2×10^{25}
C) 6.02×10^{22}
D) 60.2×10^{22}

Q.124 The combustion analysis of an organic compound shows 60% carbon, 8% hydrogen and 32% oxygen. If the molecular mass of the given organic compound is 200, then the molecular formula of the organic compound is (Ar of C = 12amu, H = 1 amu and O = 16amu)
A) $C_{10}H_{16}O_4$
B) $C_{16}H_{14}O_4$
C) $C_8H_{16}O_4$
D) $C_5H_8O_2$

Q.125 One of following is not an empirical formula but a molecular formula, identify that.....
A) C_6H_{14}
B) CH_2O
C) $C_2H_5O_3$
D) $C_4H_5O_5$

Q.126 Which represent the simple ratio of atoms present in a compound?
A) Molecular formula
B) Gravimetric analysis
C) formula unit
D) Physical analysis

Q.127 Which of the following contains one mole of the stated particles?
A) Chlorine molecules in 35.5g of Cl_2 gas
B) Electrons in 1g of hydrogen gas
C) H^+ ions in $1dm^3$ of 1 mole dm^{-3} of aqueous solution of H_2SO_4
D) Oxygen atoms in 22.4 dm^3 of oxygen gas at STP

Q.128 The volume occupied by 1.5×10^{23} molecules of ozone gas at STP is
A) $2.24dm^3$
B) $5.6dm^3$
C) 22.4 dm^3
D) 5.6 cm^3

Q.129 How many methods
A) 1
B) 3

Q.130 Total number of ato
A) 1.2×10^{24}
B) 6.02×10^{23}

Q.131 0.5 mole of magne
produced in this re
$2Mg + O_2$ ——
A) 40g
B) 30g

Q.132 The empirical for
A) Mass number
B) Molecular mas

Q.133 Actual yield is le
A) Inexperience
B) Competing si

Q.134 Hydrogen burns
reactants in che
A) 1:35.5
B) 2:35.5

Q.135 All of the follov
EXCEPT:
A) Number of st
B) Strength of e
C) With C-12 iso
D) Potential diff

Q.136 Which will we
A) 0.5 mole
B) $3.01 \times 10^$

Q.137 A sample of N
Mass spectru
What is the r
A) 20.28
B) 20.10

Q.138 Which one o
A) conc H_2SO_4
B) $CaCO_3$

Q.139 Which one
formula?
A) CH_3COOH
B) $CH_3 - CH_2$

Q.140 Stoichiome
A) Reacti
B) Law of

Q.141 Which of f
A) 2 mol
B) 1 mol

Q.142 Which is
A) Molarity
B) Normal

Q.143 For thos
simple m
A) 2
B) 1

Q.144 8 grams
A) 0.1
B) 0.1

Q.129 How many methods are there to find out number of moles?
A) 1
B) 3
C) 2
D) 4

Q.130 Total number of atoms present in 17g of hydrogen peroxide is ($N = 6.02 \times 10^{23}$):
A) 1.2×10^{24}
B) 6.02×10^{23}
C) 1.8×10^{25}
D) 1.6×10^{26}

Q.131 0.5 mole of magnesium is burnt in excess oxygen. How much amount of MgO is produced in this reaction (Mg = 24amu, O = 16amu)
$2Mg + O_2 \longrightarrow 2MgO$
A) 40g
B) 30g
0.5mole
C) 20g
D) 15g

Q.132 The empirical formula of a compound can be determined if we know
A) Mass number
B) Molecular mass
C) % of elements
D) % of atoms

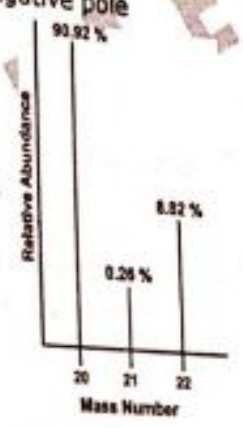
Q.133 Actual yield is less than theoretical yield this is because of
A) Inexperienced worker
B) Competing side reaction
C) Lack of proper application of technique
D) All of the above

Q.134 Hydrogen burns in chlorine to produce hydrogen chloride. The ratio of masses of reactants in chemical reaction $H_2 + Cl_2 \rightarrow 2HCl$ is: (2013)
A) 1:35.5
B) 2:35.5
C) 1:71
D) 2:70

Q.135 All of the following statements are matched correctly in Dempster's mass spectrometer EXCEPT:
A) Number of stages in mass spectrometer = 4
B) Strength of electric current shown by electrometer - relative abundance of isotopes
C) With C-12 isotope - exact masses of isotopes of an element
D) Potential different of 1000-2000 volts - the ions are attracted towards negative pole

Q.136 Which will weigh more?
A) 0.5 mole of glucose
B) 3.01×10^{23} molecules of O_3
C) 1 mole of urea
D) All have same

Q.137 A sample of Neon is found to exist as ^{20}Ne, ^{21}Ne, ^{22}Ne. Mass spectrum of 'Ne' is as follows. (2013)
What is the relative atomic mass (A, value) of Neon?
A) 20.28
B) 20.10
C) 20.18
D) 20.22



Q.138 Which one of the following is not a water absorber?
A) $conc\ H_2SO_4$
B) $CaCO_3$
C) Anhydrous $CuSO_4$
D) Mg $(ClO_4)_2$

Q.139 Which one of the following compound doesn't have same molecular and empirical formula?
A) CH_3COOH
B) $CH_3 - CH_2 - OH$
C) $C_{12}H_{22}O_{11}$
D) $CH_3 - CH_2 - CHO$

Q.140 Stoichiometric calculations are based on which of the following assumptions except one
A) Reaction is irreversible
B) Law of conservation of mass is obeyed
C) Product is stable
D) Law of reciprocal proportion is obeyed

Q.141 Which of following has highest atomicity (no. of particles)?
A) 2 mole of $HClO_4$
B) 1 mole of O_3
C) 10 dm^3 of H_2O
D) 3 N_A of NaCl

Q.142 Which is independent of temperature?
A) Molarity
B) Normality
C) Molality
D) None of these

Q.143 For those compounds which have same molecular and empirical formula, the value of simple multiple 'n' is?
A) 2
B) 1
C) 4
D) 3

Q.144 8 grams of CO_2 have how many moles of Carbon atoms?
A) 0.15
B) 0.18
C) 0.21
D) 0.24

Q.145 The value of simple multiple 'n' is:
A) The ratio of atomic mass and molecular mass
B) The ratio of molecular mass and molecular mass
C) The ratio of empirical mass and empirical mass
D) The ratio of molecular mass and molecular mass

Q.146 22g of CO_2 and 0.5 $\mathcal{N}$ of SO_2 at STP will have same
A) Atoms
B) Volume
C) Molecules
D) All of these

Q.147 One gram molecular mass of different substances expressed in grams must possess:
A) Have different masses in them
B) have same masses in them
C) Some times same masses and some times different masses in them
D) All given above

Q.148 One mole of different compounds has:
A) different masses and different number of molecules
B) same masses but different number of molecules
C) different masses but same number of molecules
D) same masses as well as same number of molecules

Q.149 Which of following is the Largest mass?
A) 32g N_2H_4
B) 1.2044×10^{24} molecules of CO
C) 24 dm^3 of O_2 at Room temperature
D) 1.090 dm^3 of ice

Q.150 Consider the reaction $Mg + H_2SO_{4(aq)} \longrightarrow MgSO_4 + H_2$, 48 g Mg reacts with 98 g H_2SO_4 to produce amount of H_2
A) 1 g
B) 4g
C) 2g
D) 6g

Q.151 An organic sample consisting of carbon, hydrogen and oxygen was subjected to combustion analysis. 0.543g of this compound gave 1.039g of Carbon dioxide, 0.636g of water vapours .The empirical formula of this compound is (2017)
A) CH_2O
B) C_3H_6O
C) $C_4H_{12}O_2$
D) CH_4O

Q.152 Which one of the following statement is correct?
A) masses and sizes of the molecules don't affect the volumes of gases
B) masses and sizes of the molecules affect ofthe volume of gases
C) masses of the molecules affect the volumes of gases
D) sizes of the molecules affect the volumes of gases

Q.153 Molar volumes is 22.414dm^3 it is true:
A) only when the gas is ideal
B) only when the gas is non-ideal
C) for ideal gas as well as for non-ideal gas
D) sometimes true for ideal gas and some time true for non ideal gas

Q.154 The atomic nuclei which have only same number of neutrons are called
A) Isotopes
B) Isosters
C) Isobars
D) Isotones

Q.155 What is the volume in cm^3 of 3.01×10^{23} molecules of O_2 gas at S.T.P.
A) 1000 cm^3
B) 11207 cm^3
C) 11000 cm^3
D) 22.4 cm^3

Q.156 One mole of an ideal at room temperature and pressure (r.t.p.) occupies a volume of:
A) 22dm^3
B) 24dm^3
C) 20dm^3
D) 26dm^3

Q.157 Number of atoms of oxygen in 90 g of Fructose is (C = 12, H = 1, O = 16)
A) 3.011×10^{23}
B) 6.022×10^{23}
C) 6.022×10^{24}
D) 1.8×10^{24}

Q.158 A mixture of 5 ml of CH_4 and 10 ml of C_2H_6 will produce how much CO_2 on complete combustion:
A) 25 ml
B) 15 ml
C) 45 ml
D) 60 ml

Q.159 Which one of the following can be separated by physical means?
A) Mixture
B) Element
C) Compound
D) Radical

Q.160 4.9 g of H_2SO_4 contains number of moles of oxygen
A) 0.01
B) 0.02
C) 0.1
D) 0.2

Q.161 The total number of covalent bonds in 4.5 grams of water is
A) 6.02×10^{23}
B) 3.01×10^{22}
C) 6.02×10^{22}
D) 3.01×10^{23}

Q.162 Many elements have fractional atomic masses. This is because:
A) The mass of the atom is itself fractional
B) Atomic masses are average masses of isobars
C) Atomic masses are average masses of isotopes
D) Atomic masses are average masses of isotopes proportionto their relative abundance

Q.163 For a reaction $X + 2Y \longrightarrow Z$. The amount of Z formed by starting the reaction with 5 moles of X and 8 moles of Y:
A) 5 moles
B) 16 moles
C) 8 moles
D) 4 moles

Q.164 What is the ratio of volume of 1 g H_2 to the volume of 16 g CH_4 at S.T.P.?
A) 1 : 1
B) 1 : 8
C) 1 : 2
D) 2 : 1

Q.165 The mass of one molecule of water in vapour phase is:
A) 18 amu
B) 18 $gmol^{-1}$
C) 18 mg
D) $18 \times 10^{-3} kgmol^{-1}$

Q.166 What is the mass of water formed when 4 grams H_2 and 64 grams of O_2 combined together?
A) 68 grams
B) 36 grams
C) 18 grams
D) 66 grams

Q.167 One mole of water and one mole of methane have an equal:
A) mass
B) number of molecules
C) number of atoms
D) number of formula units

Q.168 Which of following is an empirical formula?
A) CH
B) $C_3H_3O_3$
C) $Na_3[Fe(CN)_6]$
D) H_2SO_4

Q.169 What is the fractional atomic mass of an element such that A – 60, 60% and A – 40, 40%?
A) $\frac{60 \times 60 + 40 \times 40}{100}$
B) $\frac{60 \times 40 + 40 \times 60}{100}$
C) $\frac{60 \times 40 - 40 \times 60}{100}$
D) None of these

Q.170 Empirical formula represents _____.
A) Actual Molecule
B) Formula Unitforces
C) Class of compounds
D) None of these

Q.171 A compound has an empirical formula CH_2Cl, and molecular formula mass as $99gmol^{-1}$, identify the compound, identify the compound:
A) C_2H_5Cl
B) $C_2H_4Cl_2$
C) C_4H_8Cl
D) $C_2H_3Cl_3$

Q.172 The Avogadro's Number is the number of:
A) numbers of the molecules of H_2 in 1 gram
B) number of atoms in CO_2 in 44 grams
C) number of the molecules of CO_2 in 44 grams
D) number of oxygen atoms in CO_2 in 44 grams

Q.173 Number of moles of SO_2 which contain 8.0 g of oxygen
A) 0.25
B) 0.50
C) 0.125
D) 0.150

Q.174 Which one of the following pairs has the same mass?
A) 1 mole of CO and 1 mole of N_2
B) 1 mole of CO and 1 mole of CO_2
C) 1 mole of O_2 and 1 mole of N_2
D) 1 mole of O_2 and 1 mole of CO_2

Q.175 The empirical formula of a compound is CH_2O. What other information is needed to determine its molecular formula?
A) %age composition of each element in a compound
B) density of the compound
C) relative molecular mass of the compound
D) boiling point of the compound

Q.176 Which of the following is / are correct statement
A) Proton number of isotopes of element is same
B) Proton number of isotopes of every element is different
C) Mass number of isotopes and average atomic mass of elements are different
D) All of these

Q.177 If C : H : O = 1 : 1.33 : 1 then empirical formula would be.
A) $C_{10}H_{13}O_{10}$
B) $C_3H_4O_3$
C) $C_5H_{15}O_5$
D) $C_4H_5O_4$

Q.178 Which of following shows maximum deflection in mass spectrometer?
A) H^+
B) He^{2+}
C) He^+
D) H^-

Q.179 Given solution contains 16.0 g of CH_3OH, 92.0g of C_2H_5OH and 36g of water. Which statement about mole fraction of the components is true? (2015)
A) Mole fraction of CH_3OH is highest among all components
B) Mole fraction of C_2H_5OH and H_2O is the same
C) Mole fraction of CH_3OH and C_2H_5OH is the same
D) Mole fraction of H_2O is lowest among all

Q.180 3.0 mole of calcium will contained ——— g of calcium(2018)
A) 105 gm
B) 120 gm
C) 80 gm
D) 100 gm

Q.181 Each statement about an atom is correct except one!
A) Atom is the smallest particle of an element
B) Atomic mass is relativistic
C) Atomicity belongs to molecules
D) Atom of all elements possesses proton, neutron and electron

Q.182 How many moles of sodium are present in 0.1g of sodium? (2015)
A) 4.3×10^{-3}
B) 4.01×10^{-2}
C) 4.03×10^{-1}
D) 4.3×10^{-2}

Q.183 Which one of the following pair has the same volume?
A) 1 mole of CO and 1 mole of N_2
B) 1 mole of O_2 and 1 mole of N_2
C) 1 mole of CO and 1 mole of CO_2
D) All of these if conditions are same

Q.184 While finding the relative atomic mass, which of the following standard is used to compare the atomic mass of chlorine (35.5amu). (2018)
A) Carbon -13
B) Neon-20
C) Carbon-12
D) Nucleon number

Q.185 How many atoms are present in 124.5g of blue vitriol ?
A) $6.02 \times 10^{23} \times 17$
B) $3.01 \times 10^{23} \times 6$
C) $3.01 \times 10^{23} \times 17$
D) $6.02 \times 10^{23} \times 6$

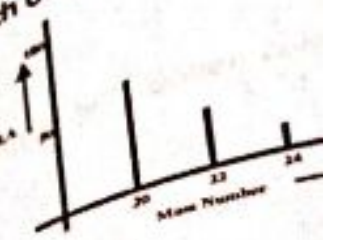
Q.186 The molar mass of K_2SO_4 is 174gmol^{-1}, how many K^+ ions are there in its 1mole of the salt?
A) 1 N_A
B) 2 N_A
C) 6 N_A
D) 7 N_A

Q.187 100g of $CaCO_3$ is decomposed, the CO_2 produced occupies a volume at STP.
A) 2.2414 dm^3
B) 22414 dm^3
C) 22.414 dm^3
D) 224014 dm^3

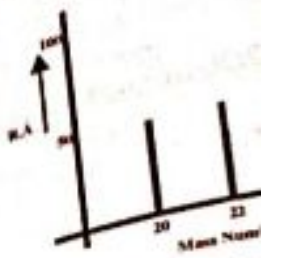
Q.188 Mass of 0.5 g molecule (mole) of CO_2 is
A) 11 dm^3
B) 22 g
C) 12 g
D) Both A and B

Q.189 Identify the species with total 2 naturally occurring isotopes
A) Ag
B) O
C) C
D) Cs

Q.190 Which of following is corr



A)



B)

Q.191 The substance for th
A) Neutral state
B) Free state

Q.192 All of the following s formula EXCEPT:

Options	
A)	
B)	
C)	
D)	

Q.193 There are almo 100 to each Pa have:
A) 6.67×10^{-15}
B) 1.5×10^{-14}

Q.194 A researcher h purification he
A) 60%
B) 58%

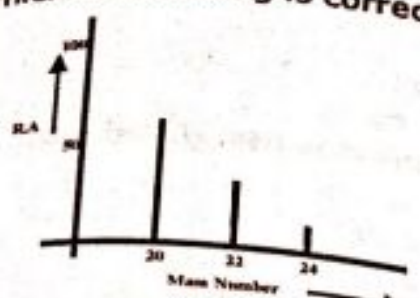
Q.195 Nauman has molecule In t
A) 2.4×10^{-24}
B) 3.6×10^{26}

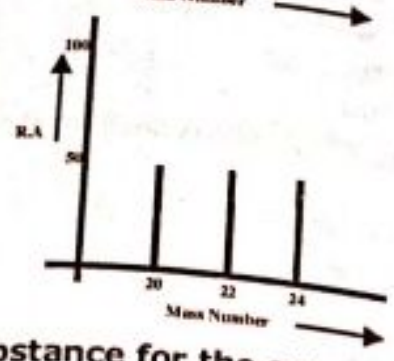
Q.196 28g OF N_2 w
A) 22.41 dm^3
B) 44.82 dm^3

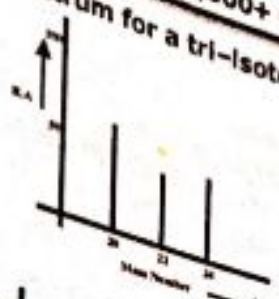
Q.197 Determine
A) 0.4 moles
B) 0.3 moles

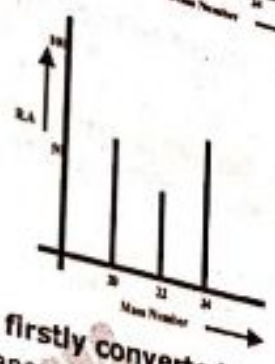
Q.198 The numbe
A) Charge o
B) Number

Q.190 Which of following is correct in context to mass spectrum for a tri-isotopic element?

A) 

B) 

C) 

D) 

Q.191 The substance for the separation of isotopes is firstly converted into the: (2016)

A) Neutral state
B) Free state
C) Vapour state
D) Charged state

Q.192 All of the following statements are correct about empirical formula and molecular formula EXCEPT:

Options	Empirical formula	Molecular formula
A)	It is the simplest formula that gives the small whole number ratio between the atoms of different elements present in a compound	It gives the total number of atoms of different elements present in the molecule of a compound
B)	Percentage of elements is required to determine it	Empirical formula and molar mass of compound is required to determine it
C)	$E.F = \frac{M.F}{n}$	$M.F = n(E.F)$
D)	This term is used for ionic compounds only	This term is used for covalent and ionic compounds

Q.193 There are almost 200 million people alive in Pakistan. If you were to distribute Rupee 100 to each Pakistani in the form of 5 Rupee coin, how many moles of coins you must have: (2017)

A) 6.67×10^{-15}
B) 1.5×10^{-14}
C) 6.67×10^{14}
D) 1.5×10^{14}

Q.194 A researcher has prepared a sample of 1-bromopropane from 10g of 1-propanol. After purification he had made 12g of product. Which of the following is percentage yield: (2017)

A) 60%
B) 58%
C) 90%
D) 50%

Q.195 Nauman has body mass 60.0kg. He has 18% water in his body. Total number of water molecule In his body is:

A) 2.4×10^{-24}
B) 3.6×10^{26}
C) 1.2×10^{25}
D) 4.8×10^{26}

Q.196 28g OF N_2 will at STP occupy the volume of: (2017)

A) 22.41 dm^3
B) 44.82 dm^3
C) 44.82 cm^3
D) 2.241 dm^3

Q.197 Determine the number of moles of O_2 in 10.6g of Na_2CO_3: (2017)

A) 0.4 moles
B) 0.3 moles
C) 0.2 moles
D) None of these

Q.198 The number of peaks obtained in mass spectrometry shows:

A) Charge on isotopes
B) Number of isotopes
C) Mass of isotope
D) Relative abundance of isotopes

Q.199 Calculate the grams of H_2O formed when 8 g of CH_4 burns in excess of oxygen: (2017)
A) 21 grams
B) 19 grams
C) 18 grams
D) 15 grams

Q.200 Choose the correct option regarding number of particles associated with one mole of substance: (2017)
A) 6.03×10^{23}
B) 6.01×10^{-19}
C) 6.02×10^{-23}
D) 6.02×10^{23}

Q.201 3.0 mole of calcium will contained _____ g of calcium. (2018)
A) 100 gm
B) 105 gm
C) 80 gm
D) 120 gm

Q.202 How many moles of calcium are present in 1.75 kg of calcium carbonate? (2019)
(Ar of Ca = 40, Ar of C = 12, Ar of O = 16)
A) 1.75 mol
B) 1750 mol
C) 0.0175 mole
D) 17.5 mol

Q.203 The number of moles of water in 1 Kg ice are (2019)
A) 50 moles
B) 1000 moles
C) 100 moles
D) 55.5 moles

Q.204 What mass of NaOH is present in 0.5 mol of sodium hydroxide? (2016)
A) 40 gm
B) 2.5 gm
C) 15 gm
D) 20 gm

Q.205 While finding the relative atomic mass, which of the following standard is used to compare the atomic mass of chlorine (35.5 amu). (2018)
A) Carbon-12
B) Neon – 20
C) Carbon - 13
D) Nucleon number

Q.206 The formula which shows the simplest whole number ratio for the atoms of different elements in a compound is (2018)
A) Ionic formula
B) structural formula
C) emperical formula
D) molecular formula

Q.207 The efficiency of chemical reaction can be expressed as: (2020)
A) Theoretical yield
B) Actual yield
C) % yield
D) Maximum yield

Q.208 In a vessel, 10 g N_2, 10g H_2 and 10g O_2 are present. Which one will have less number of atoms? (2020)
A) H_2
B) N_2
C) O_2
D) Both H_2 & N_2

Q.209 The empirical formula of Glucose $C_6H_{12}O_6$ is: (2020)
A) $C_6H_{12}O_6$
B) CHO
C) CH_2O
D) CH_2O_2

1.	D	2.	B	3.	A	4.	
11.	B	12.	D	13.	C	14	
21.	C	22.	B	23.	C	2	
31.	C	32.	C	33.	A	3	
41.	D	42.	B	43.	A		
51.	B	52.	B	53.	C		
61.	C	62.	D	63.	A		
71.	D	72.	B	73.	B		
81.	B	82.	A	83.	A		
91.	C	92.	C	93.	A		
101.	C	102.	B	103.	B		
111.	B	112.	B	113.	C		
121.	B	122.	B	123.	D		
131.	C	132.	C	133.			
141.	C	142.	C	143.			
151.	B	152.	A	153.			
161.	D	162.	D	163.			
171.	B	172.	C	173.			
181.	D	182.	A	183			
191.	C	192.	D	193			
201.	D	202.	D	20			

ANSWERS

1.	D	2.	B	3.	A	4.	A	5.	A	6.	C	7.	C	8.	A	9.	B	10.	B
11.	B	12.	D	13.	C	14.	B	15.	B	16.	D	17.	B	18.	A	19.	A	20.	C
21.	C	22.	B	23.	C	24.	A	25.	B	26.	B	27.	B	28.	A	29.	A	30.	A
31.	C	32.	C	33.	A	34.	B	35.	B	36.	B	37.	D	38.	C	39.	B	40.	B
41.	D	42.	B	43.	A	44.	A	45.	C	46.	C	47.	B	48.	C	49.	B	50.	A
51.	B	52.	B	53.	C	54.	C	55.	D	56.	A	57.	B	58.	C	59.	B	60.	A
61.	C	62.	D	63.	A	64.	A	65.	A	66.	C	67.	D	68.	D	69.	C	70.	A
71.	D	72.	B	73.	B	74.	C	75.	A	76.	B	77.	C	78.	D	79.	B	80.	B
81.	B	82.	A	83.	A	84.	C	85.	C	86.	B	87.	B	88.	B	89.	C	90.	C
91.	C	92.	C	93.	A	94.	B	95.	D	96.	B	97.	A	98.	A	99.	C	100.	A
101.	C	102.	B	103.	B	104.	C	105.	A	106.	C	107.	B	108.	B	109.	C	110.	D
111.	B	112.	B	113.	C	114.	B	115.	A	116.	C	117.	B	118.	A	119.	B	120.	B
121.	B	122.	B	123.	D	124.	A	125.	A	126.	C	127.	B	128.	B	129.	B	130.	A
131.	C	132.	C	133.	D	134.	A	135.	A	136.	A	137.	C	138.	B	139.	A	140.	D
141.	C	142.	C	143.	B	144.	B	145.	B	146.	D	147.	C	148.	C	149.	D	150.	C
151.	B	152.	A	153.	A	154.	D	155.	B	156.	B	157.	D	158.	A	159.	A	160.	D
161.	D	162.	D	163.	D	164.	C	165.	A	166.	B	167.	B	168.	A	169.	A	170.	C
171.	B	172.	C	173.	A	174.	A	175.	C	176.	D	177.	B	178.	B	179.	B	180.	B
181.	D	182.	A	183.	D	184.	C	185.	C	186.	B	187.	C	188.	B	189.	A	190.	B
191.	C	192.	D	193.	A	194.	B	195.	B	196.	A	197.	D	198.	B	199.	C	200.	D
201.	D	202.	D	203.	D	204.	D	205.	A	206.	C	207.	C	208.	C	209.	C		

Question Bank Explanations "Hint"
Unit 1

Q58. $r \propto m$

Q60. 12 g c = 6.02×10^{23} particles
16 g of s = $\frac{16}{32} \times 6.02 \times 1023 = 3.01 \times 10^{23} \times 16$
$= 18 \times 10^{23}$ electrons

Q62. 7N14 $14 - 7 = {}_6C^{13}\ 13 - 6 = 7N$

Q63. Mass of glucose? $1M = \frac{x}{100} \times \frac{1}{0.01}$
$x = 180 \times 0.01$
$x = \frac{180}{100} = 1.8g$

Q65. $2Al + 6HCl \rightarrow 2AlCl_3 + 3H_2$
$\frac{20}{27} = 0.74$ moles of Al
$\frac{106.5}{36.5} = 2.92$ mole of HCl

Al	:	H_2
2	:	3
074	:	x

$x = \frac{0.74 \times 3}{2} = 1.11$

HCl	:	H_2
6	:	3
2.92	:	x

$x = \frac{2.92 \times 3}{6_2} = 1.46$

So, Al is limiting reactant because producing less amount of product.

Q67. Actual yield: 0.5 kg = 500g
Theoratical yield:

$CaCO_3 \rightarrow$	$CaO + CO_2$	
100g	56g	44g
1kg = 1000g	560g	

So, theoretical yield : 560g
% age yield: $\frac{500}{560} \times 100 = 89.28\%$

Q80. $\frac{9.8}{98} = 0.1$ moles of H_2SO_4
$H_2SO_4 \rightleftharpoons 2H^+ + SO_4^{-2}$
1 2 + 1 = 3 mole of Ions
0.1 0.3 moles of Ions

Q82. $CH_4 + 2H_2O \rightarrow CO_2 + 4H_2$
$\frac{16g}{16} = 1$ mole $CH_4 : H_2$ $H_2O : H_2$
$\frac{18g}{18} = 1$ mole 1 : 4 2 : 4
1 : 2
So, H_2O limiting reactant and 2 moles (4g) of H_2 gas produced.

Q83. 1 Molecule of C_2H_5OH : 6 atoms
So, 1 Mole = $6.02 \times 10^{23} \times 6 = 36 \times 10^{23} = 3.6 \times 10^{24}$

Q84. One mole of CO_2 = 1 mole of C-atoms
2 moles of O-atoms
1 mole of C-atoms = 6.02×10^{23} atoms
2 moles of o-atoms = $2 \times 6.02 \times 10^{23}$ atoms
${}_6C = 6\bar{e}$, ${}_8O \times 2 = 8 \times 2\ 16\bar{e}$
$= 16 + 6 = 22\bar{e}$

Q95. A) 1 mole of NaCl = $Na^+ + Cl^-$ = 2 moles of total ions
$\frac{1}{2}$ mole of $MgCl_2 = Mg^{+2} + 2Cl^-$ = 1.5 moles of total ions

B) $\frac{2}{3}$ mole of NaCl = $Na^+ + Cl^- = \frac{2}{3} \times 2 = \frac{4}{3}$ moles of total ions
$\frac{4}{9}$ mole of NaCl = $MgCl_2 + \frac{4}{9} \times 3 = \frac{4}{3}$ moles of total ions

C) $\frac{1}{2}$ mole of NaCl = $Na^+ + Cl^-$ = 1 moles of total ions
$\frac{2}{3}$ mole of $MgCl_2 = Mg^+ + 2Cl^- = \frac{2}{3} \times 3$ = 2 moles of total ions

D) $\frac{3}{2}$ mole of NaCl = $\frac{3}{2} \times 2$ = 3 moles of total ions
$\frac{2}{3}$ mole of $MgCl_2$ $\frac{2}{3} \times 3$ = 2 moles of total ions

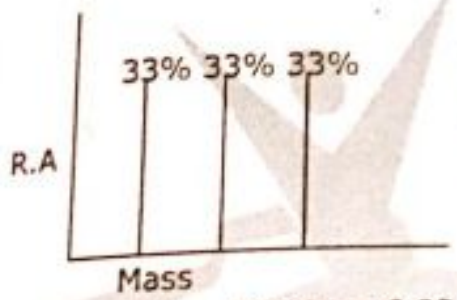
Q96. 22.414 dm^3 = 1 mole of CH_4 = 4g of H

Q97. $\frac{49}{98} \times 6.02 \times 10^{23} \times 7$

Q98. $\frac{90}{180} \times 6.02 \times 10^{23} \times 6$

Q99. E.F = C_3H_3O, E.F mass $12 \times 3 + 1 \times 3 + 16 = 55$
$n = \frac{MF\ mass}{EF\ mass} = \frac{110}{55} = 2$
M.F = n x E.F
= $2 \times C_3H_3O = C_6H_6O_2$

Q100.



Q110. 1 mole of H_2 = 2016g = 6.02×10^3 molecules
1 mole of O_2 = 32 g = 6.02×10^3 molecules
And 22.414 dm^3 volume at STP.

Q114. $H_2S \rightarrow 2H^+ + SO_4^{-2}$
98g = 1 mole = 3 moles of ions

Q115. $Ca + 2HCl \rightarrow CaCl_2 + H_2$
40g — 1 mole = 22.414 dm^3
20g — 0.5 Mole = 11.207 dm^3

Q116. $2H_2 + O_2 \rightarrow 2H_2O$
4g ↓ : 36g = 2 moles
32g : 36g
No limiting reactant b/c stoichiometric amounts are taken.

Q118.
a) 1g of He = $\frac{1}{4} \times 6.02 \times 10^{23} = 1.5 \times 10^{23}$
b) Mg^{+2} $2\bar{e} \rightarrow Mg$ ($2 \times 6.02 \times 10^{23}\ \bar{e}$ =) 12×10^{23}
c) $\frac{35.5}{71} \times 6.02 \times 10^{23} = 3.01 \times 10^{23}$ Molecules
d) $\frac{24}{24} \times 6.02 \times 10^{23} = 6.02 \times 10^{23}$ atoms of Mg

Q120.

$$4Al + 3O_2 \rightarrow 2Al_2O_3$$
4 Moles : 2 Moles
40 : 20 Moles

$$4Al + 3O_2 \rightarrow 2Al_2O_3$$
3 Mole : 2 Mole
40 : X
$$x = \frac{40 \times 2}{3} = 26.6 \text{ Moles}$$

So, Al is limiting reactant producing less amount of moles of product.

Q121.

$$2H_2 + O_2 \rightarrow 2H_2O$$
2 Moles : 2 Moles
4 Moles : 4 Moles of H_2O

$$2H_2 + O_2 \rightarrow 2H_2O$$
1 Moles : 2 Moles
2 Moles : 4 Moles

No llimiting reactant but 4 moles of H_2O.

Q122. Vol = $\frac{1.6}{32} \times 22.414\ dm^3 = 1.12dm^3$

Q127. $S_8 = 8 \times 32 = 256g$ mx weight

Q131. $22.414dm^3 = 1$ mole $= 6.02 \times 10^{23}$ or 60.2×10^{22}

Q133.
C_6H_{14}
$C_3 : H_7$
Atomic ratio can be simplify further as whole no ratio.

Q135.
A) $\frac{35.5}{71} = 0.5$ Mole $= 3.01 \times 10^{23}$
B) $\frac{1g}{2} \times 6.02 \times 10^{23} \times 2\bar{e} = 6.02 \times 10^{23}$
C) $H_2SO_4 \rightleftharpoons 2H+ = 2 \times 6.02 \times 10^{23}$ Ions
D) 22.4 dm3 of O_2 = 1 Mole of O_2 but 2 moles of o-atoms

Q136. Vol = $\frac{1.5 \times 10^{23}}{6.02 \times 10^{23}} \times 22.414 = 5.6dm^3$

Q137. From mass, vol and molecules see mole map is theory

Q138. $H_2O_2 = 34g^{mol-1}$
$= \frac{17}{34} \times 6.02 \times 10^{23} \times 4 = 12 \times 10^{23} = 1.2 \times 10^{24}$

Q139.
$2Mg + O_2 \rightarrow 2MgO$
2 : 2
0.5 : 0.5 Mole of MgO
n x M = m
0.5 x 40 = 20g

Q142.
H_2 : Cl_2
2 : 71
1 : 35.5 masses ratio

Q144.
A) 0.5 mole^{glulose} = 90g
B) 1 Mole^{Urea} = 60g
C) 3.01×10^{23} g O_3 = 24g

Q145. A) 2 Moles of HClO4 = 6 x 6.02 x
B) 1 Mole of O3 = 6.02 x 1023 x
C) $10dm^3$ $1dm^3$ of $H_2O = \frac{1000}{18} = 5$
So, $10dm^3 = 555$ moles
$555 \times 6.02 \times 10^{23} \times 3$
\+ -
D) 3NA of NaCl = 3 x 2 x 6.02 x

Q151. MF = n x E.F
MF = 1 x E.F

Q153. CO_2 = 44g = 1 mole
12g of C in 1 mole mass
Moles of C = Mass of CO_2
1 : 44
x : 8
$x \times 44 = 1 \times 8$
$x = \frac{8}{44} = 0.18$ Mole

Q155. Equal moles equal volume a

Q156.

1 Mole of O_2 = 32 g	D
1 Mole of CO_2 = 44g	
1 Mole of CO_2 = 44g	
1 Mole of C_3H_8 = 44g	

Q158.
A) 32g N_2H_4
B) $\frac{1.20\ 44 \times 10^{24}}{6.02 \times 10_{23}} \times 28 = 56g$
C) $24dm^3$ at RTP = 1 Mo
D) 1.09dm3 = $\frac{1000g}{18}$ = 5
= n x m = mass
= 55.5 x 18 = 999g

Q159. $Mg + H_2SO_4 \rightarrow MgSO_4$
Mg = H_2
1 : 1
2 : 2 So, H_2SO_4 is lim

Q160. Text book Exp No. 4

Q164. = $\frac{3.01 \times 10^{23}}{6.02 \times 10^{23}} \times 22\ 414c$

Q166. $\frac{90}{180} \times 6.02 \times 10^{23} \times 6$

Q167. $CH_4 + 2O_2 \rightarrow CO_2 +$
1 Moles 1 M
5ml 5m
$C_2H_6 + \frac{5}{2}O_2 \rightarrow 2CO$
1 Mole
10ml
Total = 5 + 20 =
Ratio of Moles is

Q149.
A) 2 Moles of HClO4 = 6 x 6.02 x 1023
B) 1 Mole of O3 = 6.02 x 1023 x 3
C) $10dm^3$ $1dm^3$ of H_2O = $\frac{1000}{18}$ = 55.5 mole
So, $10dm^3$ = 555 moles
$555 \times 6.02 \times 10^{23} \times 3$
+ -
D) 3NA of NaCl = $3 \times 2 \times 6.02 \times 10^{23}$

Q151.
MF = n x E.F
MF = 1 x E.F

Q153. CO_2 = 44g = 1 mole
12g of C in 1 mole mass
Moles of C = Mass of CO_2
1 : 44
x : 8
x x 44 = 1 x 8
x = $\frac{8}{44}$ = 0.18 Mole

Q155. Equal moles equal volume and molecules at STP

Q156.

1 Mole of O_2 = 32 g 1 Mole of CO_2 = 44g	Different
1 Mole of CO_2 = 44g 1 Mole of C_3H_8 = 44g	Same

Q158.
A) 32g N_2H_4
B) $\frac{1.20\ 44 \times 10^{24}}{6.02 \times 10_{23}}$ x 28 = 56g
C) $24dm^3$ at RTP = 1 Mole of O_2 = 32g
D) 1.09dm3 = $\frac{1000g}{18}$ = 55.5 Moles
= n x m = mass
= 55.5 x 18 = 999g

Q159. $Mg + H_2SO_4 \rightarrow MgSO_4 + H_2$ $\frac{48}{24}$ = 2 moles 98g = 10 mole
Mg = H_2 H_2SO_4 : H_2
1 : 1 1 : 1
2 : 2 So, H_2SO_4 is limiting reactant 1 Mole of H_2 = 2g

Q160. Text book Exp No. 4 Page No.9

Q164. = $\frac{3.01 \times 10^{23}}{6.02 \times 10^{23}}$ x 22 414cm^3 = 11207 cm^3

Q166. $\frac{90}{180} \times 6.02 \times 10^{23} \times 6 = 1.8 \times 10^{24}$

Q167. $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$
1 Moles 1 Moles
5ml 5ml
$C_2H_6 + \frac{5}{2} O_2 \rightarrow 2CO_2 + 3H_2O$
1 Mole 2 Mole
10ml 20ml
Total = 5 + 20 = 25ml
Ratio of Moles is ratio of valumes

Q170. $\frac{4.5}{18} \times 6.02 \times 10^{23} \times 2 = 3.01 \times 10^{23}$

Q172. $x + 2Y \rightarrow Z$

x : z	y : z
1 : 1	2 : 1
5 : 5	8 : 4

Less moles are produced by Y, so it is limiting reactant and 4 moles is amount of Z

Q173. H_2 CH_4

$\frac{1g}{2}$ $\frac{16}{16}$

2(0.5 : 1)

1 : 2

Q174. 1 Molecule mass represent in amu

Q175. $2H_2 O_2 \rightarrow 2H_2O$

4g	:	36g
32g	:	36g
64g	:	72g

Less amount of H_2O is by H_2 so it is limiting reactant thus 36g of H_2O formed.

Q180. E.F = CH_2CL = 49.5

$n = \frac{M.F\ mass}{E.F\ mass} = \frac{99}{49} = 2$

MF = 2 x CH_2Cl = $C_2H_4Cl_2$

Q186. 3 (C_1 : $H_{1.33}$: O_1) = $C_3H_4O_3$

Suitable no. to make it whole No. ratio

Q187. $M \alpha r \alpha \frac{1}{Deflection}$

Q188. CH_3OH C_2H_5OH H_2O

$\frac{16}{32}$ $\frac{92}{46}$ $\frac{36}{18}$

0.5 2 2

Q189. m = n x m

= 3.0 x 40 = 120g

Q191.

$\frac{0.1}{23} = 4.3 \times 10^{-3}$

Q194. $CuSO_4.5H_2O$

63 + 63 + 64 + 90 = 249gmol^{-1}

$= \frac{124.5}{249} \times 6.02 \times 10^{23} \times 17$

$= 3.01 \times 10^{23} \times 17$

Q195. $K_2SO_4 \rightarrow 2K^+ + SO_4^{-2}$

1 Mole 2 moles of K^+ ion

Q196. $CaCO_3 \rightarrow CaO + CO_2$

100g 44g = 1 mole = 22.414 d m^3

Q199. %age abundance must be of 100% maximum

Q202. Total population =
Rupee = 100 each
Total No. of coins
Moles of coins =

Q203. $CH_3 - CH_2 - CH_2$
OH

60g
10g
$x = \frac{10 \times 123}{60} = 20$
Actual yield = 1

Q204. Mass of Body =
%age of H_2O =
Molecules = $\frac{10}{}$

Q206. $\frac{10.6}{106} = 0.1$

Q207. $CH_4 + 2O_2$
16g
8g

Q211. $1.75 \times 1000 =$

Q202. Total population = 200 million = $200 \times 10^6 = 2 \times 10^8$
Rupee = 100 each, $\frac{100}{5} = 20$ coins each person
Total No. of coins = $2 \times 10^8 \times 20 = 4\ 10^9$ coins
Moles of coins = $\frac{4 \times 10^9}{6.02 \times 10^{23}} = 0.66\ 10^{-14}$ Moles or 6.6×10^{-15} Moles

Q203. $CH_3 - CH_2 - \underset{OH}{CH_2} \rightarrow CH_3 - CH_2 - CH_2 - Br$

60g : 123g
10g : x

$x = \frac{10 \times 123}{60} = 20.5g$ %age yield = $\frac{12}{20.5} \times 100 = 58\%$
Actual yield = 12g theoretical yield = 20.5g

Q204. Mass of Body = 60.0 kg = 60 x 1000 = 60,000g
%age of H_2O = 18% So, $\frac{60000}{100} \times 18 = 10800g$
Molecules = $\frac{10800}{18} \times 6.02 \times 10^{23} = 3.6 \times 10^{26}$

Q206. $\frac{10.6}{106} = 0.1$

Q207. $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$
16g : 2 Moles of H_2O
8g : 1 Mole of H_2O 6.02×10^{23}

Q211. $1.75 \times 1000 = \frac{1750}{100} = 17.5$

ATOMIC STRUCTURE

Q.1 **Anode is the surface on which probability of finding electron is:**
A) 50%
B) Less than 10%
C) More than 95%
D) Zero

Q.2 **Which of the following Ions has the same number of electrons as a krypton atom with atomic number 36?**
A) Chlorine
B) Rubidium
C) Sodium
D) Xenon

Q.3 **What is the definition of nucleon number?**
A) The mass in grams of an atom
B) The number of electrons in an atom
C) The number of nuclei in a molecule
D) The total number of protons and neutrons in an atom

Q.4 **Which of the following contains the same number of electrons as an atom of neon?**
A) Cl^-
B) Li
C) Li^+
D) O^{2-}

Q.5 **The atoms $^{31}_{15}P$ and $^{32}_{16}S$ have the same:**
A) Nucleon number
B) Number of electrons
C) Number of neutrons
D) Number of protons

Q.6 **Which of the following is true for isotopes of an element?**
A) They are atoms of same atomic number but different atomic masses.
B) The only difference in composition between isotopes of same element is in the number of neutrons present in nucleus.
C) The atomic weight of an element is an average of the weight of isotopes of element in proportion
in which they occur in nature.
D) All above

Q.7 **Natural chlorine occur as a mixture of isotopes. If a mixture contains 75% $^{35}_{17}Cl$ and 25% $^{37}_{17}Cl$, determine its molecular weight:**
A) 34.50
B) 35.50
C) 72.50
D) 72.10

Q.8 **An isotopes $^{242}_{94}Pu$ disintegrates by emitting 5α, 2β particles. The new isotopes formed is:**
A) $^{222}_{86}Rn$
B) $^{237}_{87}Pu$
C) $^{232}_{92}Am$
D) $^{235}_{87}Cm$

Q.9 **The symbol for a uranium atom is $^{238}_{92}U$. How many neutrons are present in this atom?**
A) 146
B) 92
C) 330
D) 149

Q.10 **The quantum numbers for given orbital are n = 2, ℓ = 1, m = 0. We would usually represent this as:**
A) 1s
B) 2s
C) $1P_z$
D) $2P_z$

Q.11 **A 3p orbital has:**
A) Two non-spherical nodes
B) Two spherical nodes
C) One spherical node and one non-spherical node
D) Two spherical nodes and one non-spherical node

Q.12 **How many nucleons are there in an atom of $^{238}_{92}U$?**
A) 238
B) 92
C) 146
D) 1

Q.13 **How many orbitals exist with principal quantum number 2?**
A) 2
B) 3
C) 4
D) 9

Q.14 **A liquid boils at a temperature of 100°C, which other property of the liquid proves that it is pure water?**
A) It does not leave a residue when boiled
B) It freezes at 0°C
C) Its pH is nearly neutral
D) It turns white anhydrous copper (II) sulphate blue.

Q.15 **What is right configuration of an element with 24 electrons?**
A) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^6$
B) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^1 3d^3$
C) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^4$
D) $1s^2 2s^2 2p^6 3s^2 3p^5 4s^1 3d^4$

Q.16 The atomic number of
A) $1s^2 2s^2 2p^6 3a^2$
B) $1s^2 2s^2 2p^6 3s^4$

Q.17 A neutral elementry h
electrons to form an i
A) -2
B) +2

Q.18 The electronic config
A) $[Ar]3s^2 3d^{10} 3p^3$
B) $[Ar]4s^2 3d^{10} 4p^3$

Q.19 A neutral atom of $^{14}_{6}$
A) 6, 14, 14
B) 6, 8, 6

Q.20 How many valence
A) 2
B) 6

Q.21 Fluorine atoms ten
A) Lose electrons
B) Gain electrons
C) neither lose nor g
D) Fluorine atoms d

Q.22 The identity of an
A) the number of it
B) The number of i

Q.23 Which of the foll
a magnesium ca
A) $1s^2 2s^2 2p^6 3s^2$
B) $1s^2 2s^2 2p^6 3s^2 3p$

Q.24 Which of the fol
A)

4s			
3p	↑↓		
3s	↑↓		
2p	↑↓	↑↓	↑↓
2s	↑↓		
1s	↑↓		

Q.25 Potassium (K
A) 1
B) 19

Q.26 Acc006Frdin
one of the fo

A) As^{-3}, Ga^{+}
B) As^{+}, Ga^{+}

Q.27 An element
number of
A) 15
B) 33

Q.28 The sum o
A) 3/2
B) 3

Q.29 The total
A) 2(n)
B) 2 x X

Q.30 Maximun
A) 2
B) 18

Q.16 The atomic number of silicon is 14. What is its ground state electronic configuration?
A) $1s^2 2s^2 2p^6 3a^2$
B) $1s^2 2s^2 2p^6 3s^4$
C) $1s^2 2s^2 2p^6 3s^2 3p^2$
D) $1s^2 2s^2 2p^6 3s^2$

Q.17 A neutral elementry has the electronic configuration $1s^2 2s^2 2p^6 3s^1$, it will gain or lose electrons to form an ion of valence:
A) -2
B) +2
C) -1
D) +1

Q.18 The electronic configuration of gallium, atomic number 31 is:
A) $[Ar]3s^2 3d^{10} 3p^3$
B) $[Ar]4s^2 3d^{10} 4p^3$
C) $[Ar]4s^2 3d^{10} 4p^1$
D) $[Kr]4s^2 3d^{10} 4p^1$

Q.19 A neutral atom of $^{14}_{6}C$ contains respectively how many protons, neutrons and elecgtrons?
A) 6, 14, 14
B) 6, 8, 6
C) 6, 6, 8
D) 8, 6, 7

Q.20 How many valence electrons does an oxygen atom have?
A) 2
B) 6
C) 8
D) 16

Q.21 Fluorine atoms tend to...?...when they form chemical compounds with metals.
A) Lose electrons
B) Gain electrons
C) neither lose nor gain electrons...they usually share electrons equally with metals
D) Fluorine atoms do not form compounds with other atoms...fluorine is an inert gas

Q.22 The identity of an element is determined by...:
A) the number of its protons
B) The number of its neutrons
C) The number of its electrons
D) Its atomic mass

Q.23 Which of the following electronic configurations represent the electron configuration for a magnesium cation...Mg^{2+}?
A) $1s^2 2s^2 2p^6 3s^2$
B) $1s^2 2s^2 2p^6 3s^2 3p^2$
C) $1s^2 2s^2 2p^6$
D) $1s^2 2s^2 2p^4$

Q.24 Which of the following orbital box diagrams represents silicon, which has 14 electrons?

A)

4s	
3p	↑↓		
3s	↑↓	
2p	↑↓	↑↓	↑↓
2s	↑↓	
1s	↑↓	

B)

4s	
3p	↑	↑	↑
3s	↑	
2p	↑↓	↑↓	↑↓
2s	↑↓	
1s	↑↓	

C)

4s	
3p	↑	↑	
3s	↑↓	
2p	↑↓	↑↓	↑↓
2s	↑↓	
1s	↑↓	

D)

3p			
4s	↑↓	
3s	↑↓	
2p	↑↓	↑↓	↑↓
2s	↑↓	
1s	↑↓	

Q.25 Potassium (K) has? _?_ neutrons in its nucleus?
A) 1
B) 19
C) 20
D) 39

Q.26 Acc006Frding to the number of protons, neutrons and electrons given in the table, which one of the following options is correct? (2014)

	Protons	Neutrons	Electrons
As	33	42	36
Ga	31	39	28
Ca	20	20	20

A) As^{-3}, Ga^{+++}, Ca
B) As^{+}, Ga^{+}, Ca
C) As^{-2}, Ga^{+3}, Ca^{+2}
D) As^{-1}, Ga , Ca^{+3}

Q.27 An element 'x' has '5' electrons in its 3rd shell (Valence Shell), what is the atomic number of the element right below it?
A) 15
B) 33
C) 23
D) 51

Q.28 The sum of values of all quantum numbers of the electron of hydrogen atom is:
A) 3/2
B) 3
C) 2
D) 2/3

Q.29 The total number of orbital in a shell are calculated by:
A) 2(n)
B) 2 x X
C) $2(n)^2$
D) $(n)^2$

Q.30 Maximum number of electrons in M-shell
A) 2
B) 18
C) 8
D) 32

Q.31 Which of the following is correct for $3d^2$, orbital?

	n	l	m	s
A)	3	0	0	+ ½
B)	3	1	0	+ ½
C)	3	2	0	+ ½
D)	3	1	2	+ ½

Q.32 The outermost electronic configuration of Mn (Z = 25) is:
A) $3d^5 4s^1$
B) $3d^7 4s^0$
C) $3d^7 4s^0$
D) $3d^5 4s^2$

Q.33 If the value of l = 3 then the electron is located in_____ shell?
A) K
B) N
C) M
D) L

Q.34 No. of electrons in $^{69}Ga_{31}^{3+}$ will be:
A) 28
B) 30
C) 29
D) 34

(2017)

Q.35 How many electrons are removed from sodium by providing 496 KJ of ionization energy?
A) 1e⁻
B) 2e⁻
C) 3.01×10^{23} e⁻
D) 6.02×10^{23} e⁻

Q.36 M^{+3} has 14 neutrons and acquires the electrons distributions of $^{10}_{20}Ne$. The mass number of M will be:
A) 32
B) 39
C) 28
D) 27

Q.37 After filling d orbitals the next electrons will enter into_____ orbital:
A) s
B) d
C) p
D) f

Q.38 Slow neutrons will move towards _____ end/ends when place in electric filed.
A) positive
B) negative
C) not any of the
D) above

Q.39 $^4_2He + ^{27}_{13}Al \longrightarrow ^{28}_{12}Mg + X$. Here 'X' May be:
A) $^{23}_{11}Na$
B) ^3_1H
C) ^7_3Li
D) ^4_2Be

Q.40 Which of the following is most penetrating than the others?
A) Electrons
B) γ-rays
C) α-particles
D) β-radiations

Q.41 The orbital which is farthest to the nucleus is:
A) f
B) p
C) d
D) s

Q.42 Which of the following pair have same n+l value.
A) 2p and 3s
B) 5s and 4p
C) 7s and 4f
D) All of these

Q.43 According to Aufbau's principal the highest energy orbital will be filled:
A) Immediately
B) in the end
C) initially
D) first

Q.44 Lowest energy electron are present in:
A) s orbital
B) d orbital
C) p orbital
D) forbital

Q.45 Which of the following orbital has different number of lobes than the other three orbitals?
A) dxy
B) dx^2-y^2
C) dyz
D) dz^2

Q.46 Which sub-shell would be filled first? When all the given sub- shells have same (n+l) values?
A) 4f
B) 6p
C) 5d
D) 7s

Q.47 If n = 3 then the maximum no. of "l" values will be
A) 2
B) 3
C) 1
D) 0

Q.48 The relative energies of 4s, 4p and 3d orbitals are in the order.
A) 3d < 4p < 4s
B) 4p < 4s < 3d
C) 4s < 3d < 4p
D) 4p < 3d < 4s

(2012)

Q.49 Roentgen discovered X-rays, with the help of his works which orbital was discovered?
A) d, f
B) s, p
C) p, d
D) None of these

Q.50 "Ionization energies of the elements of the 2nd period are greater than those of 3rd elements". It is because of
A) 2nd period elements have less electronegativity
B) 3rd Period elements have greater shielding effect
C) 2nd period element have greater shielding effect
D) 2nd period elements have completely filled atomic orbitals

Q.51 What happens to potential energy when electron is brought from infinity to a point at a distance 'r' from nucleus?
A) Potential energy remains unchanged
B) Potential energy increases
C) Potential energy decreases
D) Potential energy becomes zero.

Q.52 All orbitals of a d-sub shell are represented with four lobes except:
A) dxy
B) dz^2
C) $d\ x^2-y^2$
D) dxz

Q.53 A sodium lamp emits yellow light with a wavelength of 589 nm. Which electron is involved in this context?
A) 3s electron
B) 4s electron
C) 3p electrons
D) 3d electrons

Q.54 A gaseous element is present is 2nd period and is completely inactive, what is its ionization energy?
A) The Lowest
B) The Highest
C) Moderate
D) No concern with Ionization energy

Q.55 Which orbital makes the thickest cloud?
A) d
B) f
C) s
D) p

Q.56 Their e/m ratio resembles with that of electrons
A) Alpha rays
B) Gamma rays
C) Beta rays
D) X-rays

Q.57 Identify from the following triplets that are iso-electronic anions?
A) N^{-2}, O^{-1}, F^{-1}
B) N^{+2}, O^{-1}, F^{+1}
C) N^{-2}, O^{-1}, F
D) N^{-3}, O^{-2}, F^{-1}

Q.58 The correct formula to calculate maximum number of electrons in a sub-shell?
A) $2n^2$
B) $m = 2l + 1$
C) $l = n - 1$
D) $2(2l + 1)$

Q.59 The electrons should be filled in the order of increasing energy values is according to:
A) Pauli Exclusion Principle
B) Aufbau Principle
C) Hund's rule
D) Planck's quantum theory

Q.60 The ionization of an atom is:
A) Always exothermic process
B) May or may not be endothermic
C) Always endothermic process
D) May be exothermic or may be endothermic process

Q.61 The given formula (2l+1) is used to calculate the no of _____ present in per subshell.
A) energy level
B) shells
C) orbitals
D) energy

Q.62 An atom has a mass number of 23 and atomic number 11. The number of protons are_____.
A) 21
B) 1
C) 12
D) 23

Q.63 By obeying Hund's rule what is the correct about electronic configuration for Zn-30?
A) Zn has +2 oxidation state only
B) Zn is metal
C) Zn has 5 pairs of electrons in d-subshell
D) Both A and B

Q.64 18th electron of Argon goes to $3p_z$ orbital, if one more electron is added to Argon, where it enters?
A) $3p_y$
B) $3p_z$
C) 4s
D) $3p_x$

Q.65 Which statement is incorrect?
A) Second ionization energy is higher than first ionization energy
B) Third ionization energy is lower than fourth ionization energy
C) First ionization energy is lower than third ionization energy
D) Fourth ionization energy is greater than fifth ionization energy

Q.66 ionization energy increases with:
A) Increase in both atomic radius and nuclear charge
B) Increase in atomic radius and decrease in nuclear charge
C) Decrease in atomic radius and decrease in nuclear charge
D) Decrease in both atomic radius and nuclear charge

Q.67 Which increase in the value of Principal Quantum Number 'n', the shape of the s – orbitals remains same although their sizes: (2012)
A) Decrease
B) Remain the same
C) Increase
D) May or may not remain the same

Q.68 The mass of the atom is determined by_____.
A) electron and neutron
B) neutrons
C) electron
D) neutron and proton

Q.69 What is correct electronic configuration of Hydride ion?
A) $1s^{\uparrow\downarrow}$
B) $1s^{\uparrow}$
C) $1s^{\downarrow}$
D) Both B and C

Q.70 In $^{23}_{11}Na$, the number of neutrons
A) Equal to the number of protons
B) Greater than the number of protons
C) Less than the number of protons
D) Unpredictable

Q.71 What is the effect of shielding effect on ionization energy?
A) Ionization energy is independent of shielding effect
B) Ionization energy have no relation with decrease in shielding effect
C) Ionization energy decreases with decrease in shielding effect
D) Ionization energy decreases with increase in shielding effect

Q.72 The increasing penetration effect of atomic orbitals is:
A) d < p < s < f
B) s < f < p < d
C) p < s < d < f
D) f <d <p < s

Q.73 The spectrum of Hydrogen atom is expected to be similar as that of:
A) Li^{+}
B) Be^{+2}
C) Na^{+}
D) He^{+1}

Q.74 Which of the following are oxidizing in nature
A) Cathode rays
B) Canal rays
C) Neutrons
D) Both b and c

Q.75 Correct order of energy in the given sub – shells is: (2013)
A) 5s>3d>3p>4s
B) 3p>3d>4s>5s
C) 3p>3d>5s>4s
D) 5s>3d>4s>3p

Q.76 Which is lighter than the rest?
A) Electron
B) Neutron
C) Proton
D) None

Q.77 The order of ionization energy of sub-shell is:
A) s>p>d>f
B) s>p>f>d
C) s<p<d<f
D) s<d>p>f

Q.78 The order of electron affinity is Be > B. the most probable reason behind this:
A) 'B' is more electronegative than be
B) 'Be' has stronger nuclear charge
C) 'Be' has larger atomic radius than that of 'B'
D) Nature of orbital

Q.79 Which of the following atoms represent isotones?
A) $^{12}_{6}C, ^{13}_{6}C, ^{14}_{6}C$
B) $^{40}_{18}Ar, ^{42}_{20}Ca, ^{41}_{21}Se$
C) $^{40}_{18}Ar, ^{40}_{20}Ca, ^{41}_{21}Se$
D) $^{14}_{7}N, ^{16}_{8}O, ^{18}_{9}F$

Q.80 The elements having low values of ionization energies are:
A) Strong reducing agents
B) Strong oxidizing agents
C) Weak reducing agents
D) Non-metals

Q.81 Electrons affinity is an index to:
A) Metallic Character
B) Increasing shielding effect
C) Non- Metallic Character
D) Both B and C may be possible

Q.82 The measure of the attraction of nucleus for an extra electrons is:
A) Increased down the group
B) Constant along the period
C) decreased along the period
D) increased along the period

Q.83 The absolute charge of an electron is_____.
A) $1.6 \times 10^{-19}C$
B) $-1.6 \times 10^{-19}C$
C) $16 \times 10^{-19}C$
D) $1.6 \times 10^{-19}C$

Q.84 Number of electrons in the outermost shell of chloride ion (Cl^{-}) is: (2013)
A) 7
B) 8
C) 1
D) 17

Q.85 All have the same trend in periodic table except:
A) Ionization energy
B) Electron affinity
C) Electro negativity
D) Shielding effect

Q.86 The abnormal trend of ionization energies is shown by the elements of groups
A) II A and IIIA
B) VIA and III A
C) III A and VA
D) IIA and VA

Q.87 The element shows two valency if there is sufficient gap between:
A) Third ionization energy and fourth ionization energy
B) First ionization energy and second ionization energy
C) Second ionization energy and third ionization energy
D) Fourth ionization energy and fifth ionization energy

Q.88 If proton number of an element 'Z' is 37 then the total number of electron in its ion 'Z^{+2}' Is:
A) 37
B) 39
C) 35
D) 18

Q.89 How many electrons in an oxygen atom may have positive values of spin quantum number.
A) 2
B) 4
C) 3
D) 5

Q.90 Which quantum number are applied to the confutation: $6C = 1s^2, 2s^2, 2p^2$
A) n,m
B) h,s
C) l,m
D) n,l

Q.91 The maximum number of orbitals present in a subshell that is represented by Azimuthal quantum number = 2 will be
A) 1
B) 5
C) 3
D) 7

Q.92 When the 6d orbital is completed the entering electron goes into
A) 7f
B) 7p
C) 7s
D) 7d

Q.93 Hund's rule is obeyed by:
A) $1s^2, 2s^2, 2p_z^{\uparrow\downarrow}$
B) $1s^2, 2s^2, 2p_x^{\uparrow}, 2p_y^{\uparrow}$
C) $1s^2, 2s^2, 2p_x^{\downarrow}, 2p_y^{\downarrow}$
D) Both B and C

Q.94 The general configuration of 4th period is, involved by writing the configuration of which noble gas?
A) $_{10}Ne$
B) $_{36}Kr$
C) $_{18}Ar$
D) $_{54}Xe$

Q.95 Which one of the following positive particles has maximum charge to mass ratio?
A) O^+
B) K^+
C) Na^+
D) H^+

Q.96 Oxygen has very high second ionization potential value because of :
A) Completely filled p orbital
B) Half-filled s orbital
C) Completely filled s orbital
D) Half-filled p orbitals

Q.97 For a sub-shell having l = 1, The permitted values of 'm' are given by:
A) 0
B) -2,0,2
C) -1,0,-1
D) -1, 0,1

Q.98 The number of nodal planes for the orbital's having sausage shapes are
A) 0
B) 2
C) 1
D) 3

Q.99 Isotopic symbol of ion of sulphur-33 is $^{33}S_{16}^{-2}$. How many no of protons and neutrons are present if the number of electrons are18:
A) P=18,n=15
B) P=16,n=16
C) P=16,n=17
D) P=17,n=16

Q.100 The correct electronic configuration of $_{29}Cu^{66}$ in its ground state is
A) $[Ar]3d^{10}4s^1$
B) $[Ar]4s^2$
C) $[Ar]3d^9 4s^2$
D) $[Ar]4s^1$

Q.101 Which orbitals have number of lobes equal to 2?
A) s
B) d
C) p
D) f

Q.102 Identify the wrong combinations of quantum numbers (n, l and m)?
A) 1, 0, 0
B) 3, 2, -2
C) 2, 1, 0
D) 2, 1, 2

Q.103 All the elements (Rn, Cs and Ba) are present in the six period of the periodic table. Which of the following is correct increasing order of first ionization energy?

	Minimum	Moderate	Maximum
A)	Cs	Ba	Rn
B)	Ba	Cs	Rn
C)	Rn	Cs	Ba
D)	Cs	Rn	Ba

Q.104 The effective nuclear charge for an atom for outer electrons is less than the atomic number due to
A) Intervening electrons
B) Paramagnetism
C) Penetration
D) Electron-pair repulsion

Q.105 All of the following statements are correct for atomic structure and quantum numbers except one
A) For n=3, maximum number of electron is 18
B) f sub shell consists of 7 orbitals
C) For n=4, the largest possible value of (l) is 3
D) For n=4, the largest possible value of spin quantum number is 2

Q.106 Quantum number which tells the energy of electron is?
A) n
B) m
C) l
D) s

Q.107 If the e/m value of electron is 1.7586×10^{11} Coulumb kg^{-1}, then what would be the mass of electron in grams (charge on electron is 1.6022×10^{-12} Coulombs)? (2014)
A) 9.1095×10^{-31} g
B) 9.1095×10^{-28} g
C) 91.095×10^{-11} g
D) 0.919095×10^{-31} g

Q.108 Which following pairs of subshells have same feasible value of (n+l)?
A) 6s, 4f
B) 7s, 6d
C) 7s, 4f
D) Both B and C

Q.109 What is correct priority order of filling of electron according to Auf-Bau principle
A) 1s>2p>2s>3d>3p>3s
B) 1s<2p<2s<3d<3p<3s
C) 1s>2s>2p>3d>3p>3s
D) 1s>2s>2p>3s>3p>3d

Q.110 If the nucleon number for the same element is different,then it refers to:
A) difference of electron
B) difference of protons
C) Isotopes
D) All of these

Q.111 Sum of proton an neutrons in an atom is called its :
A) Isotope
B) Nucelon number
C) Atomic number
D) Atomic mass

Q.112 What is correct for the sub-atomic particles?
A) Mass of neutron is almost equal to mass of electron
B) e/m of a proton is almost equal to e/m of electron
C) Mass of proton is almost equal to mass of electron
D) e/m of a proton is lesser then e/m of electron

Q.113 Orbitals of equal energy are called:
A) Atomic orbitals
B) Degenerate orbitals
C) Molecular orbitals
D) Anti-bonding orbitals

Q.114 Electrons are are deflected towards _____ of electric field.
A) +ve end
B) neutral end
C) -ve end
D) Both a & b

Q.115 The highest I.P value is observed in
A) Haloges
B) Alkali metals
C) Noble gases
D) Transition elements

Q.116 The Halogens have _____ ionization potential value high:
A) 1st
B) 3rd
C) 2nd
D) 4th

Q.117 After filling d-orbitals which one of the following pairs go at high energy comparatively
A) dxy & dyz
B) $dx^2 - y^2$ & dyz
C) dzx & dxy
D) $dx^2 - y^2$ & dz^2

Q.118 Cathode rays were discovered by discharged tube experiment. Potential difference provided to electrodes in discharged tube depends on.....
A) Distance b/w cathode and anode
B) volume of gas
C) Nature of electrodes
D) Independent of every thing

Q.119 Mass of neutron is
A) 1.0073 amu
B) 1.0087 amu
C) 00.00173 amu
D) 1.6760×10^{-27} amu

Q.120 Electronic configuration of K is:
A) $[Ar]4s^2$
B) $[Kr]5s^1$
C) $[Ar]4s^1$
D) $[He]2s^1$

Q.121 A set of orbitals having same value of 'l' is called:
A) Shell
B) molecular orbital
C) Sub-shell
D) Energy level

Q.122 The element with least number of neutrons?
A) $_{53}I^{127}$
B) $_{13}Al^{27}$
C) $_{20}Ca^{40}$
D) $_{11}Na^{23}$

Q.123 Elements with _____ first ionization energies and _____ electron affinities generally form cations.
A) Low----------slightly negative
B) Low----------positive or slightly negative
C) High----------positive or slightly negative
D) High----------very negative

Q.124 Which set of quantum numbers value indicate maximum ionization energy of an electron present in particular atomic orbital?
A) n=2,l=1,m=0,s=+1/2
B) n=3,l=2,m=0,s=+1/2
C) n=2,l=0,m=0,s=+1/2
D) n=3,l=1,m=0,s=+1/2

Q.125 In a period, the alkali metals have
A) Negative charge
B) Lowest density
C) Lowest I.E
D) Highest E.A.

Q.126 e/m ratio of the canal rays is less than that of cathode rays. The reason is
A) Greater mass of canal ray particles
B) Greater mass and charge of the canal ray particles
C) Greater charge of the canal ray particles
D) Lesser charge but greater mass of Cathode rays

Q.127 Q.102 The Correct entries in the table are for a nucleus?

	A	B	C	D
Element	U_{92}^{238}	U_{92}^{239}	Np_{93}^{239}	Pu_{94}^{239}
Electrons	92	93	93	94
Protons	92	93	92	94
Neutrons	146	147	146	145
Nucleons	330	331	238	239

Q.128 Which one of the following rule is used to arrange the sub energy levels in increasing order of energy?
A) Hund's rule
B) Octet rule
C) (n+ℓ) rule
D) Auf bau principle

Q.129 Which one is the heavier particle?
A) Electron
B) Neutron
C) Proton
D) Photon

Q.130 Lobes of each of following orbital lie along the axis except one.....
A) $d_{x^2-y^2}$
B) p_x
C) d_{xy}
D) d_{z^2}

Q.131 How many Valence shell electrons are in the following element, Given below is the ionization energy values

I_1	I_2	I_3	I_4	I_5
396	415	15000	15800	17000

A) 2
B) 5
C) 3
D) 4

Q.132 Ionization energy is maximum for
A) F
B) Be
C) Li
D) N

Q.133 The electron affinity is maximum for:
A) F
B) Br
C) Cl
D) I

Q.134 The size of an atomic orbital is associated with
A) Principal quantum number (n)
B) Angular momentum quantum number (I)
C) Magnetic quantum number (m_l)
D) Spin quantum number (m_s)

Q.135 What is correct for 2nd electron affinity?
A) Is always less than first one
B) Is equal to the first ionization energy
C) Is always greater than one
D) May be greater or less than the 1st

Q.136 The total relative charge of an element is equal to:
A) Its charge of electrons
B) its Charge of protons
C) Zero
D) None of these

Q.137 Which of the following elements has the largest second ionization energy?
A) O
B) Ne
C) F
D) Na

Q.138 By convention one of following is an index to non-metallic character?
A) Ionization energy
B) Eletcronegativity
C) Electron affinity
D) Eletcro-positivity

Q.139 Which of the following is a correct set of quantum numbers for an electron in a 3p orbital?
A) n = 5, l = 3, s = +½
B) n = 4, l = 3, s = −½
C) n = 5, l = 2, s = +3/2
D) n = 4, l = 2, s = +½

Q.140 Which one of the following trend is correct regarding to 1st Ionization energy of particular species?
A) Be<B<C<N
B) Li>Be>B>C
C) B<Be<C<N
D) Li<Be<B<C

Q.141 Which equation is used to define the first ionization energy of bromine?
A) $Br(g) \rightarrow Br^-(g) + e^-$
B) $\frac{1}{2}Br_2(g) \rightarrow Br^-(g) + e^-$
C) $Br(g) \rightarrow Br^+(g) + e^-$
D) $\frac{1}{2}Br_2(g) \rightarrow Br^+(g) + e^-$

Q.142 Atomic number of Lithium is 3, which of these electronic configurations used all four quantum numbers?
A) 2, 1
B) $1s^2, 2s^2$
C) $1s^{\uparrow\downarrow}, 2s^{\uparrow}$
D) $1s^{\uparrow}, 2s^{\uparrow}, 2p_x^{\uparrow}$

Q.143 A p – subshell has have three different orientations, this information is revealed by...
A) Principal quantum number
B) Azimuthal Quantum Number
C) Magnetic Quantum Number
D) None of these

Q.144 Which one of the following determines the position of an element in the Periodic Table?
A) chemical reactivity
B) first ionization energy
C number of electrons in outer orbital
D) number of protons in the nucleus of its atom

Q.145 Which one of the following has the same number of electrons as an alpha particle?
A) H
B) H_2
C) H^+
D) He

Q.146 All of following factors affect ionization energy of an element except one?
A) Neutron number
B) Proton Number
C) Number of under lying electrons
D) Electron Number

Q.147 what is correct for the electrons in s or p or d sub-shells?

	Sub-shell	No. of electrons	shape	No. of lobes
A	s	$2e^-$	Spherical symmetrical	1
B	P	$14e^-$	Dumbbell	2
C	d	$10e^-$	Sausage	4
D	All of these are correct			

Q.148 Which one of the following electronic configurations represents an element that forms a simple ion with a charge of -3?
A) $1s^2 2s^2 2p^6 3s^2 3p^1$
B) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^1 4s^2$
C) $1s^2 2s^2 2p^6 3s^2 3p^3$
D) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^3 4s^2$

Q.149 Which of the following formulae represents a particle with the composition 1 proton, 1 neutron and 2 electrons? (D represents deuterium, ^2H)
A) D
B) H^-
C) D^-
D) He

Q.150 In which of following configurations the Hund's rule is obeyed?
A) $1s^{\uparrow\downarrow}, 2s^{\uparrow\downarrow}, 2p_x^{\uparrow\downarrow}, 2p_y^{\uparrow\downarrow}, 2p_z^{\uparrow\downarrow}$
B) $1s^{\uparrow\downarrow}, 2s^{\uparrow\downarrow}, 2p_x^{\uparrow\downarrow}, 2p_y^{\uparrow}, 2p_z^{0}$
C) $1s^{\uparrow\downarrow}, 2s^{\uparrow\downarrow}, 2p_x^{\uparrow}, 2p_y^{\downarrow}, 2p_z^{\uparrow}$
D) $1s^{\uparrow\downarrow}, 2s^{\uparrow\downarrow}, 2p_x^{\downarrow}, 2p_y^{\downarrow}, 2p_z^{\downarrow}$

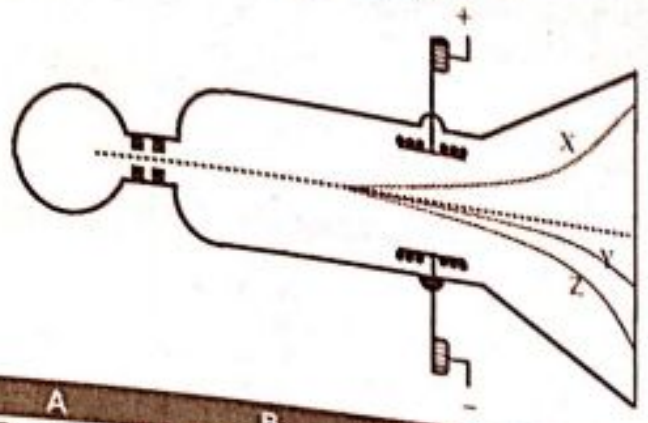
Q.151 Which of the following particles would, on losing an electron, have a half-filled set of p orbitals?
A) C^-
B) N^-
C) N
D) O^+

Q.152 What kind of orbital must an electron with the principal quantum number n=2 occupy?
A) a spherically –shaped orbital
B) the orbital closest to the nucleus
C) either an s or p orbital
D) a dumb-bell-shaped orbital

Q.153 Which property is the same for the two nuclides $\frac{40}{18}$Ar and $\frac{40}{19}$K?
A) the number of electrons
B) the number of nucleons
C) the number of neutrons
D) the number of protons

Q.154 The electronic configurations of four elements are given. Which of these elements has the highest first ionization energy?
A) $1s^2 2s^2 2p^1$
B) $1s^2 2s^2 2p^6 3s^1$
C) $1s^2 2s^2 2p^4$
D) $1s^2 2s^2 2p^6 3s^2 3p^3$

Q.155 What is correct labeling of the following diagram?



	A	B	C	D
X	Positron	Electron	Electron	Positron
Y	Proton	Proton	Positron	Deuteron
Z	Deuteron	Positron	Proton	Proton

Q.156 Number of neutrons in $^{66}_{30}Zn$ will be:

A) 30
B) 35
C) 38
D) 36

(2016)

Q.157 The maximum number of electrons in electronic configuration can be calculated by using formula:

A) 21 + 1
B) $2n^2 + 2$
C) $2n^2$
D) $2n^2 + 1$

(2016)

Q.158 No of electrons in $_{31}{}^{69}Ga^{3+}$ will be:

A) 28
B) 29
C) 30
D) 34

(2017)

Q.159 Isotopic symbol of ion of sulphur -33 is $_{16}{}^{33}S^{-2}$. How many no of protons and neutrons are present if the number of electrons are 18:

(2017)

A) P = 18, n = 15
B) P = 16, n = 17
C) P = 16, n = 16
D) P = 17, n = 16

Q.160 Identify the correct option associated with the shape of p-orbital: (2017)

A)

B)

C)

D)

Q.161 Among the following, which contains same no. of electrons & protons but different no. of neutrons: (2017)

A) Isobars
B) Isotopes
C) Isotones
D) None of these

Q.162 The average atomic mass of Boron is 10.8. It has two isotopes of masses 10 and 11 respectively. What is the percentage of isotope with the average mass of 10? (2019)

A) 20%
B) 60%
C) 80%
D) 50%

Q.163 Copper is a typical transition metal. Its atomic number is 29. In which oxidation state does it have partially filled orbital in d-subshell? (2019)
A) Cu
B) Cu^+
C) Cu^-
D) Cu^{2+}

Q.164 Which of the following is the electronic configuration of Cr? (2019)
A) [Ar] $3d^5\ 4s^1$
B) [Ar] $3d^3\ 4s^1$
C) [Ar] $3d^4\ 4s^2$
D) [Ar] $3d^6\ 4s^0$

Q.165 The relationship between quantum number n and l is: (2020)
A) n = 1-1
B) l = n-2
C) l = n-1
D) n= l-2

Q.166 Quantum number values for '2p' orbitals are: (2020)
A) n=2, l=1
B) n=1, l=2
C) n=1, l=0
D) n=2, l=0

Q.167 Which pair has 1 electron in its 's' orbital? (2020)
A) Li & Fe
B) Na & Cr
C) K & Mn
D) H & He

Q.168 Which of the following has the lowest e / m ratio? (2020)
A) Li^+
B) H^+
C) He^+
D) Be

1.	D	2.	B	3.	D	4.	D	5.	C	6.	D	7.	B	8.	A	9.	A	10.	D
11.	C	12.	A	13.	C	14.	B	15.	B	16.	C	17.	D	18.	C	19.	B	20.	B
21.	B	22.	A	23.	C	24.	C	25.	C	26.	A	27.	C	28.	A	29.	D	30.	B
31.	C	32.	B	33.	B	34.	A	35.	D	36.	D	37.	C	38.	C	39.	C	40.	B
41.	A	42.	D	43.	B	44.	A	45.	D	46.	A	47.	B	48.	C	49.	D	50.	B
51.	C	52.	B	53.	A	54.	B	55.	C	56.	C	57.	D	58.	D	59.	B	60.	D
61.	C	62.	B	63.	D	64.	C	65.	D	66.	C	67.	C	68.	D	69.	A	70.	B
71.	D	72.	D	73.	D	74.	A	75.	D	76.	A	77.	A	78.	D	79.	B	80.	A
81.	C	82.	D	83.	B	84.	B	85.	D	86.	D	87.	C	88.	B	89.	D	90.	B
91.	B	92.	B	93.	D	94.	B	95.	D	96.	D	97.	D	98.	C	99.	C	100.	A
101.	C	102.	D	103.	A	104.	A	105.	D	106.	A	107.	B	108.	C	109.	D	110.	C
111.	B	112.	D	113.	B	114.	A	115.	C	116.	B	117.	D	118.	A	119.	B	120.	C
121.	C	122.	D	123.	B	124.	C	125.	C	126.	A	127.	D	128.	C	129.	B	130.	D
131.	A	132.	A	133.	C	134.	A	135.	C	136.	C	137.	D	138.	C	139.	A	140.	C
141.	C	142.	C	143.	C	144.	C	145.	C	146.	A	147.	A	148.	C	149.	C	150.	D
151.	B	152.	C	153.	B	154.	A	155.	B	156.	C	157.	A	158.	A	159.	B	160.	B
161.	B	162.	A	163.	D	164.	B	165.	C	166.	C	167.	B	168.	D	169.		170.	

GASES

Q.1 **Gases deviate from ideal behaviour at high pressure. Which of the following is correct for non ideality?**
A) At high pressure, the collision between the gas molecules becomes enormous
B) At high pressure, the gas molecules move only in one direction
C) At high pressure, the volume of gas becomes insignificant
D) At high pressure the intermolecular interaction become significant

Q.2 **Among the following gaseswhich one has the lowest root mean square velocity at 25°C?**
A) SO_2
B) N_2
C) O_2
D) Cl_2

Q.3 **A certain mass of gas occupies a volume of 2 litres at a pressure of 1 atmospheres and a temperature of 27°C. Keeping pressure constant the volume would be doubled by raising the temperature to?**
A) 54°C
B) 270°C
C) 327°C
D) 540°C

Q.4 **The value of vander Waal's constant 'a' for gases O_2, N_2, NH_3 and CH_4 are 1.360, 1.390, 4.179 and 2.253 l^2 atm moles-2 respectively. The gas which can most easily be liquefied is?**
A) O_2
B) N_2
C) NH_3
D) CH_4

Q.5 **A liquid is an equilibrium with uits vapour at its boiling point. On the average the molecules in the two phases have equal?**
A) Intermolecular force
B) Potential energy
C) Total energy
D) Kinetic energy

Q.6 **300 mL of a gas at 37°C is cooled to - 3°C at constant pressure. The final volume is?**
A) 540 mL
B) 135 mL
C) 270 mL
D) 350 mL

Q.7 **Rate of diffusion of hydrogen is 8 times that of a gas X_2. The molecular weight of X_2 is?**
A) 64
B) 128
C) 32
D) 16

Q.8 **A gas a having molecular weight 4 diffueses thrice as fast as the gas B. the molecular weight of gas B is**
A) 36
B) 12
C) 18
D) 24

Q.9 **One mole of CO_2 contain?**
A) 6.02×10^{23} atoms of C
B) 6.02×10^{23} atoms of O
C) 18.1×10^{23} molecules of CO_2
D) 3 gm atoms of CO_2

Q.10 **At a given temperature and pressure, the rate of diffusion of a gas is?**
A) Directly propportional to the density of the gas
B) Directly proportional to the square root of its density
C) Inversely proportional to the density of the gas
D) Inversely propertional to the square root of its density

Q.11 **If a gas expandds at constant temperature?**
A) The pressur eincreases
B) K.E of the molecules decreases
C) K.E of the molecules remains constant
D) The numbe rof gaseous molecules increase

Q.12 **The temperature at which Celsius and Fahrenheit scales give the same reading is?**
A) 0°C
B) 32°F
C) -40°C
D) 40°C

Q.13 **Which of the following samples weighing 10g contains the greates number of atoms?**
A) NH_3
B) O_2
C) C_2H_6
D) CO_2

Q.14 **Air contains 79% N_2 and 21% O_2 by volume. If the barometric pressure is 750 m.m. Hg. The partial pressure of oxygen is?**
A) 157.5 mm of Hg
B) 175.5 mm of Hg
C) 315.0 mm of Hg
D) None

Q.15 A gaseous mixture contains 1 g. of H_2, 4g of He, 7g. of N_2 and 8 g. of O_2. The gas having the highest partial pressure is?
A) H_2
B) O_2
C) He
D) N_2

Q.16 If the pressure is halved and absolute temperature doubled the volume of the gas will be?
A) 4
B) 2
C) Same
D) 8

Q.17 The vander Waal's equation for real gas is?
A) $\left(P+\frac{a}{v^2}\right)(V-b)=RT$
B) $\left(P+\frac{a}{v^2}\right)(V+b)=nRT$
C) $\left(P+\frac{an^2}{V^2}\right)(b+nV)=nRT$
D) $P=\frac{nRT}{(V-nb)}+\frac{an^2}{V^2}$

Q.18 Which of the following is not correct in case of kinetic theory of gases?
A) Gases are made up of small particles called molecules
B) The molecules are in constant motion
C) When molecules collide, they lose energy
D) When the gas is heated, the molecules move faster

Q.19 As the velocity of molecules increases, the numbe rof collisions per second?
A) Decreases
B) Increases
C) Does not change
D) None

Q.20 A gas is said to behave like an ideal gas when the reaction PV/T=constant, holds. When do you expect a real gas to behave like an ideal gas?
A) When temperature and pressure are low
B) When temperature and pressure are high
C) When temperature is low and pressure is high
D) When temperature is high and pressure is low

Q.21 Avogadro's number of particles are not present in ?
A) One mole of H_2O
B) One Farday
C) One mole of carbon
D) 22.4 litre of gas at room temp.

Q.22 A gaseous mixture contains oxygen and nitrogen in the ratio of 1:4 by weight. Therefore, the ratio of their number of molecules is?
A) 1:4
B) 1:8
C) 7:32
D) 3:16

Q.23 c.c. of CO_2 are passed over red hot coke. The volume of CO evolved is?
A) 15 c.c.
B) 10 c.c
C) 32 c.c.
D) None

Q.24 Which of the following has more weight at NTP?
A) One litre of oxygen
B) One litre of hydrogen
C) One litre of nitrogen
D) One litre of chlorine

Q.25 The RMS velocity at NTP of the species can be calculated from the expression?
A) $\sqrt{(3P/d)}$
B) $\sqrt{(3PV/M)}$
C) $\sqrt{(3RT/M)}$
D) All are correct

Q.26 When an ideal gas undergoes unrestrained expansion, no cooling occurs because the molecules?
A) Are above inversion temperature
B) Exert no attractive forces on each other
C) Do work equal to loss in K.E
D) Collide with loss of energy

Q.27 At S.T.P. 11.2g of a gas, of vapour density 11.2 will ocupy a volume of?
A) 2 lit
B) 4 lit
C) 11.2 lit
D) 22.4 lit

Q.28 The mole percentage of hydrogen in a mixture of 6g of hydrogen and 28g of nitrogen is?
A) 25
B) 50
C) 75
D) 100

Q.29 The kinetic energy of a gas molecule is zero at?
A) 0°C
B) 273°C
C) −273°C
D) 116°C

Q.30 Which of the following contains the same number of molecules as 16g of oxygen?
A) 16 g O_3
B) 16 g SO_2
C) 32 g SO_2
D) All the above

Q.31 Avogadro's number of helium atom weights?
A) 1 g
B) 4 g
C) 8 g
D) $4 \times 6.02 \times 10^{23}$g

Q.32 How many moles of He gas occupy 22.4 litres at 30°C and one atmospheric pressure?
A) 0.90
B) 1.11
C) 0.11
D) 1.0

Q.33 A closed vessel contains equal number of oxygen and hydrogen molecules at a totalpressure of 740 mm, if oxygen is removed from the system, the pressure?
A) Become half of 740 mm.
B) Remains unchanged
C) Becomes 1/9th of 740 mm
D) Becomes double of 740 mm

Q.34 If two moles of an ideal gas at 546K occupy a volume of 44.8 litre, the pressure must be?
A) 2 atm
B) 3 atm
C) 4 atm
D) 1 atm

Q.35 At 27°C the ratio of root mean square velocityies of ozone to oxygen is?
A) $\sqrt{(3/5)}$
B) $\sqrt{(4/3)}$
C) $\sqrt{(2/3)}$
D) 0.25

Q.36 Which of the following gases would have the highest R.M.S velocity at 0°C?
A) O_3
B) CO_2
C) SO_3
D) CO

Q.37 Number of molecules in one litre of water is close to?
A) $18 \times 6.023 \times 10^{23}$
B) $\frac{18}{22.4 \times 10^{23}}$
C) $55.5 \times 6.023 \times 10^{23}$
D) None

Q.38 The number of atoms is greatest for?
A) 71 g chlorine
B) 48 g of Mg
C) 127 g of iodine
D) 4.0 g of hydrogen

Q.39 The oxygen and hydrogen formed during electrolysis of water are in the weight ratio of?
A) 2 : 1
B) 8 : 1
C) 16 : 1
D) 1 : 8

Q.40 Equal weights of ethane and hydrogen are mixed in an empty container at °C. The fractio of total pressure exerted by hydrogen is?
A) 1 : 2
B) 1 : 1
C) 1 : 16
D) 15 : 16

Q.41 When 0.1 g of hydrogen is burnt in oxygen the number of water molecules formed is equal to?
A) 6.02×10^{23}
B) 3.01×10^{23}
C) 3.01×10^{22}
D) 6.02×10^{22}

Q.42 To raise he volume of a gas by four times, the following methods may be adopted. Which of the methanods is wrong?
A) T is doubled and P is also doubled
B) Keeping P constant, T is raised by four times
C) Temperature is doubled and pressure is halved
D) Keeping temperature constant, pressure is reduced to ¼ of its initial value

Q.43 The density of neon will be highest at?
A) STP
B) 0°C, 2 atm
C) 273°C, 1 atm
D) 273°C, 2 atm

Q.44 There is 10 lit of a gas at STP. Which of the following changes keep the volume constant?
A) 273K and 2 atm pressure
B) 273°C and 2 atm pressure
C) 546°C and 0.5 atm pressure
D) 0°C and 0.0 atm pressure

Q.45 0.03g of a metal releases 11.2 L of hydrogen at NTP from a dibasic acid Molecular weight of the metal is?
A) 15
B) 60
C) 30
D) 6

Q.46 Avogadro's number of oxygen atoms weights?
A) 8.0g
B) 16.0g
C) 32.0g
D) 6.03×10^{23}

Q.47 What is the ratio of the volume of 2 g of hydrogen to the volume of 16g of methane, [illegible] volumes at r.t.p?
A) 1 to 1
B) 1 to 2
C) 1 to 8
D) 2 to 1

Q.48 The density of oxygen gas at 25°C is 1.458 mg/lit at one atomosphere. At what pressure will oxygen have the density twice the value?
A) 0.5 atm/25°C
B) 2 atm/25°C
C) 4 atm/25°C
D) None

Q.49 Four one litre flasks an separately filled with the gases, O_2, F_2, CH_4 and CO_2 under [illegible] same conditions. The ratio of number of molecules in these gases?
A) 2:2:4:3
B) 1:1:1:1
C) 1:2:3:4
D) 2:2:3:4

Q.50 In which of the following pairs the gaseous species diffuse through a porous plug with the same rate of diffusion?
A) NO, CO
B) NO, CO_2
C) NH_3, PH_3
D) NO, C_2H_6

Q.51 Pressure remaining constant at which temperature the volume of gas will become two of what it is at 0°C.
A) 546 °C
B) 546 K
C) 200 °C
D) 273 K

Q.52 The General gas equation is the combination of ..... laws.
A) Boyle's Law and Charles' Law
B) Charles' Law and Avogadro's Law
C) Boyle's Law and Avogadro's Law
D) All of these

Q.53 To develop non-ideality in gases the high pressure is required:
A) to increase the intramolecular distances
B) to bring the molecules close to each other
C) to decrease the attractive forces
D) to increase the Kinetic energy of molecules

Q.54 Which one of the following parameters is very important for the non-ideal behavior of gases?
A) low pressure and low volume
B) high volume and high temperature
C) low temperature and high pressure
D) high temperature, high volume and high pressure

Q.55 If absolute temperature of gas is doubled and the pressure is reduced to one half the volume of gas will
A) remain unchanged
B) reduce to ¼th
C) increases four times
D) be doubled

Q.56 Non-polar gases of are thought to have _____ in them as compared to ideal ones
A) strong polarizability
B) highl temperature
C) weak polarizability
D) low temperature

Q.57 With the increase in polarizability, the ideal behavior of non-polar gases:
A) increases
B) does not change
C) decreases
D) may or may not be changed

Q.58 The molar volume of CO_2 is maximum at
A) STP
B) 0 °C and 1 atm
C) 127 °C & 1 atm
D) 273 °C and 1 atm

Q.59 The deviation of a gas from ideal behavior is maximum at
A) - 10 °C and 5.0 atm
B) 100 °C and 2.0 atm
C) -10 °C and 2.0 atm
D) 0 °C and 2.0 atm

Q.60 Ideal gasses have all the following characteristics except:
A) The molecules occupy no space
B) Collisions among the molecules of an ideal gas are perfectly elastic
C) Absence of intermolecular forces
D) All of the above are correct

Q.61 The value of compressibility factor for an ideal gas is:
A) zero
B) fraction
C) unity
D) none of given

Q.62 If any liquid takes too much time to reach its boiling point, then its graph (Vapour pressure on y-axis and temperature on x-axis) will be:
A) Perpendicular to x-axis
B) A straight line up to greater extent with x-axis
C) of greater slope
D) An inclined line up larger extent with x-axis

Q.63 When a graph is plotted between pressure on x-axis and the PV/RT on y-axis for an ideal gas, then:
A) Hyperbolic curve is obtained
B) A straight line is obtained running in-between x-axis and y-axis
C) A straight line is obtained running parallel to pressure axis
D) A peak is obtained running parallel to compressibility factor axis

Q.64 Which one of the following gases show more deviation from ideal behavior?
A) CO_2
B) N_2
C) H_2
D) He

Q.65 At high temperature isotherm moves away from both the axes because of increase in
A) pressure
B) no. of moles
C) volume
D) all above

Q.66 At what temp the gases is likely to obey the K.M.T?
A) low
B) high
C) highest
D) lowest

Q.67 The deciding criteria for non-ideality in a gas is:
A) Polarity
B) bonds
C) Molar mass
D) none of these

Q.68 Charle's law is an example of _____ process:
A) isothermal
B) isochoric
C) isobaric
D) All of given

Q.69 Most ideal gas at room temperature is
A) CO_2
B) SO_2
C) NH_3
D) N_2

Q.70 When the temperature of a gas is doubled, the pressure of the gas will be at constant volume
A) doubled
B) halved
C) stay the same
D) Increases unlimited

Q.71 All gases behave ideally at _____ ^{0}C temp
A) 25
B) 0
C) 273
D) 100

Q.72 The S.I unit of general gas constant 'R' is
A) $ergmol^{-1}k^{-1}$
B) $calmol^{-1}k^{-1}$
C) $atmdm^3mol^{-1}k^{-1}$
D) None of these

Q.73 Which gas is likely to be the most ideal?
A) H_2S
B) NH_3
C) CH_4
D) Ne

Q.74 In Boyle's law _____ graph is more informative:
A) Direct
B) Both of the
C) Inverse
D) None of these

Q.75 There are four gases H_2, He, N_2 and CO_2 at 0° C. Which gas shows greater non – ideal behavior? **(2013)**
A) He
B) N_2
C) H_2
D) CO_2

Q.76 If V_1 = 5 Liters, P_1 = 2 atm, P_2 = 1 atm T_1 = 273 C^0, T_2 = 0 C^0 and V_2 = ?
A) 5 Liters
B) 125 Liters
C) 80 Liters
D) 127 Liters

Q.77 To compress a gas by 1/3 of its original volume, the pressure of gas should be .....
A) P
B) 2P
C) 3P
D) 1/3 P

Q.78 All statements are correct except:
A) At high pressure and low temperature gases behave non-ideally.
B) All the gas laws have no significance for real gases
C) Any gas can never be 100% ideal
D) The value of compressibility factor is changed by changing pressure and temperature for an ideal gas

Q.79 If pressure remains constant at given temp the volume of an ideal gas is doubled as compared to volume at O°C:
A) -273°C
B) 273°C
C) 273K
D) 546°C

Q.80 Density of gas in S.I. units is expressed as:
A) $Kg\ m^{-3}$
B) $g\ dm^{-3}$
C) $Kgdm^{-3}$
D) $g\ m^{-3}$

Q.81 All gases liquefy before reaching at
A) 373 K
B) −473 °C
C) 273 K
D) 0 K

Q.82 The Number of collisions occurring among gas molecules depends on
A) Average speed
B) Temperature
C) Pressure
D) All of these

Q.83 Weight of one dm ^{3} of O_2 at STP is
A) 1.4384 gm
B) 1.6384 gm
C) 1.84 gm
D) 1.0384 gm

Q.84 Charles's law is only satisfied if temperature is kept in
A) Kelvin scale (K)
B) Celsius scale (°C)
C) Fahrenheit scale (°F)
D) Rankney scale (°R)

Q.85 If absolute temp, of a gas is increased four times and pressure is also increased four times, the volume of the gas will:
A) Remain unchanged
B) Increase two lime
C) Increase two time
D) Reduce to $\frac{1}{4th}$

Q.86 If the volume of a gas collected at a temperature of 60° C and pressure of 1.05×10^5 Nm^{-2} is 60 dm^3 what would be the volume of gas at STP ($P = 1.01 \times 10^3\ Nm^{-2}$, T = 273K)? (2015)
A) $25 \times 10^2\ dm^3$
B) $10 \times 10^2\ dm^3$
C) $75 \times 10^2\ dm^3$
D) $51 \times 10^2\ dm^3$

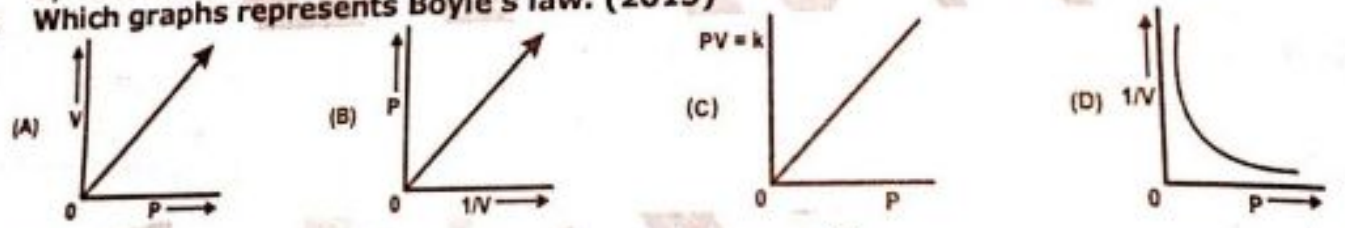
Q.87 For a gas isotherm is a graph between
A) V & T
B) n & T
C) T & P
D) P & V

Q.88 The gas laws are not obeyed by general gases at
A) Low temp
B) High pressure
C) High temp
D) Both A & C

Q.89 Calculate the density of NO_2 at 0°C and 1 atm pressure:
A) $\frac{46\times1}{8.3143\times300}$
B) $\frac{46\times1}{0.0821\times273}$
C) $\frac{46\times1}{1.989\times300}$
D) $\frac{44\times1}{0.0821\times273}$

Q.90 Absolute zero is equal to
A) 273 C^0
B) −273 K
C −273 C^0
D) −273 F^0

Q.91 Which graphs represents Boyle's law. (2015)



a. A b. B c. C d. D

Q.92 S.I units for measurement of pressure
A) Pascal
B) atm
C) mm of Hg
D) torr

Q.93 Identify the value of R at STP: (2017)
A) 8.314 atm dm^{-3} mol^{-1}
B) 0.0821 cal K^{-1} mol^{-1}
C) 0.0821 atm dm^3 k^{-1}
D) 8.314 cal K^{-1} mol^{-1}

Q.94 In the equation $\left(P + \frac{n^2a}{V^2}\right)(V - nb) = RT$, 'b' represents the _____: (2017)
A) Excluded volume
B) Excluded pressure
C) Actual volume
D) Excluded volume per mole

Q.95 Which of the following is the correct equation to calculate relative molecular mass of a gas. (2018)
A) M=mRT/PV
B) M=PV/mRT
C) M=mPR/VT
D) M=mPRT/V

Q.96 According to the general gas equation, density of an ideal gas depends upon: (2020)
A) Pressure
B) Temperature
C) Molar mass of the gas
D) All of the above

Q.97 The actual volume of gas molecules is considered negligible at following pressures: (2020)
A) 2 atm
B) 4 atm
C) 6 atm
D) 8 atm

Q.98 **CO_2 and SO_2 both are tri-atomic molecules but heat of vaporization of SO_2 is greater than that of CO_2 due to: (2020)**
A) Hydrogen bonding
B) Dipole Dipole force
C) Greater Polarizability and large size
D) Extraordinary stable

Q.99 **Ideal gas obeying kinetic theory of gases can be liquefied it:**
A) $T > T_c$
B) $P > P_v$
C) $P > P_c$
D) It cannot be liquified at any value of P and T

Q.100 **An ideal gas, obeying kinetic theory of gases cannot be liquified, because:**
A) Its critical temperature is above 0°C
B) Its molecules are relatively small in size
C) It solidifies before becoming a liquid
D) forces acting between its molecules are negligible.

Q.101 **Van der Waals real gas, act as an ideal gas, at which condition?**
A) high temperature, low pressure
B) low temperature, high pressure
C) high temperature, high pressure
D) low temperature, low pressure

Q.102 **The compressibility factor of an ideal gas is**
A) 1
B) 2
C) 4
D) 0

Q.103 **By the ideal gas law the pressure of 0.60 mol NH3 gas in a 3.00 litre vessel at 25°C is**
A) 48.9atm
B) 4.89atm
C) 0.489atm
D) 489atm

Q.104 **At what Centigrade temperature will be the volume of a gas at 0°C double of itself, when pressure remains constant?**
A) 0°C
B) 273°C
C) 273 K
D) 546 K

Q.105 **What are the conditions under which the relation between volume (V) and number of moles (n) of gas is plotted? (P = pressure; T = temperature)**
A) constant P and T
B) constant T and V
C) constant P and V
D) constant n and V

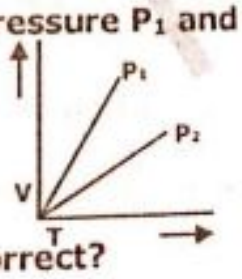
Q.106 **4 grams of an ideal gas occupies 5.6035 litres of volume ot 546 K and 2 atm pressure. What is its molecular weight?**
A) 4
B) 16
C) 32
D) 64

Q.107 **A gas has double the average velocity of SO_2 gas at any temperature. The gas may be**
A) CO_2
B) C_2H_4
C) CH_4
D) O_2

Q.108 **A gas behaves most like an ideal gas under conditions of**
A) high pressure and low temperature
B) high temperature and high pressure
C) low pressure and high temperature
D) low pressure and low temperature

Q.109 **The term that accounts for intermolecular force in van der Waals equation for an ideal gas is**
A) RT
B) V – b
C) $(P+\alpha/V^2)$
D) $(RT)^{-1}$

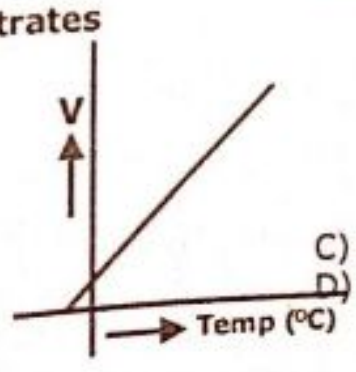
Q.110 **V vs T curves at constant pressure P_1 and P_2 for an ideal gas are shown below.**



Which of the following is correct?
A) $P_1 > P_2$
B) $P_1 < P_2$
C) $P_1 = P_2$
D) All of above

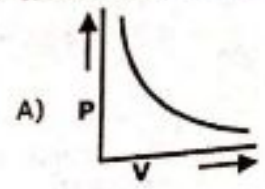
Q.111 **If increase in temperature and volume of an ideal gas is two times, then the initial presure P changes to**
A) 4P
B) 2P
C) P
D) 3P

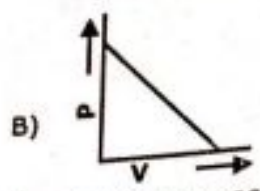
Q.112 **The following graph illustrates**

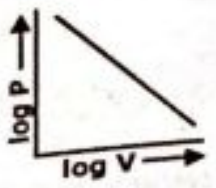


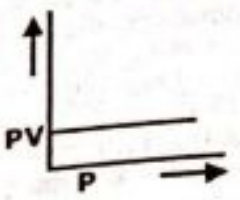
A) Boyle's law
B) Charles law
C) Dalton's law
D) Gay Lussac's law

Q.113 Which curve does not represent Boyle's law?

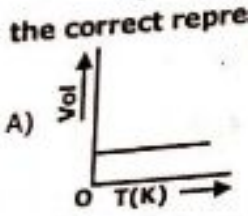
A) 

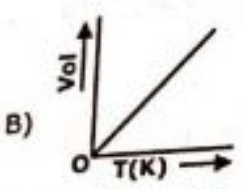
B) 

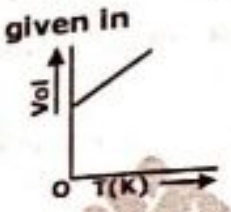
C) 

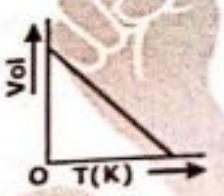
D) 

Q.114 the correct representation of Charle's Law is given in

A) 

B) 

C) 

D) 

Q.115 For an ideal gas, number of mole per litre in terms of its pressure P, temperature T and gas constant R is

A) PT/R
B) PR/T
C) P/RT
D) RT/P

Q.116 Based on kinetic theory of gases following laws can be proved:

A) Boyle's law
B) Charles law
C) Avogadro's law
D) All of these

Q.117 According to the kinetic theory of gases, in an ideal gas, between two successive collisions the gas molecules travels

A) in a circular path
B) in a wavy path
C) in a straight line path
D) with an accelerated velocity

Q.118 As the temperature is raised from 20°C to 40°C, the average kinetic energy of neon atoms changes by a factor of which of the following?

A) 1/2
B) 2
C) √313/293
D) 313/293

Q.119 Which one of the following statement is not true about the effect of an increase in temperature on the distribution molecular speeds in a gas?

A) The most probable speed increases
B) The fraction of the molecules with the most probable speed increases
C) The distribution becomes broader
D) The area under the distribution curve remains the same as the under the lower temperature

1.	D	2.	
11.	C	12.	
21.	D	22.	
31.	B	32.	
41.	D	42.	
51.	B	52.	
61.	C	62.	
71.	C	72.	
81.	D	82.	
91.	B	92.	
101.	A	102.	
111.	C	112.	

ANSWERS

1.	D	2.	D	3.	C	4.	C	5.	B	6.	C	7.	B	8.	A	9.	A	10.	D
11.	C	12.	C	13.	C	14.	A	15.	C	16.	A	17.	A	18.	C	19.	B	20.	D
21.	D	22.	C	23.	D	24.	D	25.	D	26.	B	27.	C	28.	C	29.	C	30.	C
31.	B	32.	A	33.	A	34.	A	35.	C	36.	D	37.	C	38.	D	39.	B	40.	D
41.	D	42.	A	43.	B	44.	B	45.	B	46.	B	47.	A	48.	B	49.	B	50.	D
51.	B	52.	D	53.	B	54.	C	55.	C	56.	A	57.	C	58.	D	59.	A	60.	A
61.	C	62.	D	63.	C	64.	A	65.	D	66.	C	67.	A	68.	C	69.	D	70.	A
71.	C	72.	D	73.	D	74.	A	75.	D	76.	A	77.	C	78.	B	79.	B	80.	A
81.	D	82.	B	83.	A	84.	A	85.	A	86.	D	87.	D	88.	D	89.	B	90.	C
91.	B	92.	A	93.	D	94.	A	95.	A	96.	D	97.	A	98.	C	99.	D	100.	D
101.	A	102.	A	103.	B	104.	B	105.	A	106.	B	107.	C	108.	C	109.	C	110.	B
111.	C	112.	B	113.	C	114.	B	115.	C	116.	D	117.	C	118.	D	119.	B	120.	

LIQUIDS

Q.1 Which of the following compounds should have the highest boiling point?
A) NH_3
B) CH_4
C) H_2O
D) HF

Q.2 Force of attraction between atoms of He is:
A) London dispersion forces
B) Hydrogen bonding
C) Van-dar-Weal's Forces
D) Dipole-dipole interaction

Q.3 The density of water decreases, when it freezes at 0°C because of:
A) Change of bond lengths
B) Change of bond angles
C) Cubic structure of ice
D) Empty spaces present in the cubic structure of ice

Q.4 The gases can be converted into liquids by:
A) Increasing the pressure only
B) Lowering temperature and increasing pressure
C) Increasing pressure and bringing temperature below critical point.
D) Lowering temperature only

Q.5 The intermolecular forces in liquids are:
A) Negligible
B) Very weak
C) Very strong
D) Reasonably strong

Q.6 H_2S is a gas while H_2O is liquid at room temperature. It is due to:
A) Lone pair on oxygen of water molecule
B) Covalent bond in H-O in water molecule
C) Hydrogen bonding in water molecules
D) Ionic characters in water molecules

Q.7 Evaporation of water is possible at:
A) Above 100°C
B) 0°
C) 100°
D) At all temperatures

Q.8 Rate of evaporation and rate of condensation at equilibrium is:
A) Very low
B) Very high
C) Same
D) Never equal

Q.9 At sea level and at 100°C, the vapour pressure of water in an open system is:
A) 1000 mm Hg
B) 760 mm Hg
C) 730 mm Hg
D) 670 mm Hg

Q.10 Escape of high energy molecules from the surface of a liquid is called:
A) Sublimation
B) Distillation
C) Condensation
D) Evaporation

Q.11 Which of the following liquids has low vapour pressure at 25°C:
A) Diethyl ether
B) Acetone
C) Water
D) Ethyl alcohol

Q.12 Heat of vapourization for liquids with strong dipole-dipole forces will have:
A) Negligible values
B) Reasonably high values
C) Low values
D) Very low values

Q.13 Trend of boiling point of halogens, from fluorine to iodine is:
A) Decreases
B) Negligible
C) Increases
D) Remains constant

Q.14 Liquids have low boiling point provided they posses:
A) Very high vapour pressure
B) Very low vapour pressure
C) Low vapour pressure at given temperature
D) High vapour pressure at given temperature

Q.15 Cooking time reduces in a pressure cooker because:
A) Boiling point of water rises
B) A large flame is used
C) Vapour pressure of liquid reduces
D) That is uniformly distributed

Q.16 Boiling point of a liquid depends upon:
A) Type of burner used for boiling
B) External pressure
C) Amount of liquid
D) Shape of container of the liquid

Q.17 Which of the following may be a variable parameter along with temperature?
A) Boiling Point
B) Vapour pressure
C) Melting point
D) All of these

Q.18 Correct order of boiling points of given liquids is: (2012)
A) $H_2O > HF > HCl > NH_3$
B) $H_2O > HF > NH_3 > HCl$
C) $HF > H_2O > HCl > NH_3$
D) $HF > H_2O > NH_3 > HCl$

Q.19 One feels a sense of cooling after taking bath under a running fan because of
A) Rate of evaporation decreases
B) K.E of water molecules increases
C) Rate of Evaporation increases
D) All of these

Q.20 A Liquid having, vapour pressure equal to _____ at room temperature will boil at the earliest?
A) 800 torr
B) 500 torr
C) 650 torr
D) 400 torr

Q.21 Which of the following has no effect on the rate of evaporation?
A) Surface area
B) Temperature
C) speed of Air above liquid
D) External pressure

Q.22 The process of cooking of food becomes time consuming when:
A) External pressure is increase
B) We apply vacuum on a closed vessel
C) Water boils with external pressure of 1000torr
D) V.P of water becomes 500 torr and it boils

Q.23 When a liquid just starts to boil, then which phenomenon occurs on the surface of liquid?
A) Sublimation
B) Condensation
C) Bubbling
D) Decomposition

Q.24 Which of the following has same no. of molecules at STP?
A) 1000 cm^3 of N_2H_4 and O_2
B) 50 cm^3 of CO and N_2
C) 200 cm^3 of CO_2 and N_2O
D) all above

Q.25 The force of attraction between the atoms of helium is
A) hydrogen bonding
B) covalent bond
C) coordinate covalent bond
D) London dispersion force

Q.26 Which of the following liquids has minimum vapour pressure:
A) Methanal
B) Ethanal
C) Propanal
D) Ethanol

Q.27 Ice is less dense than water at: (2014)
A) 0 degree C
B) – 4 degree C
C) 4 degree C
D) 2 degree C

Q.28 Correct order of boiling points of the given liquids is:
A) $H_2O > HF > HCl > NH_3$
B) $H_2O > HF > NH_3 > HCI$
C) $HF > H_2O > HCl > NH_3$
D) $HF > H_2O > NH_3 > HCI$

Q.29 Which of the following factors decreases evaporation?
A) Temperature
B) Surface area
C) Strength of intermolecular forces
D) Both A and B

Q.30 At boiling point of a gas, which of following has the higher average Kinetic energy?
A) Vapour molecules
B) Vapours coming back
C) Liquid molecules
D) All have same

Q.31 When 50ml of ethanol is mix with 50ml of water, the total volume of this solution is 97ml. this is possibly due to :
A) Vapour Pressure
B) Hydrogen Bonding
C) Boling Point
D) Chemical Bonding

Q.32 The correct statement is:
A) Hydrogen Bonding in ice is stronger than is HCl
B) Hydrogen Bonding in ice and water is same in strength
C) Hydrogen Bonding in ice is weaker than is HCl
D) Hydrogen Bonding in ice is negligible as compared to water

Q.33 If the critical temperature of Argon (157 K) at what temperature it may boil?
A) 160 K
B) 113°C
C) –113°C
D) 155K

Q.34 Which is correct increasing order of boiling points of the hydrides of VI-A group?
A) $H_2Te<H_2S<H_2Se<H_2O$
B) $H_2Se<H_2S<H_2O<H_2Te$
C) $H_2S<H_2Se<H_2Te<H_2O$
D) $H_2Te<H_2Se<H_2S<H_2O$

Q.35 Which correctly represent the increasing order of boiling points of hydrides of IV-A group?
A) $CH_4<GeH_4<SiH_4<SnH_4$
B) $CH_4<SiH_4<GeH_4<SnH_4$
C) $SiH_4>CH_4<GeH_4<SnH_4$
D) $GeH_4<SnH_4<H_4<SiH_4$

Q.36 Gas is enclosed in a container of 20cm³ with the moving piston. According to kinetic theory of gases, what will be the effect on freely moving molecules of the gas if temperature is increased from 20°C to 100°C ?(2018)
A) Pressure will become one half
B) Volume will be increased
C) Temperature has no effect on freely moving molecules
D) Colliding capability of molecule will become lower

Q.37 Boiling point of which gas may be the highest?
A) H_2
B) SO_2
C) He
D) CO_2

Q.38 Hydrides of which one of the following group has relatively low boiling points?
A) IV-A
B) V-A
C) VI-A
D) VII-A

Q.39 Ethyl Alcohol is soluble in water due to:
A) Dipole-dipole forces
B) Instantaneous dipole-induced dipole forces
C) Dipole-induced dipole forces
D) Hydrogen bonding

Q.40 What about the solubility of hydrocarbons in H_2O?
A) Readily soluble
B) Insoluble
C) Partially soluble
D) Soluble at high temperature

Q.41 Which one of the following statement is not true about evaporation?
A) Spontaneous process
B) Temperature increasing
C) Causes cooling
D) Increases with increase in surface area

Q.42 Long chains of Amino acids are coiled about one another into a spiral by:
A) Covalent bond
B) Hydrogen bonds
C) Ionic bonds
D) Van der Waal's forces

Q.43 All of the followings are incorrect except
A) $\Delta H_{vaporization}<\Delta H_{sublimation}<\Delta H_{fusion}<\Delta H_{condensation}$
B) $\Delta H_{fusion}<\Delta H_{condensation}<\Delta H_{sublimation}<\Delta H_{vaporization}$
C) $\Delta H_{condensation}<\Delta H_{fusion}<\Delta H_{vaporization}<\Delta H_{sublimation}$
D) $\Delta H_{condensation}<\Delta H_{sublimation}<\Delta H_{fusion}<\Delta H_{vaporization}$

Q.44 Which one of the following halogen has highest melting and boiling point?
A) Br_2
B) Cl_2
C) I_2
D) F_2

Q.45 Which one of the following intermolecular forces has minimum strength?
A) H-bonding
B) London forces
C) Dipole-dipole interaction
D) Dipole-induced dipole forces

Q.46 The weakest intermolecular force is
A) hydrogen bonding
B) dipole-dipole forces
C) ion-dipole forces
D) London dispersion forces

Q.47 Which one of the following hydrogen bonds is stronger that others? (2015)
A) $N^{\delta-}-H^{\delta+}$ ..... $N^{\delta-}-H^{\delta+}$
B) $O^{\delta-}-H^{\delta+}$ ..... $O^{\delta-}-H^{\delta+}$
C) $F^{\delta-}-H^{\delta+}$ ..... $F^{\delta-}-H^{\delta+}$
D) $N^{\delta-}-H^{\delta+}$ ..... $O^{\delta-}-H^{\delta+}$

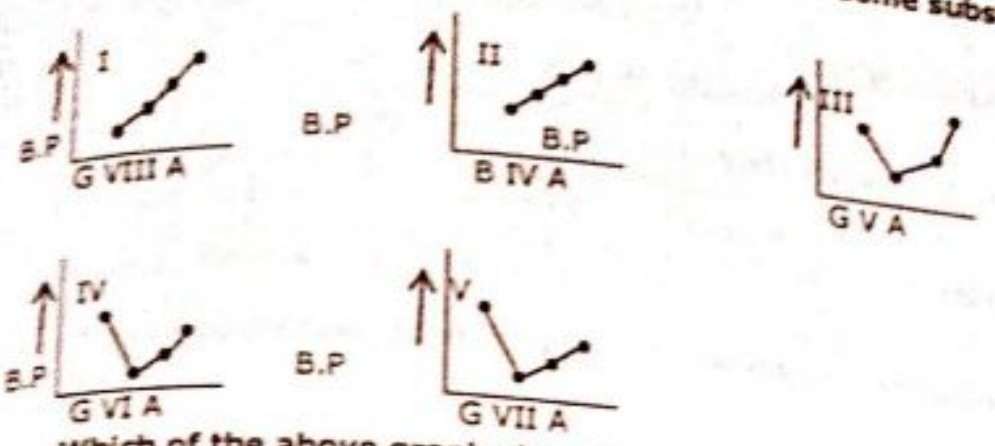
Q.48 In which compound hydrogen bonding is not present?
A) H_2O
B) CH_4
C) NH_3
D) C_2H_5OH

Q.49 liquid in the container have temperature 70°C . what will be the temperature in Kelvin Scale? (2018)
A) 350K
B) 343K
C) 300K
D) 283K

Q.50 The above graph indicate that which group members will have hydrogen bonding between their molecules? (2017)
A) IV+V
B) V+VI+VII
C) VII+V
D) VI+IV+VII

Q.51 London dispersion forces are the only forces present among the: (2016)
A) Molecules of H_2O in liquid state
B) Molecules of HCl gas
C) Atoms of helium in gaseous state at high temperature
D) Molecules of solid chlorine

Q.52 Study the following graphs of boiling points of some substances: **(2017)**



Which of the above graph show that some members of graph have hydrogen bonding:

A) I + IV
B) II + IV
C) III + IV + V
D) I + + II + III

Q.53 What is the reason the ice at 0°C occupies more volume than water: **(2017)**

A) Empty spaces
B) Ionic bond
C) Intermolecular forces
D) Debye forces

Q.54 The stability in the following structure is due to the **(2018)**

A) Disulfide bridges
B) Hyderogen bonding between NH group of one peptide and CO group of another pertide
C) presence of unpaired electron in the structure
D) Weak vander Waals forces

Q.55 Liquid in the container have temperature 70 C. What will be the temperature in Kelvin scale? **(2018)**

A) 283 K
B) 350 K
C) 343 K
D) 300 K

Q.56 Which of the following substances exhibits hydrogen bonding? **(2019)**

A) H_2S
B) NH_3
C) HI
D) SiH_4

Q.57 According to Watson and Crick's model of DNA, the DNA molecule consists of a double helix. What type of forces are responsible to keep two strands of DNA together? **(2019)**

A) Hydrogen bonding
B) Ionic bonding
C) van der Waal's forces
D) Dipole-induces dipole forces

Q.58 Which of the following has the lowest vapour pressure at 20°C? **(2020)**

A) Diethyl ether
B) Chloroform
C) Carbon tetrachloride
D) Water

Q.59 Which of the following has strongest intermolecular forces of attraction?

A) Hydrogen (H_2)
B) Iodine (I_2)
C) Chlorine (Cl_2)
D) Methane (CH_4)

Q.60 Which has strongest bonding in the solid state?

A) Hydrogen Chloride (HCI)
B) Xenon(Xe)
C) Chlorine (Cl_2)
D) Sodium Chloride (NaCI)

Q.61 When substance moves from a solid to a liquid state all of the following changes occur except

A) Molecules become more disordered
B) Intermolecular forces become weaker
C) K.E of the molecules decreases
D) Molecule become further separated

Q.62 In order to mention the boiling point of water at 110?C the external pressure should be

A) Between 760 torr and 1200 torr
B) 765 torr
C) Between 200 torr and 760 torr
D) any value of pressure

Q.63 Which one is false for evaporation?
A) Surface phenomenon
B) Exothermic
C) Continuous
D) Cause cooling

Q.64 Vapour pressure of water at 100?C is
A) 55 mm Hg
B) 355 mm Hg
C) 760 mm Hg
D) 1489 mm Hg

Q.65 Which one of the following does not show hydrogen bonding ?
A) Water
B) Phenol
C) Ethyl alcohol
D) Diethyl ether

Q.66 Hydrogen bonding is involved in
A) Solubility
B) Biological molecules
C) Cleansing action of detergents
D) All

Q.67 Actually the vapour pressure on the surface of liquid in the flask is equal to
A) Δh
B) Pa + Δh
C) Pa - Δh
D) Pt = Pa - Δh

Q.68 Forces of attraction which may be present between all kinds of atoms and molecules a
A) intramolecular
B) van der Waal
C) intermolecular
D) Dipole-induced dipole

Q.69 The density of water may be
A) Equal to that of ice
B) Less than that of ice
C) Greater than that of ice
D) All are possible

Q.70 The quantity of heat required to convert one mole of liquid into its vapours at its boili
point is called molar heat of
A) vaporization
B) crystallization
C) evaporation
D) sublimation

Q.71 Steam causes more sever burn than the boiling water because it possesses.
A) Latent heat of fusion
B) Latent heat of sublimation
C) Latent heat of vaporization
D) All of the above

Q.72 The conversion of vapours back into their liquid state is called
A) crystallization
B) vaporization
C) evaporization
D) condensation

Q.73 Formation of vapours from the surface of a liquid is called
A) vapourization
B) condensation
C) evaporation
D) cracking

Q.74 When water freezes at 0?C its density decreases due to
A) Change of bond angles
B) Empty space present in the structure of ice
C) Cubic structure of ice
D) Change of bond length

Q.75 The attractive forces between the partial positive end of one molecule and partial negative end of other molecule are called
A) Dipole-dipole forces
B) London dispersion forces
C) Ion dipole-dipole forces
D) Debye forces

Q.76 The boiling point increases down the zero group element due to
A) Ion dipole forces
B) Hydrogen bonding
C) London forces
D) Dipole dipole forces

Q.77 Vapour pressure is not affected by
A) Surface area
B) intermolecular forces
C) temperature
D) atmospheric pressure

Q.78 Rising of a wetting liquid in a capillary tube is due to
A) Surface tension
B) Adhesive forces
C) Cohesive forces
D) viscosity

Q.79 During which process empty spaces between particles become minimum?
A) ionization
B) fusion
C) condensation
D) evaporation

Q.80 Liquid gets the shape of the container when it is poured into it. Which one of the following reasons justifies it?
A) Liquid do not have definite shape
B) Lieuid is highly compressible
C) Liquid do not have definite volume
D) Liquid molecules can slide over each other

Q.81 Which one of the following has highest volatility
A) Diethyl ether
B) Water
C) Ethyl alcohol
D) Ethylene glycol

Q.82 Molar heat of vaporization of water is
A) 40.7 KJ/mole
B) 40.7 cal/mole
C) 40.7 J/mole
D) 40.7 Kcal/mole

Q.83 If we provide very high amount of heat to a liquid its boiling point will
A) increase
B) decrease
C) remains constant
D) there will be no boiling

Q.84 **Boiling points of hydrocarbons increase with the increase in number of carbon atoms. It is mainly due to**
A) More strength of H-bonding
B) Less polarizability
C) More strength of London forces
D) All of the above

Q.85 **NH_3 show a maximum boiling point among the hydrides of V-A group elements due to**
A) Very small size of nitrogen
B) Pyramidal structure of NH_3
C) Lone pair of electrons present on nitrogen
D) Enhanced electromotive character of nitrogen

Q.86 **All of following acids have hydrogen bond in liquid state except**
A) Nitric acid
B) Hydrofluoric acid
C) Hydrochloric acid
D) Sulphuric acid

Q.87 **When water freezes at 0°C its density decreases dues to:**
A) Cubic structure of ice
B) Change of bond lengths
C) Change of bond angles
D) Empty spaces present in the structure

Q.88 **Acetone and chloroform are soluble in each other due to**
A) Dipole-dipole interaction
B) Instantaneous dipoles
C) Intermolecular hydrogen bonding
D) Ion-dipole forces

Q.89 **Which of the following statements is incorrect?**
A) The layers in graphite are held together by van der Waals forces
B) The greater the number of electrons in a molecule , the greater the van der Waals forces
C) The boiling point of noble gases increases down the group
D) H_2O has higher than expected b.p. because of inter molecular Van der Waals forces correct

Q.90 **London dispersion forces are the only present among the**
A) Molecules of water in liquid state
B) Molecules of solid iodine
C) Atoms of helium in gaseous state at high temperature
D) Molecules of hydrogen chloride gas

Q.91 **Instantaneous dipole-induced dipole forces are also known as**
A) Dipole-dipole interactions
B) Covalent bonds
C) Van Der Waals forces
D) Hydrogen bonds

Q.92 **Why is it difficult to cook food at high as compared to at sea level?**
A) Boiling point of water decreases at the mountain
B) Density of water decreases at the mountain
C) H-bonding in H_2O changes with height
D) Temperature at the top of mountain is low

Q.93 **London forces are more effective at**
A) Low temperature
B) High temperature
C) Low pressure
D) High pressure

Q.94 **The spontaneous mixing of particles is called:**
A) evaporation
B) sublimation
C) diffusion
D) boiling

Q.95 **Which of these processes involves a weakening of the attraction between particles?**
A) Condensation
B) Crystallization
C) Freezing
D) Evaporation

Q.96 **Which of the following crystals is expected to be soft and have low melting point:**
A) Ionic
B) Covalent
C) Molecular
D) Metallic

Q.97 **Arrange the following compounds in order of increasing vapour pressure: (C_3H_7OH) (propanol) & C_3H_8 (propane):**
A) $C_3H_8 > C_3H_7OH$
B) $C_3H_7OH > C_3H_8$
C) $C_3H_8 < C_3H_7OH$
D) $C_3H_8 = C_3H_7OH$

Q.98 **A dynamic equilibrium established when:**
A) molecules undergoing vaporization
B) molecules undergoing condensation
C) two opposing processes takes place at exactly the same rate
D) molecules undergoing sublimation

Q.99 **Evaporation or vaporization is the:**
A) Conversion of solid to a gas
B) Conversion of liquid to a gas
C) Conversion of solid to a liquid
D) Conversion of liquid to a solid

Q.100 **Enthalpy of vaporization at 298K of water is:**
A) 79 KJ/mol
B) 44 Kl/mol
C) 28 Kilmol
D) 65 KJ/mol

Q.101 **The reverse of vaporization process in which vapours are converted into liquid phase is called:**
A) Sublimation process
B) Vaporization process
C) Condensation process
D) Fusion process

Q.102 Vaporization is always an/a:
A) endothermic process
B) exothermic process
C) Sometime heat absorbed or sometimes evolved
D) none of these

Q.103 From the molecular view point, molecules evaporate from the surface of a liquid if they
A) have sufficient K.E to overcome the attractive forces in the liquid.
B) are attracted to other molecules in the vapour phase.
C) are in the state of dynamic equilibrium.
D) are repelled by other molecules in the liquid phase.

Q.104 The highest temperature at which a liquid can coexist in equilibrium with its vapour is called:
A) melting point
B) critical temperature
C) critical point
D) all of these

Q.105 The solid becomes a liquid, the process is called:
A) Condensation
B) melting
C) fusion
D) melting and fusion

Q.106 The reverse of melting, in which liquid is converted into solid is termed as:
A) boiling
B) sublimation
C) freezing
D) vaporization

Q.107 Which one of the following statements is incorrect?
A) Vapour pressure is low that the liquid is non-volatile
B) Vapour pressure is high that the liquid is volatile
C) Intermolecular forces are strong for non-volatile compound
D) Diethyl ether have low vapour pressure

Q.108 The temperature at which vapour pressure of liquid is equal to atmospheric pressure is termed as:
A) Critical temperature
B) Boiling point
C) transition temperature
D) melting point

Q.109 The boiling point of water is 95°C at:
A) which vapour pressure is equal to atmospheric pressure
B) high altitude below 1 atm pressure
C) a pressure higher than 760 mm
D) none of these

Q.110 Which one of the following compound contain high value of surface tension?
A) Hexane
B) Mercury
C) Water
D) C_2H_5OH

Q.111 Adhesive forces are intermolecular forces between:
A) like molecules
B) metals
C) liquid and a surface
D) Non-polar molecules

Q.112 Which of the following variables do you expect to affect vapour pressure of a liquid?
A) Temperature
B) Volume of vapour at equilibrium
C) Volume of liquid at equilibrium
D) Area of contact between liquid and vapours

Q.113 The force of attraction between the instantaneous dipole and the induced dipole as in helium is known as:
A) Vander waal's forces
B) London forces
C) Dispersion forces
D) Dispersion and London forces

Q.114 Dipole-dipole forces refers to those between:
A) noble gases
B) polar molecules
C) non-polar molecules
D) organic compound

1.	D	2.	A	3.	D				
11.	C	12.	B	13.	C				
21.	D	22.	D	23.	C				
31.	B	32.	A	33.	B				
41.	B	42.	B	43.	C				
51.	D	52.	C	53.	A				
61.	C	62.	A	63.					
71.	C	72.	D	73.					
81.	A	82.	A	83.					
91.	C	92.	A	93.					
101.	C	102.	A	103.					
111.	C	112.	A	113.					

ANSWER KEY

1.	D	2.	A	3.	D	4.	C	5.	D	6.	C	7.	D	8.	C	9.	B	10.	D
11.	C	12.	B	13.	C	14.	C	15.	A	16.	B	17.	B	18.	B	19.	C	20.	D
21.	D	22.	D	23.	C	24.	D	25.	D	26.	D	27.	A	28.	B	29.	C	30.	A
31.	B	32.	A	33.	B	34.	C	35.	B	36.	B	37.	B	38.	A	39.	D	40.	B
41.	B	42.	B	43.	C	44.	C	45.	B	46.	D	47.	C	48.	B	49.	B	50.	B
51.	D	52.	C	53.	A	54.	B	55.	C	56.	B	57.	A	58.	D	59.	B	60.	D
61.	C	62.	A	63.	B	64.	C	65.	D	66.	D	67.	D	68.	B	69.	C	70.	A
71.	C	72.	D	73.	C	74.	B	75.	A	76.	C	77.	A	78.	B	79.	C	80.	D
81.	A	82.	A	83.	C	84.	C	85.	D	86.	C	87.	D	88.	C	89.	D	90.	B
91.	C	92.	A	93.	A	94.	C	95.	D	96.	C	97.	A	98.	C	99.	B	100.	B
101.	C	102.	A	103.	A	104.	B	105.	D	106.	C	107.	D	108.	C	109.	B	110.	B
111.	C	112.	A	113.	D	114.	B	115.		116.		117.		118.		119.		120.	

SOLIDS

Q.1 **Which one of the following is pseudosolid?**
A) Glass
B) NaCl
C) CaF_2
D) All of above

Q.2 **Hydrocarbons which generally have high molecular masses exist in:**
A) Gaseous form
B) Vapours form
C) Liquid form
D) Solid form

Q.3 **A crystal shows variation in physical properties depending upon the direction. This property is called:**
A) Isotropy
B) Anisotropy
C) Polymorphism
D) Isomorphism

Q.4 **Isomorphic crystals show:**
A) Same crystalline form
B) Same physical properties
C) Same melting point
D) Same chemical properties

Q.5 **One of the following pair of compounds is isomorphic in nature and that is:**
A) MgO and NaF
B) NaCl and KNO_3
C) KNO_3 and $CaCO_3$
D) MgO and NaCl

Q.6 **Polymorphic substances have:**
A) Same physical but different chemical properties
B) Same physical and chemical properties
C) Different physical and chemical properties
D) Different physical and same chemical properties

Q.7 **Diffused melting point is present in:**
A) Metallic solids
B) Amorphous solids
C) Covalent solids
D) Crystalline solids

Q.8 **Nature of I_2 crystals is:**
A) Molecular
B) Ionic
C) Metallic
D) Covalent

Q.9 **Solid NaCl is a bad conductor of electricity because:**
A) There are no free electrons
B) There are no free ions
C) Covalent bond is present
D) There is no velocity of ions

Q.10 **Which element exists as discrete small molecules in the solid state?**
A) Iodine
B) Sodium
C) Silicon
D) Aluminium

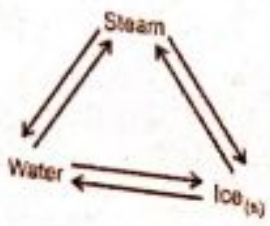
Q.11 **Which solid has no contain covalent bond?**
A) Graphite
B) Diamond
C) Ice
D) Copper

Q.12 **By which process does the smell of cooking spread to all the rooms in a house?**
A) Decomposition
B) IonicDiffusion
C) Displacement
D) Distillation

Q.13 **Which property of gas affects the rate at which it spreads throughout a laboratory?**
A) Boiling point
B) Molecular mass
C) Reactivity
D) Solubility in water

Q.14 **A liquid boils at a temperature of 100°C. Which other property of the liquid proves that it is pure water?**
A) It does not leave residue when boiled
B) It freezes at 0°C.
C) It is neither acidic nor alkaline
D) It turns white anhydrous copper (II) sulphate blue

Q.15 **In which conversion do H_2O molecules lose speed?**



A) Ice → Water
B) Ice → Steam
C) Steam → Ice
D) Water → Steam

Which of the following is a pure compound?
A) Ethanol
B) Petrol
C) Steel
D) Tap water

Which gas has the lowest rate of diffusion?
A) NH_3
B) CH_4
C) O_2
D) N_2

At which temperature does a concentrated aqueous solution of sodium chloride starts to boil?
A) 96°C
B) 99°C
C) 100°C
D) 104°C

The 8:8 type of packing is present in?
A) CsCl
B) KCl
C) NaCl
D) MgF2

Which of the following is covalent solid?
A) Fe
B) Diamond
C) NaCl
D) Cu

Q.21 If a substance is cleaved or crushed into a powder, each resulting particle possesses identical interfacial angle. It is characteristic of
A) Crystalline solids
B)Amorphous solidso
C) Para crystalline solids
D) None of these

Q.22 Each unit cell of NaCl consists of 13 chlorine atoms and?
A) 13 Na atoms
B) 14 Na atoms
C) 6 Na atoms
D) 8 Na atoms

Q.23 The Miller indices are often used in the area of
A) Single crystal
B)Surface chemistry
C) Polymer
D) Molecular spectrum

Q.24 Silicon dioxide is an example of?
A) Metallic crystal
B) Ionic crystal
C) Covalent crystal
D) None

Q.25 ZnS sulphide is an example of?
A) Ionic crystal
B) Covalent crystal
C) Metallic crystal
D) Vander waals crystal

Q.26 The presence of ionic salts in a liquid?
A) Decreases the viscosity of the liquid
B) Increases the viscosity of the liquid
C) Does not affect the viscosity of the liquid
D) None

Q.27 Te O_2 is well known example of?
A) Triclinic system
B) Tetragonal system
C) Monoclinic system
D) None

Q.28 A crystal may have one or more planes and one or more axes of symmetry but it has?
A) Two aentres.of symmetry
B) One centre of symmetry
C) No centre of symmetry,
D) None

Q.29 Crystals have vacant sites or defects in them. When light strikes a photographic AgBr paper, silver atoms move in through these defects to'?
A) Form –ve images
B) Form tiny clumps of silver atoms
C) Form a colour image
D) None

Q.30 The rank of a cubic unit cell is 4. The' type of the cell is?
A) Body centred
B) Face centred
C) Primitive
D) None

Q.31 In a crystal some ions are missing from normal sites. This is an example of?
A) F-centres Ci
B) Interstitial defect
C) Frenkel defect
D) Schottky defect Cl

Q.32 A certain metal crystallises ire a simple cubic structure. At a certain temperature, it arranges to give a body centred structure. In this transition, the density of the metal
A) Decreases
B) Increases
C) Remain unchanged
D) Changes without a definite pattern

Q.33 The number of atoms in a face centred cubic unit cell ?
A) 4
B) 6
C) 8
D) 12

Q.34 The number of atoms in a simple unit cell are?
A) 4
B) 3
C) 2
D) 1

Q.35 Missing of one cation and one anion from the crystal lattice is called?
A) Ionic defect
B) Crystal defect
C) Schottky defect
D) Frenkel detect

Q.36 How many atoms are there in a unit cell of Mg which forms hexagonal crystals, being a face-centred atom in each cnd of the unit cell and 3 completely enclosed within the unit cell
A) 4
B) 6
C) 12
D) 8

Q.37 When an ion occuples an interstitial position in the crystal lattice, it is called?
A) Crystal defect
B) Schottky defect D
C) Frenkel defect
D) None

Q.38 In a simple cubic cell, each point on a corner is shared by?
A) 2 unit cells
B) One unit cell
C) 8 unit cells
D) 4 unit cells

Q.39 In a face centred cube cell, an atom at the
A) 4 units cells
B) 2 unit cells
C) One unit cell
D) 6 unit cells

Q.40 In a body centred cubic cell, an atom at the body of centre is shared hy?
A) One unit cell
B) 4 unit cells
C) 3 unit cells 0
D) 2 unit cells

Q.41 AB AB ... close packing of identical spheres given rise to?
A) A face-centred cubic structure
B) A body-centred cubic structure
C) A hexagonal close-packed structure
D) A cubic close-packed structure

Q.42 The structure of C_sCI crystal is
A) Body centred cutie lattice
B) None
C)Octahedral
D) Face centred cubic lattice

Q.43 Frenkel defect generally appears in
A) AgBr
B) ZnS
C) AgI
D) All

Q.44 Schottky defect generally appears in ?..
A) NaCl
B) KCI
C) CsCl
D) All

Q.45 Which geometrical arrangement of atom about a central atom is predicted by a CX_4
A) Primitive cubic
B) Plane triangular
C) Octahedral
D) Tetragonal

Q.46 In a face cubic lattice the number of nearest neighbors for a given lattice point is?
A) 6
B) 8
C) 12
D) 14

Q.47 Close packing is maximum in the crystal
A) Simple cubic
B) Face centred
E) Face centred
C) Body centred
D) None

Q.48 The mass of a unit cell of CsCl corresponds to?
A) 8Cs+ and ICI+
B) 1 Cs+ and 6CT-
C) 1Cs+ and 1CT-
D) 4Cs+ and 4CI-

Q.49 The co-ordination number of a body centred atom is?
A) 4
B) 6
C) 8
D) 12

Q.50 Which of the following pairs is isomorphous?
A) KNO_3 $NaNO_3$
B) Cr_2O, Fe_2O_3
C) Both
D) None

Q.51 The CsCl unit cell is best described as
A) Primitive cubic
B) Body-centred cubic
C) Face-centred cubic
D) Ortho-rhombic

Q.52 C.N. of 12 is possible where r^+/r^- is
A) 1 to 0.73
B) 0.73 to 0.41
C) 0.41 to 0.22
D) 1

Q.53 The number of nearest neighbours in ahexagonal closed structure is
A) 4
B) 6
C) 8
D) 12

Q.54 Which of the following is diamagnetic?
A) Sn^{2+}
B) Pb^{4+}
C) Sb^{3+}
D) All are correct

Q.55 Na_2SeO_4, and Na_2SO_4 are?
A) Isomorphous
B) Polymorphs
C) Alloys
D) Ferromagnetic

Q.56 In graphite crystal, carbon is?
A) sp hybridised
B) sp^3 hybridized
C) sp^2 hybridised
D) None

Q.57 **In diamond crystal, carbon is?**
A) sp hybridised
B) sp^2 hybridized
C) sp^3 hybridized
D) None

Q.58 **Most crystals' show good cleavage because their atoms, ions or molecules are ?**
A) Weakly bonded together
B) Strongly bonded together
C) Spherically symmetrical
D) Arranged in planes

Q.59 **The highest packing fraction is observed in**
A) Simple cubic
B) Body-centred cubic
C) Face-centred cubic
D) Hexagonal closc-packed

Q.60 **The three states of matter are solid, liquid and gas. Which of the following statements is / are correct about them ?**
A) Gases and liquids have viscosity as a common property
B) The molecules in all the three states possess random translational motion D
C) Gases can not be converted into solids without passing through the liquid phase
D) Solids and liquids have vapour pressure as a common property

Q.61 **The number of atoms / molecules contained in one face centered cubic unit cell of a mono atomic substance is ?**
A) 1
B) 4
C) 2
D) 6

Q.62 **The number of atoms/molecules contained in one body centred cubic unit cell is ?**
A) 1
B) 2
C) 4
D) 6

Q.63 **In zinc sulphide structure the co-ordinationnumber of sulphide ion is?**
A) 2
B) 4
C) 6
D) 8

Q.64 **In zinc blende structure, the co-ordination number of Zn^{2+} ion is**
A) 2
B) 6
C) 4
D) 8

Q.65 **An example of Frenkel defect is in ?**
A) NaBr
B) TeBr
C) AgBr
D) CuBr

Q.66 **The vacant space in bcc unit cell is?**
A) 32%
B) 10%
C) 23%
D) 46%

Q.67 **Which defect causes decrease in the density of the crystal?**
A) Schottky
B) Frenkel
C) Face centre
D) Interstitial

Q.68 **A match box exhibits ?**
A) Cubic geometry
B) Monoclinic geometry
C) Orthorhombic geometry
D) Tetragonal geometry

Q.69 **For an ionic crystal of the general formula AX and co-ordination number 6, the radius ratio value will be ?**
A) Greater than 0.73
B) Between 0.73 and 0.41
C) Between 0.41 and 0.22
D) Less than 0.22

Q.70 **Space lattice of CaF^2 is ?**
A) Face centred cubic
B) Body centred cubic
C) Simple cubic
D) Hexagonal closed packing

Q.71 **In a crystal, the atoms are located at the position of ?**
A) Zero P.E
B) Infinite PE
C) Minimum P.E
D) Maximum P.E

Q.72 **Which substance shows antiferromagnetism ?**
A) ZrO2
B) Cdo
C) CrO2
D) Mn^2O^3

Q.73 **In a solid lattice the cation has left a lattice site and is located at an interstitial position. The lattice defect is ?**
A) Interstitial defect
B) Valency defect
C) Frenkel defect
D) Schottky defect

Q.74 **Distance between neighbors in hexagonal-close-packed structure is given by**
A) a
B) $3\sqrt{a/2}$
C) $\sqrt{2}\ a/2$
D) None of these

Q.75 **Radius of sphere ir hexagonal close-packed structure is given by**
A) r=a/2
B) r= V3 a/4
C) r= V2 a/4
D) None of these

Q.76 **Metals have conductivity of the order of ($ohm^{-1}cm^{-1}$) ?**
A) 10^{12}
B) 10^8
C) 10^2
D) 10^{-6}

Q.77 The number of atoms / molecules contained in one primitive cubic unit cell is ?
A) 1
B) 4
C) 2
D) 6

Q.78 In the fluorite structure, the co-ordination number of Ca^{2+} ion is
A) 2
C) 6
B) 8
D) 4

Q.79 Wax is an example of ?
A) Ionic crystal
B) Covalent crystal
C) Molecular crystal
D) Metallic crystal

Q.80 Amorphous substances show ?
A) Short and long range order
B) Short range order
C) Long range order
D) Have no sharp m.p.

Q.81 4:4 Co-ordination is found in ?
A) Zns
B) Cucl
C) Agl
D) All

Q.82 The structure of MgO is similar to NaCl. The co-ordination number of Mg is?
A) 2
B) 6
C) 4
D) 8

Q.83 The oxide which shows metallic conduction ?
A) RcO^3
B) TiO
C) CO^2
D) All are correct

Q.84 The oxide which shows transition from metal to insulator?
A) $V2O^3$
B) VO^2
C) $Ti2O^3$
D) All are correct

Q.85 The oxide that is insulator is ?
A) VO
B) CoO
C) ReO^3
D) Ti^2O^3

Q.86 The oxide that possesses electrical conductivity
A) V_20+
B) Tio
C) VO^2
D) MnO

Q.87 In the unit cell' of NaCl lattice there are?
A) $3Na^+$ ions
B) $6Na^+$ ions
C) $6Cl^-$ ions
D) 4 NaCl units

Q.88 The substance which possesses zero resistance at OK are?
A) Conductor
B) Insulator
C) Super conductor
D) Semiconductor

Q.89 NaCl (rock-salt structure) has edge length of unit cell of 5,52 Ä. The ionic radius of Cl is 1.81 A, the ionic radius of Na^+ is.
A) 1.76 Å
B) 2.76 Å
C) 0.95 Å
D) 3.62 Å

Q.90 Of the elements Sr, Zr, Mo, Cd and Sb, all of which are in V period, the ones that are paramagnetic are?
A) Se, Cd and Sb
B) Zr, Mo and Cd
C) Sr, Zr and Cd
D) Zr, Mo and Sb

Q.91 Which of the following species is diamagnetic?
A) Ca^+
B) Hg_2Cl_2
C) Sb^{3+}
D) All are correct

Q.92 Which of the following species is paramagnetic?
A) NO
B) Fe^{3+}
C) Fe^{2+}
D) All are correct

Q.93 A certain metal fluoride crystallises in such a way that F atoms occupy simple cubic lattice sites, while metal atoms occupy the body centres of half the cubes. The formula of metal fluoride is
A) M_2F
B) MF
C) MF_2
D) MF_8

Q.94 Which of the following is diamagnetic?
A) ClO
B) HgCl
C) F
D) Ni^{2+}

Q.95 Ferromagnetism is maximum in?
A) Fe
B) Ni
C) Co
D) None

Q.96 According to the band theory of solids an insulator is one which has energy band
A) Half-filled
B) Completely filled
C) Empty
D) High energy difference

Q.97 Which of the following planes will be absent in a simple cubic system?
A) 100
B) 110
C) 111
D) 200

Q.98 Which of the following
A) KCl
B) MgO
E) RbI

Q.99 A compound contains
with X atoms at the c
simplest formula of th
A) XY
B) XY_2

Q.100 For which of the follo
largest amount of co
A) NaBr
B) SIS

Q.101 Of the following cry
A) Body centred cubic
B) Simple cubic

Q.102 The melting point c
melting point of Na
A) The two crystals a
B) The molar mass o
C) The intemuclear d
D) The bond in RbBr

Q.103 For which of the f
contact to be valid
A) NaF
B) Nai
E) sro

Q.104 crystalline solid
When the solid is
classification by
A) Covalent (net-v
B) Metallic

Q.105 How many Brav
A) 7
B) 14

Q.106 The most malle
A) Hexagonal clo
B) Cubic close –

Q.107 Transition met
are ccommoda
A) Voids or hole
B) Tetrahedral v

Q.108 A certain solid
A) The solid is
B) The pressur
C) The solid is
D) The pressur

Q.109 Which of the
A) KF
B) NaF

Q.110 Which one o
A) Graphite
B).Naci

Q.111 Ice is less d
A) Water h
B) Associa
C) Structu
D) Water

Q.112 Crystalline
A) Cleava
B) variab

Q.113 The coordi
A) 2
B) 6

Q.98 Which of the following crystals has the largest lattice energy?
A) KCI
B) MgO
E) RbI
C) LiBr
D) NaF

Q.99 A compound contains two types of atoms, X and Y. Its crystal structure is a cubic lattice with X atoms at the comers of the unit cells and Y atoms at the body centers. The simplest formula of this compound is?
A) XY
B) XY_2
C) X_2 Y
D) X_2, Y_3

Q.100 For which of the following ionic crystalline solids does the cation- anion bond have the largest amount of covalent character?
A) NaBr
B) SIS
C) CdS
D) Bao

Q.101 Of the following crystal lattices, the one that has the largest packing fraction is II
A) Body centred cubic
B) Simple cubic
C) Simple tetragonala
D) Face centred cubic

Q.102 The melting point of RbBr is 682°C, while that of Naf is 988°C. The principal reason that melting point of NaF is much higher than that of RbBr is that?
A) The two crystals are not isomorphous
B) The molar mass of NaF is smaller than that of RbBr
C) The intemuclear distance, rc + ra rais greater for RbBr than for NaF
D) The bond in RbBr has more ovalent character than the hond in NaF

Q.103 For which of the following crystals would you expect the assumption of anion-anion contact to be valid ?
A) NaF
B) Nai
E) sro
C) CsBr
D) KCI

Q.104 crystalline solid has a high melting point and is a poor thermal and electrical conductor When the solid is melted, the resulting liquid is a good electrical conductor. Its crystal classification by bond type is?
A) Covalent (net-work)
B) Metallic
C) Tonic
D) Molecular

Q.105 How many Bravais can exist in nature ?
A) 7
B) 14
C) 17
D) 32

Q.106 The most malleable metals (Cu, Ag, Au) have close - packing of the type ?
A) Hexagonal close – packing
B) Cubic close – packing
C) Body-centred cubic packing
D) Malleability is not related to type of packing

Q.107 Transition metals, when they form interstitial compounds, the non-metals (H, B, C, N) are ccommodated in?
A) Voids or holes in cubic-packed structure
B) Tetrahedral voids
C) Octahedral voids
D) All of these

Q.108 A certain solid sublime at 25°C and 1 atm. This means ?
A) The solid is more dense than the liquid
B) The pressure at the triple point is greater than 1 atm.
C) The solid is less dense than the liquid
D) The pressure at the triple point is less than 1 atm.

Q.109 Which of the following has the highest lattice energy and hence m.p.?
A) KF
B) NaF
C) RDF
D) CsF

Q.110 Which one of the following solid consists of discrete molecules ?
A) Graphite
B).Naci
C) Iron
D) Dry ice

Q.111 Ice is less dense than water because
A) Water has more volume than ice
B) Associations in water are broken and then reformed
C) Structure of ice is hexagonal
D) Water has less volume than ice

Q.112 Crystalline solids show all of following properties except one, identify that:
A) Cleavage planes
B) variable m.p
C) Geometrical shape
D) Allotropy
(2013)

Q.113 The coordination number of Na^+ in NaCl crystal is:
A) 2
B) 6
C) 4
D) 8

Q.114 The permitted coordination number in an ionic crystal of NaCl is 6, the arrangement of anions around the cation will be:
A) Planer triangular
B) Face centered cubic
C) Octahedral
D) Tetrahedral

Q.115 In a crystal the atoms are located at the positions where potential energy is:
A) Maximum
B) Zero
C) Infinite
D) Minimum

Q.116 The structure of unit cell of diamond has resemblance with that of:
A) Sand
B) Water
C) Graphite
D) Ice

Q.117 Which one does not melt on heating?
A) Sodium chloride
B) Calcium chloride
C) Benzoic Acid
D) All of these can be melted

Q.118 Molecular crystals are generally
A) hard
B) unstable
C) soft
D) stable

Q.119 Which of the following sets of solid elements A, B, C and D includes a giant metallic structure, a macromolecular structure and a simple molecular structure?
A) Na. Mg. Al .S
B) Al, Si, S , P
C)) C, Si, Sn, P
D) Al, S, Si , Na

Q.120 Valence bond theory treat metallic bond as:
A) A coordinate covalent bond
B) A de-localized covalent bond
C) A localized covalent bond
D) Van der Waal's force

Q.121 The highest conductivity is shown by which type of crystals?
A) Ionic
B) Polar Covalent
C) Metallic
D) Highly Polar Covalent

Q.122 In which crystal system, all sides and all angles are equal i.e [a=b=c and $\alpha=\beta=\gamma=90^{\circ}$]
A) Triclinic
B) Hexagonal
C) Cubic
D) Trigonal

Q.123 The coordination number of Cs^+ is CsF crystal is
A) 12
B) 4
C) 6
D) 8

Q.124 What is the % decrease in the mass of ice, when water freezes?
A) 9%
B) 9% Increase
C) 0%
D) 2% Increase

Q.125 The overall structure of ice is just like that of a:
A) Graphite
B) Tin
C) Sugar
D) Diamond

Q.126 Which of the following is a pseudo solid?
A) CaF_2
B) NaCl
C) Glass
D) All of these

Q.127 Covalent crystals are bad conductor of electricity due to absence of free electrons and ions except:
A) Silicon Carbide
B) Cadmium iodide
C) Graphite
D) Born nitride

Q.128 The covalent crystals having giant molecules like diamond and silicon carbide are:
A) Soluble in all the solvents
B) Soluble in all the non-polar solvents only
C) Insoluble in all the polar solvents only
D) Insoluble in all the solvents

Q.129 Which statement about covalent solids is incorrect?
A) They contain a network of atoms
B) They have high melting points
C) They are very hard and greater energy is required to break them
D) They volatility is very high

Q.130 The overall structure of diamond looks like:
A) Body centered cubic
B) End centered
C) Face centered cubic
D) none of given

Q.131 Which one of the following pairs contains polar molecular solids?
A) Iodine and Sugar
B) Phosphorus and Carbon dioxide
C) Carbon dioxide and Ice
D) Sugar and Ice

Q.132 Which of the following is not a molecular solid?
A) Bromine
B) Sulphur
C) Phosphorus
D) Carbon dioxide

(2020)

Q.133 Which of the following solids is incorrect:

Options	Properties
A)	Example
B)	Basic compo
C)	Electrical conductivity
D)	M.P and B.

Q.134 Electrical conductivi

A) Isomorphism
B) Cleavage plane

Q.135 The Lattice energy
A) Energy of affinity
B) Bond energy

1.	A	2.	D	3.	B
11.	D	12.	B	13.	
21.	A	22.	B	23.	
31.	D	32.	B	33.	
41.	C	42.	A	43.	
51.	A	52.	D	53.	
61.	C	62.	B	63.	
71.	C	72.	D	73.	
81.	D	82.	B	83	
91.	D	92.	D	93	
101.	D	102.	C	10	
111.	D	112.	B	1	
121.	C	122.	C	1	
131.	D	132.	A	1	

Q.133 Which of the following statements about ionic solids, covalent solids and molecular solids is incorrect:

Options	Properties	Ionic solids	Covalent solids	Molecular solids
A)	Example	NaCl. CaO	Diamond. SiC	I2, CO_2, HCl, Ice
B)	Basic component	Ions	Atom	Molecule
C)	Electrical conductivity	Non-conductor in solid slate	Non-conductor except graphite	Non-conductor except HCl in H_2O
D)	M.P and B.P	Very high M.Ps and B.Ps	Verv low M.Ps and B.Ps	Very high M.Ps and B.Ps

Q.134 Electrical conductivity of graphite is greater in one direction that in order due to:

A) Isomorphism
B) Cleavage plane
C) Anisotropy
D) Symmetry

(2016)

Q.135 The Lattice energy is also called as:

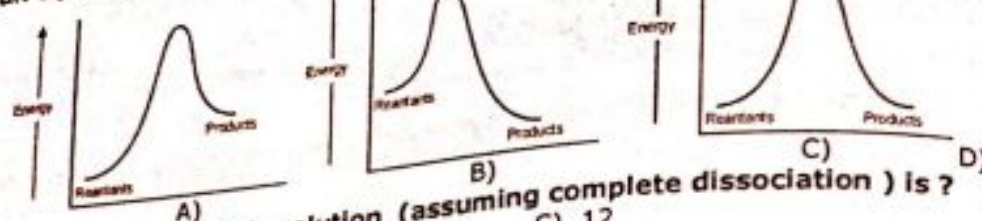
A) Energy of affinity
B) Bond energy
C) Crystal energy
D) Potential energy

(2020)

1.	A	2.	D	3.	B	4.	A	5.	A	6.	D	7.	B	8.	A	9.	D	10.	A
11.	D	12.	B	13.	B	14.	B	15.	C	16.	A	17.	C	18.	B	19.	A	20.	B
21.	A	22.	B	23.	A	24.	C	25.	B	26.	A	27.	B	28.	B	29.	B	30.	B
31.	D	32.	B	33.	A	34.	B	35.	C	36.	B	37.	C	38.	C	39.	B	40.	A
41.	C	42.	A	43.	D	44.	D	45.	D	46.	C	47.	B	48.	C	49.	C	50.	B
51.	A	52.	D	53.	D	54.	D	55.	A	56.	C	57.	C	58.	D	59.	D	60.	A
61.	C	62.	B	63.	B	64.	C	65.	C	66.	A	67.	A	68.	C	69.	B	70.	B
71.	C	72.	D	73.	C	74.	C	75.	C	76.	B	77.	A	78.	B	79.	C	80.	D
81.	D	82.	B	83.	D	84.	D	85.	B	86.	B	87.	D	88.	C	89.	C	90.	D
91.	D	92.	D	93.	B	94.	C	95.	D	96.	A	97.	D	98.	B	99.	A	100.	C
101.	D	102.	C	103.	A	104.	C	105.	B	106.	B	107.	D	108.	B	109.	B	110.	B
111.	D	112.	B	113.	B	114.	C	115.	D	116.	D	117.	C	118.	C	119.	B	120.	B
121.	C	122.	C	123.	C	124.	C	125.	D	126.	C	127.	C	128.	D	129.	D	130.	C
131.	D	132.	A	133.	D	134.	C	135.	C	136.		137.		138.		139.		140.	

CHEMICAL EQUILIBRIUM

Q.1 Which of he following reaction coordinate diagrams could represent a reaction that has an equilibrium constant fo 10^{-3}?



D) None

Q.2 Ph of M/200 $Ba(OH)_2$ solution (assuming complete dissociation) is ?
A) 2
B) 12.70
C) 12
D) 11.6

Q.3 If 0.1 m HCN solution is 0.01 % ionside, the K_a for HCN is?
A) 10^{-2}
B) 10^{-6}
C) 10^{-7}
D) 10^{-9}

Q.4 The PH of 1×10^{-3} NaOH is?
A) 11
B) 12
C) 3
D) 13

Q.5 A certain buffer conatain equal concetarion of X^- amd HX the K_b of x^- is 10^{-10} the PH of the buffer is ?
A) 4
B)7
C) 10
D) 13

Q.6 The buffering action oaf acidc buffer is maximum when its pH is equal to ?
A) 5
B) 7
C) 10
D) Pk_a

Q.7 A buffering solution consists of sodium acetate and acetic Acid Pka of acetic acid is 4.74 what will be th Ph of solution is concentration of sodium acetate is increased ten-fold?
A) 4..75
B) 5.76
C)3.76
D) none

Q.8 The PH of a solution is 4 the [H^+] Ion concentration of the solution is ?
A) 10^{-2}
B)0.4 moles/litre
C) 4 Moles/litre
D) 4×10^{-2}

Q.9 Which one of he following has large concentration of the solution is ?
A) NH_4CI
B) H_2O
C)CH_3COONa
D) CH_3COONH_4

Q.10 On addition of a small quantity of strong acid, the pH of buffer solution?
A) Decrease
B) Increasing
C)Remains practically constant
D) both A And B

Q.11 Which of the following H^2 ion concentration is possible for acidic solutions?
A) 10^{-12} M
B) 10^{-10} M
C) 10^{-7} M
D) 10^{-3} M

Q.12 pH of water is 7.0 at 25° C if water is heated to 70° C the ?
A)pH will decrease
B) Ph will remain constant at PH 7
C)Ph will increase
D) H^+ ion concentration will decrease and oH^- and concentration

Q.13 As the concentration of H^+ of a solution is increase 10 times, it PH,
A) Decrease by one unit
B) Decreasing
C) Remains same
D) None

Q.14 The pH of a solution is 5.0 to this solution sufficient acid is added to decrease the PH to 2.0 the H^+ ion concentration ?
A) Increase 1000 time
B) Decreasing 100 times
C) Increasing 100 times
D) Decreasing 100 times

Q.15 The pH of a solution is 2. Its pH is to be change to 4. Then H^+ concentration of original solution has to be?
A) Halved
B) Doubled
C) Increasing 100 times
D) Decreasing 100 times

Q.16 A Solution of pH 3 is .. acidic than that of pH 6?
A) less
B) more
C) eqally
D) none

Q.17 pH of a solution is 10. oH^- Ion c
A) 10^{-4} moles/ litre
B) 10^{-6} moles / litre

Q.18 A buffer mixture of acetic acid ratio of [Ch^3COO^-]/ [CH^3COOH
A) 3;1
B) 1;3

Q.19 The pH of 0.005 M H^2SO^4 is ?
A)one
B)Two

Q.20 The term pH comes form?
A) prure hydrogen
B) pH will increase

Q.21 The Ionic product of water wi
A) increase
B) Decrease

Q.22 A solution of pH 9.0 is one t
A) 6
B) 7

Q.23 The pH of a solutionis 4 wha solution if pH is to be incre
A) halved
B) Decrease by 10 times
C) Doubled
D) Decreased to half of its ori

Q.24 The reaction between H^+ ic
A) Hydroxylation
B) Hydrolysis

Q.25 The pH of a solution is def
A)pH = log H
B) $pH = -log \frac{1}{[H_3O^+]}$

Q.26 The pH value of 0.1 moles 0.05 moles/litr H_2SO_4 is n
A) 0.05
B) 2

Q.27 Strength of an acid depe
A) Hydrolysis
B) Concentration o acid

Q.28 A solution conatiaon 10 solution is ?
A) 7
B) > 7

Q.29 50 Litres of 0.1 M HCI a the resulting solution I
A) 12.70
B) 12.34

Q.30 The pH of 10^{-8} M HCI is
A)p H of the solution incr
B)pH decreases

Q.31 Concentration of OH^-
A) $1x\ 10^{-7}$
B) $1x\ 10^{-7}$

Q.32 In the reaction 2 X (g pressure and tempera
A)500 atms and 100°C
B)100 atms and 100°C

Q.33 Conder the reversible of CN^- (aq) would?
A) Reduce HCN (aq) co
B) Decrease H^+ ion con

Q.34 In which of the follo
A) $N_2H_2 \rightarrow 2NO_2$
B) $2HI \rightleftharpoons H_2 + I_2$

Q.17 pH of a solution is 10. oH^- Ion concentration in thy solution Is?
A) 10^{-4} moles/ litre
B) 10^{-6} moles / litre
C) 10^{-10} moles /litre
D) 10^{-8} moles / litre

Q.18 A buffer mixture of acetic acid and potassium acetate has pH= 5.24 what sis the ratio of $[Ch^3COO^-]/[CH^3COOH]$ In this buffer?
A) 3;1
B) 1;3
C) 1;1
D) 1;2

Q.19 The pH of 0.005 M H^2SO^4 is ?
A)one
B)Two
C) three
D) four

Q.20 The term pH comes form?
A) prure hydrogen
B) pH will increase
C) principle of hydrogen
D) Poue voir hydrogen or hydrogen power

Q.21 The Ionic product of water with the increase In, temperature?
A) Increase
B) Decrease
C) Remain constant
D) None

Q.22 A solution of pH 9.0 is one thousdan time as basic as a solution of pH?
A) 6
B) 7
C) 4
D) 10

Q.23 The pH of a solutionis 4 what should be change in the hydrogen Ion concentration of the solution if pH is to be increased to 5?
A) halved
B) Decrease by 10 times
C) Doubled
D) Decreased to half of its original value of concentration

Q.24 The reaction between H^+ ions and OH^- Ions is called?
A) Hydroxylation
B) Hydrolysis
C) Neutralization
D) Hydrogenation

Q.25 The pH of a solution is defined by equation?
A) $pH = \log H$
B) $pH = -log \frac{1}{[H_3O^+]}$
C) ph =log $[H_3O^+]$
D) ph = -log $[H_3O^+]$

Q.26 The pH value of 0.1 moles/liter HCI is approximately 1. The approximate pH value of 0.05 moles/litr H_2SO_4 is most likely to be?
A) 0.05
B) 2
C) 0.5
D) 1

Q.27 Strength of an acid depends on?
A) Hydrolysis
B) Concentration o acid
C) concentration of H^+ ions
D) No. of moles of base used for neutralization

Q.28 A solution conatiaon 10 mL of 0.1 N NaOH and 10 mL of 0.05 N H^2SO^4 pH of this solution is ?
A) 7
B) > 7
C) < 7
D) 0

Q.29 50 Litres of 0.1 M HCI are throughoutly mixed with 50 litres of 0.2 M NaOH. The pH of the resulting solution Is?
A) 12.70
B) 12.34
C) 8.7
D) 4.2

Q.30 The pH of 10^{-8} M HCI is ?
A)p H of the solution increases
B)pH decreases
C) pH does not change
D) None

Q.31 Concentration of OH^- ions in moles /litre in neutral solution is ?
A) 1×10^{-7}
B) 1×10^{-7}
C) 1×10^{-10}
D) 1×10^{-14}

Q.32 In the reaction 2 X (g) + Y (g) ⇄ + 80cals, which of the following combinations of pressure and temperature gives the highest yield of Z at Equilibrium?
A)500 atms and 100°C
B)100 atms and 100°C
C) 500 atms and 500°C
D) 100 atam and 500°C

Q.33 Conder the reversible reaction HCN (aq) ⇄H^+ (aq) + CN^- (aq) at equilibrium the addition of CN^- (aq) would?
A) Reduce HCN (aq) concentration
B) Decrease H^+ ion concentration
C) Increase equilibrium constant
D) Decrease equilibrium constant

Q.34 In which of the following kp is less than Kc?
A) $N_2H_2 \rightarrow 2NO_2$
B) $2HI \rightleftarrows H_2 + I_2$
C) $2SO_2 + O_2 \rightarrow 2SO_3$
D) $N_2 + O_2 \rightarrow 2NO$

Q.35 At a constant temperature when concentration of a reactant is increased the equilibrium constant?
A) increase
B) Decrease
C) Remain unaffected
D) first increase and the decrease

Q.36 Three volumes f hydrogen are required to combine completely with on volume of nitrogen of form two volume of ammonia. If once mole of hydrogen combines with one mole of hydrogen. How many moles of ammonia are formed?
A) 1/2
B) 3/2 mole
C) 2/3 mole
D)2 mole

Q.37 A reaction would go to an end it one of the products is?
A) A1 $(NO_3)_3$
B) $(NH_4)_2S$
C) $CuSO_4$
D) $FeCO_3$

Q.38 The system $PCI_5 \rightleftarrows PCI_3 + CI_2$ attain equilibrium . If equilibrium concentration of PCI_3 is doubled, the concentration of CI_2 would become?
A) Half its original value
B) twice of its original value
C) one fourth of its original value
D None

Q.39 For the equilibrium $2NO_2\ (g) \rightleftarrows N_2O_4\ (g) + 14.6$ K cals, increase of temperature could ?
A) favour the formation of N_2O_4
B) favour the formation of N_2O_4
C) Not affect the equilibrium
D) stop the reaction

Q.40 One mole of ethyl alcohol was treated with one mole of acetic acid at 25°C.two – third of the acid changes into acid. At equilibrium. The equilibrium constant for the reaction be?
A) 1
B) 2
C) 3
D) 4

Q.41 The reacation A+ 2B → C+D is at equilibrium. Concentration of reactants and products are A]= 0 20 B] = 0 10 c] =0 30 d] =0 50 the Value of equilibrium constant is ?
A) 75
B) 7.5
C) 150
D 750

Q.42 When a reversible reaction is in equiliburm opposing forces?
A) stop acting
B) are shifted to the right
C) are in constant operation
D) go to one end

Q.43 If in reaction $N_2O_4 \rightleftarrows @NO_2$ a is that part of N_2O_4 which dissociates, then the number of molecule at equilibrium will be ?
A) 3
B) 1
C) $(1-a)^2$
D) (1 + a)

Q.44 For the endothermic reaction $N_2\ (g) + O_2(g) \rightleftarrows 2NO(g)$ which of the following is true?
A) K is independent of temperature
B) k Increase as temperature increase
C) k decrease as temperature decrease
D) k varies with the addition decrease

Q.45 Which of the following changes will invariably increase the yield of products at equilibrium?
A) an increase in T
B) An increase in P
C) addition of a catalyst
D) increasing original reactant concentration

Q.46 In a gaseous reversible reaction $N_2 + O_2 \rightleftarrows 2NO$+ heat. If the pressure is increase, the equilibrium constant would?
A) Decrease
B) increase
C) remain unchanged
D) sometimes increase sometimes decrease

Q.47 The effect of increasing pressure on the equilibrium $2A + 3B \rightleftarrows$ indicated that ?
A) forward reaction in favored
B) backward reaction is favored
C) no reaction is favored
D) none

Q.48 Raising the temperature of a reversible reaction ?
A) favors the forwarded reaction rate only
B)favors the backward rate only
C) favors the forward and backward rates
D) favors neither the forward nor the backward reaction

Q.49 A reversible reaction $H_2 + Cl_2 \rightleftarrows 2HCI$ is carried out in one liter flask. The equilibrium constant will be?
A) Doubled
B) Decreased
C) Halved
D) same

Q.50 The Kc for the reaction A + B ⇄ C+ D is 9. If one mole of each of A And B are mixed and there is No change in volume, the number of moles of C formed is?
A)0.50
B) 0.75
C) 0.90
D) 1.5

Q.51 In an exothermic reaction, high yield is produced at?
A) high temperature
B) low temperature
C) low concentration
D) None

Q.52 In which following case will the least time be required to arrive at equilibrium?
A) kc is very small
B)kc is nearly one
C) kc is very large
D) Difficult to predict

Q.53 The oxidation of SO2 by O2 to form SO3 i
A) if temperature is raised
B) if temperature is decrease
will be maximum?

Q.54 For the reversible reaction $N_2\ (g) + 3H_2$
A) N_2 is deceased
B) N_2 is increase
equilibrium will shift in the forward dire

Q.55 In the endothermic reaction high yield i
A) low temperature
B) high temperature

Q.56 $N_2\ (g) + 3H_2\ (g) \rightleftarrows 2NH_3\ (g)$: G = - 93
when?
A) pressure in increased
B) temperature is lowered

Q.57 Does Le-Chatelier's principle predicts
reaction $N_2O_4\ (g) \rightleftarrows 2NO_2\ (g)$ if the g
A) ye products are favoured
B) ye reactants are favoured

Q.58 In the Ostwald process $4NH_3 + 5O_2 \rightleftarrows$
amount of catalyst is increased when
following will accure?
A) More NO and H_2O will form
B) more NH_3 and O_2 will form

Q.59 Approximately stoichiometric amoun
sufficient time, the reactions may be
A) Kc is much less than one
B) Kc is much larger than one

Q.60 The equilibrium $2SO_2\ (g) + O_2\ (g) \rightleftarrows$
A) A Catalyst is used
B) small amounts of reactants are used
C) large amount of reactants are used
D) an adsorbent is used to remove SO

Q.61 The Equilibrium constant of the rea
reaction is 203, the rate constant o
A) 20 3
B) 10 3

Q.62 N2 + O2 ⇄ 2NO – heat. The forwar
A) increase temperature
B) decreasing pressure

Q.63 Which a reversible reaction has re
A) $Pb(NO_3)_2 + 2NaI \rightarrow PbI_2 + 2NaNO_3$
B) $AgNO_3 + N_2Cl \rightarrow 2NaOH + H2$

Q.64 WHEN AREVERSIBLE Reaction has
A) the forward reaction stop
B) the whole reaction stops
C) the back ward reaction stop
D) the forward and backward reactio

Q.65 Pure NH_3 is placed in a vessel at
appreciable. At equilibrium?
A) K_p does not change with pressur
B) concertation of ammonia does no
C) concentration of hydrogen I less
D) k_p does not change significantly

Q.66 Which of the following will favo
A) removal of at least one of the pr
B) increasing the concertation of o
C) increasing the concentration of
D) None

Q.67 Which of the following is not fa
Δ H = -45.0 K.cals?
A) High pressure
B) High temperature

Q.68 Le-Chatelier principle is not ap
A) Fe (s) + S (s) ⇄ FeS(s)
B) $N_2\ (g) + 3H_2\ (g) \rightleftarrows 2NH_3\ (g)$

Q.53 **The oxidation of SO2 by O2 to form SO3 is an exothermic reaction. Production of SO3 will be maximum?**
A) if temperature is raised
B) if temperature is decrease
C) if concentration of SO4 is decrease
D) None

Q.54 **For the reversible reaction N_2 (g) + $3H_2$ (g) ⇄ $2NH_3$ (g): G = - 93.7 K. J,, the equilibrium will shift in the forward direction if concertation of?**
A) N_2 is deceased
B) N_2 is increase
C) NH_3 I s increased
D) temperature is kept constant

Q.55 **In the endothermic reaction high yield is produced at?**
A) low temperature
B) high temperature
C) neither at low nor at high temperature
D) None

Q.56 **N_2 (g) + $3H_2$ (g) ⇄ $2NH_3$ (g): G = - 93.7 K. J,, the yield of ammonia does not increase when?**
A) pressure in increased
B) temperature is lowered
C) pressure in lowered
D)volume of reaction vessel is deceased

Q.57 **Does Le-Chatelier's principle predicts a change of equilibrium concentration for the reaction N_2O_4 (g) ⇄ $2NO_2$ (g) If the gas mixture is compressed?**
A) ye products are favoured
B) ye reactants are favoured
C) No change
D) None

Q.58 **In the Ostwald process $4NH_3 + 5O_2$ ⇄ $4NO + 6H_2O$ Platinum I used as a catalyst, If the amount of catalyst is increased when the system has reached equilibrium, which of the following will accure?**
A) More NO and H_2O will form
B) more NH_3 and O_2 will form
C) Reaction rate will be increased
D) no change will be evident

Q.59 **Approximately stoichiometric amount reactants are mixed in a suitable container. Given sufficient time, the reactions may be converted almost entirely to produces if?**
A) Kc is much less than one
B) Kc is much larger than one
C) G = O
D) G is larger positive number

Q.60 **The equilibrium $2SO_2$ (g) + O_2 (g) ⇄ $2SO_3$ (g) shifts in the forward direction if?**
A) A Catalyst is used
B) small amounts of reactants are used
C) large amount of reactants are used
D) an adsorbent is used to remove SO3 as soon as its is formed

Q.61 **The Equilibrium constant of the reaction A + B → C + D is 10. If rate constant of forward reaction is 203, the rate constant of backward reaction is?**
A) 20 3
B) 10 3
C) 2 03
D) 203

Q.62 **N2 + O2 ⇄ 2NO – heat. The forward reaction is favored by ?**
A) increase temperature
B) decreasing pressure
C) Deceasing N2 concentration
D) presence of catalyst

Q.63 **Which a reversible reaction has reached the state of equilibrium?**
A) $Pb(NO_3)_2$ + 2NaI → PbI_2 + $2NaNO_3$
B) $AgNO_3$ + N_2Cl →2NaOH + H2
C) 2Na P2H2O → 2NaOH+ H_2
D) KNO_3+ NaCl= $NaNO_3$

Q.64 **WHEN AREVERSIBLE Reaction has reached the state of equilibrium?**
A) the forward reaction stop
B) the whole reaction stops
C) the back ward reaction stop
D) the forward and backward reaction proceed with same speed

Q.65 **Pure NH_3 is placed in a vessel at temperature where its dissociation constant is appreciable. At equilibrium?**
A) K_p does not change with pressure
B) concertation of ammonia does not change with pressure
C) concentration of hydrogen I less than that of nitrogen
D) k_p does not change significantly with pressure

Q.66 **Which of the following will favoured reverse reaction in a chemical equilibrium?**
A) removal of at least one of the product at regular intervals
B) increasing the concertation of one of the reactants
C) increasing the concentration of one or more of the products
D) None

Q.67 **Which of the following is not favorable for SO_3 formation in $2SO_2$ (g) + O_2 (g) ⇄ $2SO_3$ (g) Δ H = -45.0 K.cals?**
A) High pressure
B) High temperature
C) Decreasing SO3 concentration
D) incising reactant Concentration

Q.68 **Le-Chatelier principle is not applicable to?**
A) Fe (s) + S (s) ⇄ FeS(s)
B) N_2 (g) + $3H_2$ (g) ⇄$2NH_3$ (g)
C) N_2(g) + I_2 (g) ⇄2HI(g)
D) N_2 (g) + O_2(g) ⇄2NO(g)

Q.69 For the reaction $CO(g) + 2H_2(g) \rightleftarrows CH_3OH(g)$?
A) $kp = kc$
B) $Kp = Kc$
C) $kp < Kc$
D) $Kc = 0$ but is not zero

Q.70 Consider the following two equilibria involving SO_2 and the corresponding equilibrium constant K_1 and k_2 at 298?
A) $SO_2(g) \rightleftarrows \frac{1}{2}O_2(g) \rightleftarrows SO_3(g)$: K1
B) $2SO_2(g) \rightleftarrows 2SO_2(g) + O_2(g)$: k2
A) $k2 = k_1$
B) $k2 = k_1^2$
C) $k2 = 1/k_1^2$
D) $k2 = 1\ k_1$

Q.71 Ice ⇄ water is at equilibrium what happens in pressure is applied?
A) water change to vapor
B) large amount of ice forms
C) no change
D) large amount of water form

Q.72 At 25 °C the equilibrium constants K1 and k2 of two ammonia related reaction are $2NH_3 \rightleftarrows N + 3H_2$; K1 $\frac{1}{2}N_2 + \frac{3}{2}H_2) \rightleftarrows NH_3$; K2 Which of the following shows the relation between two equilibrium constant?
A) $k1 = k2$
B) $k2 = /K_1^2$
C) $k2 = 1/K_1^2$
D) $k1 = 1\ k2$

Q.73 For the exothermic reaction $2NO9(g) \rightleftarrows N_2(g)$ + heat
A) k increase with temperature
B) k is independent of temperature
C) k decrease with temperature
D) k varies with additional of N_2 or O_2

Q.74 In a chemical reaction P + Q → PQ, if the concentration of P and Q are increased by two fold the reaction rate?
A) Decreased by half
B) increase to 4 fold
C) increased by two fold
D) increased by 8 fold

Q.75 For the reaction $C(s) + CO_2 \rightleftarrows 2CO(g)$ AN equilibrium mixture has partial pressure for CO_2 AND CO AS 4;0 AND 8.0 ATM. respectively K_P FOR THE REACTION IS.
A) 0.5
B) 2
C) 16
D) 32

Q.76 In this reaction $2HI \rightleftarrows H_2 + I_2$ the equilibrium constant depends on
A) initial concentration
B) Temperature
C) volume concertation
D) total pressure equilibrium state

Q.77 the active mass of 5.6 liters of O_2 at STP is?
A) 0.5/5.6
B) 0.25/5.6
C)8/5.6
D) 32/5.6

Q.78 NO_2 associates as : $2NO_2 \rightleftarrows N_2O_4$ the apparent M.W of NO_2 is 60 and its normal M.W is 46. The mole fraction of dimer in the reaction mixture is.
A) 14/46
B)16/46
C) 28/79
D)60/90

Q.79 For the reaction $I_2(g) \rightleftarrows 2I(g)$, kc 37.6×10^{-6} at 1000 k. if 10 mole of I_2 is introduced into a 10 liter flask at 1000 k then at equilibrium?
A) the concertation of $I_2(g)$ is much greater than of I(g)
B) $[I_2] = 2I$
C)) the concentration of $I_2(g)$ is much less than that of I (g)
D) $[I_2] = \frac{2}{1}[I]$

Q.80 At 540 k, PCl_5 dissociates as $PCI_5(g) \rightleftarrows PCI_3(g) + Cl_2(g)$. if this reaction is exothermic, which of the following factors would cause the concentration of PCI_5 to decrease in the reaction vessel?
A) adding Cl_2 to reaction mixture
B) increasing the volume of reaction vessel
C) Addition of catalyst
D) increasing temperature

Q.81 The concept of solubility product is originally applicable to _____ salt in aqueous solution
A) Na_2SO_4
B) $AgNO_3$
C) $BaSO_4$
D)$Pb(NO_3)_2$

Q.82 which of the following change will decrease the amount of the steam
$2H_2O_{(g)} \rightleftharpoons 2H_{2(g)} + O_{2(g)}$ $\Delta H = +241.7kJ$
A) Addition Pt catalyst
B) Increase the pressure at constant temperature
C) Addition of more oxygen
D) Increasing the temperature at constant pressure

Q.83 For which one of the follow
A) $N_2 + O_2 \rightleftarrows 2NO$
B) $2SO_3 \rightleftarrows 2SO_2 + O_2$

Q.84 If [products]/[reactants] r
A) concentration of product is
B) The reaction will move in t
C) The reaction is in equilibri
D) The reaction will move fo

Q.85 Increase in temperature
A) Alters the Kc
B) Variate average molecul

Q.86 In the following homoge
would be the direction o
A) Forward
B) Backward

Q.87 To attain equilibrium w
A) Kc=10
B) Kc= 10^{+2}

Q.88 In common ion effect
A) more
B) un-reactive

Q.89 For which equilibrium
A) $H_2 + F_2 \rightleftharpoons 2HF$
B) $N2O_4 \rightleftharpoons 2NO_2$

Q.90 The pK_w value at 25°
A) 1.00×10^{-14}
B) 14

Q.91 If K_c for a reaction i
A) The rate of forwar
B) The reaction mixtu
C) The products are
D) The forward react

Q.92 The change in pres
A) System is in solid
B) System is in liqui
C) Total moles of ga
products.
D) Total moles of g

Q.93 Strength of an ac
A) Dissociation con
B) pH of the acid

Q.94 Which statemen
A) Conjugate base
B) Conjugate acid
C) Greater is the
D) Greater is pK_b

Q.95 If in 'AgCl' solu
A) more solubilit
B) electrolyte

Q.96 A reaction is r
A) reactants are
B) products are

Q.97 Calculate the
A) 4.74
B) 2.74

Q.83 For which one of the following the value of K_c is greater than K_p ?
A) $N_2 + O_2 \rightleftharpoons 2NO$
B) $2SO_3 \rightleftharpoons 2SO_2 + O_2$
C) $PCl_3 + Cl_2 \rightleftharpoons PCl_5$
D) $N_2O_4 \rightleftharpoons 2NO_2$

Q.84 if [products]/[reactants] ratio is less than given K_c for a reaction then:
A) concentration of product is less than of reactants
B) The reaction will move in reverse direction to attain equilibrium.
C) The reaction is in equilibrium
D) The reaction will move forward direction to attain the equilibrium

Q.85 Increase in temperature the equilibrium reaction
A) Alters the Kc
B) Variate average molecular speed
C) Changes the Kp
D) All of these

Q.86 In the following homogeneous equilibrium when pressure is increased at 25°C. What would be the direction of reaction for $2O_3 \rightleftharpoons 3O_2 \quad K_c = 10^{55}$
A) Forward
B) Backward
C) No effect
D) Unpredictable

Q.87 To attain equilibrium which reaction will proceed in forward direction?
A) Kc=10
B) Kc= 10^{+2}
C) Kc= 10^{-2}
D) Kc= 10^{-1}

Q.88 In common ion effect _____ soluble salt is precipitated out first.
A) more
B) un-reactive
C) lesser
D) none

Q.89 For which equilibrium reaction $K_P > K_C$
A) $H_2 + F_2 \rightleftharpoons 2HF$
B) $N2O_4 \rightleftharpoons 2NO_2$
C) $N_2 + 3H_2 \rightleftharpoons 2NH_3$
D) $PCl_3 + Cl_2 \rightleftharpoons PCl_5$

Q.90 The pK_w value at 25°C is
A) 1.00×10^{-14}
B) 14
C) 3.00×10^{-14}
D) 7.5×10^{-14}

Q.91 If K_c for a reaction is very small, then which statement of the following is incorrect?
A) The rate of forward reaction is very low as compared to rate of reverse reaction
B) The reaction mixture largely composed of reactants
C) The products are highly unstable as compared of reactants
D) The forward reaction is almost complete

Q.92 The change in pressure or volume will affect the equilibrium state of the system when:
A) System is in solid state
B) System is in liquid state
C) Total moles of gaseous reactants either greater or lesser than the total moles of gaseous products.
D) Total moles of gaseous reactants and total moles of gaseous products are equal.

Q.93 Strength of an acid is directly proportional to all except
A) Dissociation constant of acid
B) pH of the acid
C) Percentage ionization of the acid
D) pOH of the acid

Q.94 Which statement is incorrect
A) Conjugate base of a very weak acid is relatively very strong base
B) Conjugate acid of a very weak base is relatively very strong acid
C) Greater is the percentage ionization stronger is the base
D) Greater is pK_b value stronger is the base

Q.95 If in 'AgCl' solution, some salt of 'NaCl' is added, 'AgCl' will be precipitated due to: (2011)
A) more solubility
B) electrolyte
C) un saturation effect
D) common ion effect

Q.96 A reaction is reversible because
A) reactants are reactive
B) products are stable
C) product are reactive
D) reactants are stable

Q.97 Calculate the pH of a buffer solution 0.1M CH_3COOH and 0.01M CH_3COONa if pK_a is 4.74
A) 4.74
B) 2.74
C) 3.74
D) 5.74

Q.98 Which is true about the following equilibrium
$HNO_3 + 2H_2SO_4 \rightleftharpoons 2HSO_4^- + NO_2^+ + H_2O$
A) Sulphric acid is a base
B) Addition of water reduces $[NO_2^+]$
C)Sulphuric acid is dehydrating
D) Both B and C

Q.99 In which of the following reactions Kc &Kp will have the same numerical value?
A) $PCl_5 \rightleftharpoons PCl_3 + Cl_2$
B) $2SO_2 + O_2 \rightleftharpoons 2SO_3$
C) $N_2 + 3H_2 \rightleftharpoons 2NH_3$
D) $N_2 + O_2 \rightleftharpoons 2NO$

Q.100 The active mass of a solid in determining "Kc" value of a reaction is generally taken as:
A) 10
B) more than unity
C) less than 10
D) Constant

Q.101 Equimolar aqueous solution would have the same hydrogen ion concentration as of
hydrochloric acid
A)Sulphuric acid
B) Nitric acid
C) Sodium hydroxide
D)Ehanoic acid

Q.102 For which system the equilibrium constant KC has units of (concentration)+2
A) $2HF \rightleftharpoons H_2 + F_2$
B) $2NH_3 \rightleftharpoons N_2 + 3H_2$
C) $2NO_2 \rightleftharpoons N_2O_4$
D) $PCl_5 \rightleftharpoons PCl_3 + Cl_2$

Q.103 In a reaction A+B →AB If the concentration of A & B is double then the reaction rate will:
A) increased 4 times
B) decreased 2 half time
C) increased 2 times
D) will decreased 2 time

Q.104 A buffer solution is that which resists/minimizes the change is: (2012)
A) pOH
B) PK_a
C) pH
D) PK_b

Q.105 The solubility of AgI in NaI solution is less than n pure water due to
A) Common ion effect
B)AgI forms complex with NaI
C) Temperature
D) K_{SP} of AgI is more than that of NaI

Q.106 If the difference of pKa between two acids is two, then the acid with greater pKa value will be ____ times ____ than other
A) 10, Stronger
B) 100, Weaker
C) 200, Weaker
D) 100, Stronger

Q.107 The solubility of LiCl and Li_2CO_3 decreases with increases in temperature because their heats of solution are:
A) + ve
B) zero
C) - ve
D) very close to zero

Q.108 Which one of the following condition is favorable for crystallization?
A) Increase in pressure
B) Increase in temperature
C) decrease in temperature
D) Increasing amount of H_2O

Q.109 The relation b/w K_p and K_c is given by:
A) $Kc = Kp\,(p)^{-\Delta n}$
B) $Kp = Kc\,(RT)^{n}$
C) $Kp = Kc\,(RT)^{\Delta n}$
D) $Kp = Kc\,(RT)^{2n}$

Q.110 $K_c = \frac{x_2}{V(a-x)}$ is true6
A) $2NO_2 \rightleftharpoons N_2O_4$
B) $H_2 + I_2 \rightleftharpoons 2HI$
C) $PCl_5 \rightleftharpoons PCl_3 + Cl_2$
D) $CH_3COOH + C_2H_5OH \rightleftharpoons CH3COOC_2H_5 + H_2O$

Q.111 In which of the following reaction, the value of K_p will be equal to K_c?
A) $PC\ell_5 \rightleftharpoons PC\ell_3 + C\ell_2$
B) $H_2 + I_2 \rightleftharpoons 2HI$
C) $2NH_3 \rightleftharpoons N_2 + 3H_2$
D) $2SO_2 + O_2 \rightleftharpoons 2SO_3$

Q.112 The PK_a of CH_3COOH is 4.74. The pH of equimolar solution of CH_3COOH and CH_3COONa:
A) 4.79
B) 4.42
C) 4.32
D) 4.74

Q.113 If NH_3 gas is dissolved in H_2O, pH of the solution:
A) May increases or decreases
B) not affected
C) increases
D) decreases

Q.114 The pOH of 1.0 mol dm^{-3} of NH_4OH which is only 1% dissociated is
A) 1
B) 2
C) 12
D) 13

Q.115 The solubility product of Ag_2CrO_4 is 2.8×10^{-2} at 25°C. The solubility of the compound is
A) 2.085×10^{-1} mol dm^{-3}
B) 1.866×10^{-2} mol dm^{-3}
C) 1.501×10^{-1} mol dm^{-3}
D) 1.866×10^{-1} mol dm^{-3}

Q.116 The chemical substance, when dissolved in water, gives "H^+" is called: (2013)
A) Acid
B) Base
C) Amphoteric
D) Neutral

Q.117 For which reaction numerical value of Kc and Kp are same
A) $N_2+3H_2 \rightarrow 2NH_3$
B) $H_2+Cl_2 \rightarrow 2HCl$
C) $2SO_2+O_2 \rightarrow 2SO_3$
D) $N_2O_4 \rightarrow 2NO_2$

Q.118 If for a reaction $A+B \underset{k_r=0.5}{\overset{k_f}{\rightleftharpoons}} C+D$ $K_c = 2.0$ then rate constant of forward reaction would be
A) 1.0
B) 0.5
C) 2.0
D) 2.5

Q.119 For the reaction $CO_{(g)} + C\ell_{2(g)} \rightleftharpoons COC\ell_{2(g)}$ the ratio K_p/K_c is equal to:
A) (1/RT)
B) $\sqrt{RT}$
C) 1.0
D) RT

Q.120 The pH of 10^{-3} mole dm^{-3} of an aqueous solution of H_2SO_4 is
A) 3.0
B) 2.0
C) 2.7
D) 1.5

Q.121 The precipitation occur if the ionic concentration is
A) less than K_{sp}
B) equal to K_{sp}
C) more than K_{sp}
D) is present an any moment

Q.122 Kc value indicates that the chemical reaction reaches earlier to completion
A) 10^{-3}
B) 10^{3}
C) 10^{15}
D) 10^{10}

Q.123 Which statement is incorrect
A) pH= $\frac{1}{2}$ pKw, solution is neutral
B) pH < $\frac{1}{2}$ pKw, solution is acidic
C) pH > $\frac{1}{2}$ pKw, solution is basic
D) pH=3, for sulphuric acid 10^{-3} M

Q.124 The units of equilibrium constant (Kc. for the reaction $N_2 + 3H_2 \rightleftharpoons 2NH_3 + 92.2\ KJ$), will be:
A) $dm^{+6}mol^{-2}$
B) $Mole\ dm^{-3}$
C) $Mole^{+2}dm^{-6}$
D) $Mole^{-1}dm^{+3}$

Q.125 The unit of ionic product (Kw) of water is:
A) $Mole^{-1}\ dm^{-3}$
B) $Mole^{-2}\ dm^{-3}$
C) $Mole^{-2}\ dm^{-6}$
D) $Mole^{+2}\ dm^{-6}$

Q.126 which is incorrect statement
A) Chemical equilibrium is dynamic in nature
B) Catalyst can alter the state of equilibrium
C) Chemical equilibrium can approach from either side
D) At chemical equilibrium concentration / pressure become constant

Q.127 Which one of the following has highest pH?
A) 0.1M HCl
B) gastric juice
C) 1.0M HCl
D) lemons

Q.128 The correct Kc expression for the following reaction is

$$CH_3COOC_2H_{5(\ell)} + H_2O_{(\ell)} \longrightarrow CH_3COOH + C_2H_5OH_{(\ell)}$$

A) $K_c = \frac{[C_2H_5OH]}{[CH_3COOC_2H_5][H_2O]}$
B) $K_c = \frac{[CH_3COOH]}{[CH3COOC_2C_5][H_2O]}$
C) $K_c = \frac{[CH_3COOH]}{[CH_3COOC_2H_5][H_2O]}$
D) $K_c = \frac{[CH_3COOC_2H_5][H_2O]}{[C_2H_5OH][CH_3COOH]}$

Q.129 If Ksp< Ionic conc. The nature of the solution is
A) saturated
B) super saturated
C) unsaturated
D) None of these

Q.130 The decomposition of N_2O_4 at 25°C, $N_2O_{4(g)} \rightleftharpoons 2NO_{2(g)}$ Has $K_c = 4.61 \times 10^{-3}$, A 2.00 dm^3 vessel contained 0.466 mol N_2O_4 at equilibrium. What was the concentration of NO_2 in the vessel?
A) 1.04×10^{-3} M
B) 3.15×10^{-5} M
C) 1.04×10^{-2} M
D) 2.03×10^{-2} M

Q.131 The equilibrium constant at 1300 K for the reaction $H_{2(g)} + Br_{2(g)} \rightleftharpoons 2HBr_{(g)}$ is 1.6×10^5. What is the value of K for the reverse reaction?
A) -1.6×10^5
B) 6.3×10^{-6}
C) 1.6×10^{-5}
D) 6.3×10^{-5}

Q.132 Which one of the following relation is incorrect?
A) $pK_a + pK_b = 14$
B) $K_a + K_b = 14$
C) $pK_w = \log 1/K_w$
D) $K_w = K_a . K_b$

Q.133 Which one of the following condition is required for the precipitation?
A) K_{sp} > Ionic product
B) K_{sp} = Ionic product
C) Ionic product > K_{sp}
D) none of given

Q.134 The solution having zero PH will be
A) basic
B) neutral
C) high basic
D) highly acidic

Q.135 The pH of our blood is: (2013)
A) 7.35 - 7.4
B) 7.9
C) 6.7 - 8
D) 7.5

Q.136 Which change will increase the equilibrium concentration of SO_3?
$2SO_{2(g)} + O_{2(g)} \rightleftharpoons 2SO_3 + Heat$
A) Decrease the concentration of $O_{2(g)}$
B) Increase the pressure on the system
C) Increase the temperature of the system
D) Introduce a catalyst

Q.137 What is the result of increasing the concentration of CH_3COOH in this equilibrium system? $CH_3COOC_2H_{5(aq)} + H_2O_\ell \rightleftharpoons C_2H_5OH_{(aq)} + CH_3COOH_{(aq)}$
A) a change in the equilibrium constant
B)a decreased concentration of $CH_3COOC_2H_5$
C) a decreased concentration of H_2O
D) a decreased concentration of C_2H_5OH

Q.138 A solution is said to be saturated with respect to the electrolyte, if its:
A) Ionic product < K_{sp}
B) Ionic product = K_{sp}
C) ionic product > K_{sp}
D) (ionic product)^2 = K_{sp}

Q.139 If $CaCl_2$ is added to saturated solution of Calcium Oxalate, the solubility of calcium oxalate:
A) Decreases
B) equal
C) increases
D) moderate

Q.140 Analysis of a sample of $HC\ell$ gas showed that then equilibrium was reached at a certain temperature, one half of the $HC\ell$ molecules had dissociated into H_2 and $C\ell_2$ molecules:
$2HC\ell_{(g)} \rightleftharpoons H_{2(g)} + C\ell_{2(g)}$
What is the numerical value of the equilibrium constant at this temperature?
A) 0.25
B) 0.50
C) 1.0
D) 2.0

Q.141 Why does increasing the concentrations of the reactants in a chemical reaction increase the rate of the reaction?
A) The activation energy of the reaction decreases
B) The average kinetic energy of the reactants increases
C) The collisions become more effective
D) The frequency of collisions increases

Q.142 If the temp in the synthesis ammonia is decreased. The formation of ammonia is
A) increased
B) Not effected
C) decreased
D) none

Q.143 The value of equilibrium constant (K_c) for the reaction $2HF_{(s)} \leftrightharpoons H_{2(g)} + F_{2(g)}$ is 10^{-13} at 2000°C. calculate the value of K_p for the reaction: (2014)
A) 2×10^{-13}
B) 186×10^{-13}
C) 10^{-13}
D) 3.48×10^{-9}

Q.144 The Lechatlier Principle
A) first
B) third

Q.145 The term active mass
A) Moles
B) $mol^{-1}dm^{-3}$

Q.146 The value of K_p becom
A) Total number of mole
B) Total number of mol
C) The difference of tot
D) The difference of to

Q.147 Which is the correct
A) $K_p = K_c(P)^{\Delta n}$
B) $K_c = K_p(RT)^{\Delta n}$

Q.148 Calculate the value
nitrogen, hydrogen
A) 1.0 mol^{-2} dm^6
B) 1/64 mol^{-2} dm^6

Q.149 Which of the follo
A) 1M HCl
B) 0.1M HNO_3

Q.150 If the concentrat
A) shift towards th
B) not be effected

Q.151 How does a cata
A) decreases the
B) increases the

Q.152 What will be ph
A) 3
B) 11

Q.153 A chemical eq
A) concentratio
B) opposing re
C) velocities of
D) temp. of op

Q.154 If the activat
energy for t
A) <50 kJ/m
B) 50 kJ/mol

Q.155 What is tru
A) complete
B) constant
C)equal qua
D) only rea

Q.156 If an acid
A) 8.4
B) 12.3

Q.157 Kp is alw
A) Numbe
B) Numb
C) If bot
D) All of

Q.158 Which
A) beak
B) kett
C)natu
D) unc

Q.144 The Lechatlier Principle with the Newton's _____ Law.
A) first
B) third
C) second
D) Gravitation

Q.145 The term active mass represent the concentration in:
A) Moles
B) $mol^{-1}dm^{-3}$
C) mole fraction
D) mol dm^{-3}

Q.146 The value of K_p becomes equal to K_c when:
A) Total number of moles of reactants are greater than total number of moles of products.
B) Total number of moles of products are greater than total number of moles of reactants.
C) The difference of total moles of reactants and total moles of products is zero.
D) The difference of total moles of reactants and total moles of products is less than zero.

Q.147 Which is the correct relationship
A) $K_P=K_C(P)^{\Delta n}$
B) $K_C=K_P(RT)^{\Delta n}$
C) $K_P=K_C(RT)^{n}$
D) $K_P=K_C(RT)^{\Delta n}$

Q.148 Calculate the value of K_C for ammonia synthesis when the equilibrium concentration of nitrogen, hydrogen and ammonia are 2M,2M and 4M at 400°C
A) 1.0 mol^{-2} dm^6
B) 1/64 mol^{-2} dm^6
C) 0.1mol^{-2} dm^6
D) 16 mol^{-2} dm^6

Q.149 Which of the following solution have zero PH?
A) 1M HCl
B) 0.1M HNO_3
C) 0.1 M H_2SO_4
D)1M CH_3COOH

Q.150 If the concentration of the reactant is increased then the position of equilibrium will
A) shift towards the forward direction
B) not be effected
C) shift towards the backward direction
D) none

Q.151 How does a catalyst speed up a chemical reaction?
A) decreases the heat of reaction
B) increases the heat of reaction
C) lowers the activation energy
D) raises the activation energy

Q.152 What will be pH of a solution of NaOH with concentration of 10^{-3} M? (2014)
A) 3
B) 11
C) 14
D) 7

Q.153 A chemical equilibrium in a reaction is established when
A) concentration of the reactants & products is equal
B) opposing reaction is happening
C) velocities of the opposing reaction are equal
D) temp. of opposing reaction are equal

Q.154 If the activation energy for an exothermic reaction is 50 kJ/mol, what is the activation energy for the reverse reaction?
A) <50 kJ/mol
B) 50 kJ/mol
C) > 50 kJ/mol
D) 100 kJ/mol

Q.155 What is true about a chemical system at equilibrium?
A) complete conversion of reactants into products
B) constant quantities of reactants and products
C)equal quantities of reactants and products
D) only reactants present

Q.156 If an acid has pK_a= 3.4 , what will be the value of pK_b for its conjugate base?
A) 8.4
B) 12.3
C) 10.6
D) 9.6

Q.157 Kp is always greater than Kc if
A) Number of mole of reactants are greater than products.
B) Number of mole of products are greater than reactants.
C) If both reactants and products carry same number of moles
D) All of these

Q.158 Which system would most likely be at equilibrium?
A) beaker of alcohol sitting on a counter at room temperature
B) kettle of water boiling at a constant rate
C)natural gas burning in a home furnace
D) unopened can of soda pop sitting on a grocery shelf

Q.159 Ammonia reacts with aqueous silver ions to form a complex ion.
$Ag^{+}_{(aq)} + 2NH_{3(aq)} \rightleftharpoons Ag(NH_3)^{+}_{2(aq)}$ K = 1.7 × 107 at 25°C
What will be the final result of adding more ammonia to this system without changing the temperature?
A) The concentration of $Ag^{+}_{(aq)}$ will increase
B) The concentration of $Ag(NH_3)^{+}_{2(aq)}$ will decrease
C) The concentration of NH3(aq) will decrease
D) The equilibrium constant will remain the same

Q.160 In the given exothermic reaction, $2SO_2 + O_2 \leftrightarrow 2SO_3$ the yield of product will be maximum if
A) T is increased and P remains same
B) both T& P is increased
C) T is decreased and P is increased
D) none

Q.161 Which one of the following is the correct representation for K_{sp}? (2015)
$AgCl \rightarrow Ag^{+} + Cl^{-}$
A) $K_{sp} = \frac{[AgCl]}{[Ag^{+1}][Cl^{-1}]}$
B) $K_{sp} = \frac{[Ag^{+1}][Cl^{-1}]}{[AgCl]}$
C) $K_{sp} = [Ag^{+1}][Cl^{-1}]$
D) $K_{sp} = [AgCl]$

Q.162 In reaction A+B →AB if the concentration of A & B is tripled then the reaction will:
A) Increase 9 times
B) Decrease to half time
C) increase 3 times
D) decrease 6 times

Q.163 When HCl is passed from a saturated solution of NaCl the solubility of NaCl is:
A) Increased
B) not affected
C) decreased
D) none

Q.164 Which would increase the equilibrium concentration of $C\ell_2O_{(g)}$?
$2C\ell_{2(g)} + O_{2(g)} \rightleftharpoons 2C\ell_2O_{(g)}$
A) adding a suitable catalyst
B) decreasing the concentration of $C\ell_{2(g)}$
C) decreasing the temperature
D) increasing the concentration of $O_{2(g)}$

Q.165 What is the equilibrium constant expression for this equation?
$CO_{2(g)} + C_{(s)} \rightleftharpoons 2CO_{(g)}$
A) $\frac{[co_2][C]}{[co]^2}$
B) $\frac{[co]^2}{[co_2][C]}$
C) $\frac{[co_2]}{[co]^2}$
D) $\frac{[co]^2}{[co_2]}$

Q.166 What is the correct rotation between pH and pK? (2015)
A) $pH = pKa + \log\left[\frac{Acid}{Base}\right]$
B) $pH = pKa - \log\left[\frac{Base}{Acid}\right]$
C) $pH = pKa - \log\left[\frac{Acid}{Base}\right]$
D) $pKa = pH + \log\left[\frac{Base}{Acid}\right]$

Q.167 In the formation of ammonia if pressures of the system is increased then the reaction_____ direction.
A) moves in forward
B) remains in the equilibrium
C) moves in the backward
D) none

Q.168 A student prepares a sodium chloride solution by placing 100 g of solid sodium chloride in a flask, adding 200 ml. of distilled water, placing a stopper in the flask and then shaking the flask vigorously. Which is an observable property that indicates the system is at equilibrium?
A) The amount of undissolved sodium chloride gradually decreased
B) The amount of undissolved sodium chloride remains constant
C) The rate of dissolving equals the rate of crystallizing
D) The rate of precipitation equals the rate of crystallizing

Q.169 "If a system is subjected to stress, the system acts to relieve the effects of the stress" Who proposed this idea?
A) Arrhenlus
B) Bronstsed and Lowry
C) Le Chatelier's
D) Lewis

Q.170 In the formation of ammonia if pressures of the system is increased then the reaction will move in which direction
$N_2 + 3H_2 \rightleftharpoons 2NH_3$
A) Moves in forward
B) Remains in equilibrium
C) moves in backward
D) none

Q.171 If the pH of the solution
must possess a pH
A) Slightly lower than the
B) Exactly equal to the exp

Q.172 What happens as the te
A) Every gas molecule no
B) None of the gas molecu
C) The average molecular
D) When gas molecules c

Q.173 At equilibrium in this
[A] = 2.00, [B] = 1.20
equilibrium constant?
A) 4.32
B) 1.33

Q.174 Strength of an acid c
A) PK_a
B) POH

Q.175 If 'Ka' for an acid is
pKa:
A) Higher pKa, weake
B) pKa has no relatio

Q.176 Which expression
$2NO_{(g)} + O_2$
A) $\frac{[NO][O_2]}{[NO_2]}$
B) $\frac{[NO_2]}{[NO][O_2]}$

Q.177 For the reaction,
greatest convers
A) 1.5×10^{-1}
B) 1.8×10^{-2}

Q.178 Formation of NH
A) More reactant
B) More H_2 will b

Q.179 Which reaction
A) $K_c = 10$
B) $K_c = 10^2$

Q.180 During the ma
This reaction
$2NO_{(g)} + O_{2(g)}$
According to
A) Reaction m
B) Reaction m
C) Reaction m
D) Reaction n

Q.181 At a certain
$2HI_{(g)} \rightleftharpoons H_{2(g}$
If the conce
^{3}mol/L, wh
A) 1.6×10
B) 1.8×10

Q.182 For the re
largest co
A) 0.87
B) 0.41

Q.183 Almost fo
A) Very hi
B)

Q.171 If the pH of the solution during the reaction is expected to decrease then the buffer used must possess a pH
A) Slightly lower than the expected pH
B) Exactly equal to the expected pH
C) Slightly higher than the expected pH
D) All of these

Q.172 What happens as the temperature of a gas increases?
A) Every gas molecule now moves faster than any molecule did before
B) None of the gas molecules experiences a change in velocity
C) The average molecular velocity increases
D) When gas molecules collide, they lose energy

Q.173 At equilibrium in this gaseous system $2A + B \rightleftharpoons 2C + D$; [A] = 2.00, [B] = 1.20, [C] = 3.00, and [D] = 0.600. What is the numerical value of the equilibrium constant?
A) 4.32
B) 1.33
C) 1.13
D) 0.889

Q.174 Strength of an acid can be determined by
A) PK_a
B) POH
C) PK_a
D) PK_a

Q.175 If 'Ka' for an acid is higher, the stronger is the acid; relate the strength of an acid with pKa: (2011)
A) Higher pKa, weaker acid
B) pKa has no relation with acid strength
C) Lower pKa, stronger the acid
D) Both a &c

Q.176 Which expression represents the equilibrium constant for this equation?
$2NO_{(g)} + O_{2(g)} \rightleftharpoons 2NO_{2(g)}$
A) $\frac{[NO][O_2]}{[NO_2]}$
B) $\frac{[NO_2]}{[NO][O_2]}$
C) $\frac{[NO]^2+[O_2]}{[NO_2]^2}$
D) $\frac{[NO_2]^2}{[NO]^2[O_2]}$

Q.177 For the reaction, $2NO_{2(g)} \rightleftharpoons N_2O_{4(g)}$, which value of the equilibrium constant indicates the greatest conversion to products?
A) 1.5×10^{-4}
B) 1.8×10^{-2}
C) 4.1×10^{-1}
D) 8.7×10^{-1}

Q.178 Formation of NH_3 is a reversible and exothermic process, what will happen on cooling? (2012)
A) More reactant will form
B) More H_2 will be formed
C) More N_2 will be formed
D) More product (NH_3) will be formed

Q.179 Which reaction will proceed in forward direction to attain equilibrium state:
A) $K_c = 10$
B) $K_c = 10^2$
C) $K_c = 10^{-4}$
D) $K_c = 10^{-7}$

Q.180 During the manufacture of nitric acid, nitric oxide is oxidized to nitrogen dioxide. This reaction is given as: (2015)
$2NO_{(g)} + O_{2(g)} \rightarrow 2NO_{2(g)} \quad \Delta H = -114kJ/mol$
According to Le Chatelier's Principle
A) Reaction must not be temperature dependent
B) Reaction must be carried out at room temperature
C) Reaction must be carried out at low temperature
D) Reaction must be carried out at high temperature

Q.181 At a certain temperature, the equilibrium constant of this reaction equals 0.018:
$2HI_{(g)} \rightleftharpoons H_{2(g)} + I_{2(g)}$
If the concentration of HI is 1.6×10^{-2}mol/L and the concentration of H_2 is 2.9×10^{-3}mol/L, what is the concentration of I_2?
A) 1.6×10^{-3}mol/L
B) 1.8×10^{-2}mol/L
C) 9.9×10^{-2}mol/L
D) 1.0×10^{1}mol/L

Q.182 For the reaction, $2NO_{2(g)} \rightleftharpoons N_2O_{4(g)}$, which value of the equilibrium constant indicates the largest concentration of N_2O_4?
A) 0.87
B) 0.41
C) 0.15
D) 0.018

Q.183 Almost forward reaction is complete when value of K_c is:
A) Very high
B) neither large nor very small
C) very small
D) zero

Q.184 If we increased the pressure in decomposition of PCl_5 will favours the reaction
A) forward direction
B) equilibrium direction
C) backward direction
D) none

Q.185 Water is a neutral compound but when an acid added to it, then in the resulting solution:
A) $[OH^-] < [H^+]$
B) $[H^+] < [OH^-]$
C) $[OH^-] = [H^+]$
D) $[OH^-] = [H^+]$

Q.186 The acid is moderately strong when the value of Ka is:
A) Greater than 10^{-5}
B) 1 to 10^{-5}
C) less than 1
D) none of given

Q.187 What is the relation between Kw and temperature?
A) Kw is independent of temperature
B) Kw is directly proportional to temperature
C) Kw is inversely proportional to temperature
D) Kw is inversely proportional to square root of temperature.

Q.188 When 1 mole of water is dissociated into ions at 25°C, what should be the suitable value?
A) 10^{-9}
B) 10^{-4}
C) 10^{-5}
D) 10^{-14}

Q.189 Which statement is incorrect?
A) Stronger the acid, weaker its conjugate base
B) Stronger the conjugate acid, weaker its acid
C) Weaker the conjugate base, stronger its acid
D) Weaker the base, stronger its conjugate acid.

Q.190 K_a value for H_2S is 1.0×10^{-7}? What will be its pK_a?
A) -9
B) 7
C) 10^{-3}
D) 10^{-7}

Q.191 How catalysts decrease the activation energy?
A) By changing path of reaction
B) by reacting with reactants
C) by giving energy to reactants
D) none of given

Q.192 In which gaseous equilibrium more products will be formed by increasing pressure?
A) $N_2 + 3H_2 \rightarrow 2NH_3$
B) $N_2 + O_2 \rightarrow 2NO$
C) $PCl_5 \rightarrow PCl_3 + Cl_2$
D) $H_2 + I_2 \rightarrow 2HI$

Q.193 The solubility of a less soluble salt in water is:
A) Increased by the addition of more soluble salt
B) Decreased by the addition of less soluble salt having a common ion.
C) Decreased by the addition of less soluble salt having a common ion.
D) Decreased by the addition of more soluble salt having a common ion.

Q.194 From solubility product value we can calculate:
A) Solubility of a solute
B) Both 'a' and 'b'
C) concentration of individual ions
D) None of these

Q.195 Maximum yield of NH_3 can be achieved by:
A) Low pressure, low temperature and continual removal of N_2
B) High temperature, low pressure and continual addition of NH_3
C) High pressure, low temperature and continual removal of NH_3
D) High temperature, high pressure and continual removal of H_2

Q.196 The catalyst used in NH_3 synthesis by Haber's process is the pieces of iron crystals embedded in a fused mixture of:
A) Cr_2O_3. MgO. PbO_2
B) MgO. $Al_2O3.SiO_2$
C) Al_2O_3. NiO.CO_2
D) ZnO. Cr_2O_3. SiO_2

Q.197 The solubility of those salts increases with increase in temperature which have?
A) ΔH = -ve
B) ΔH = +ve
C) $\Delta H = 0$
D) none of given

Q.198 Human blood maintains it pH between: (2016)
A) 6.50 - 7.00
B) 7.20 - 7.25
C) 7.50 - 7.55
D) 7.35 - 7.40

Q.199 Value of K_{sp} for $PbSO_4$ system at 25 °C is equal to: (2016)
A) 1.6 x 10-5 mol^2dm^{-6}
B) 1.6 x 10-6 mol^2dm^{-6}
C) 1.6 x 10-8 mol^2dm^{-6}
D) 1.6 x 10-7 mol^2dm^{-6}

Q.200 For which of the following eq
A) $N_2 + 3H_2 \rightarrow 2NH_3$
B) $SO_2 + 2O_2 \rightarrow 2S_3O$

Q.201 $Ca(OH)_2$ is sparingly soluble
A) 2.75×10^{-2}
B) 2.75×10^{2}

Q.202 According to Lowry – Bron
A) A salt
B) An Acid

Q.203 Which of the following rea
A) $2NO + Cl_2 \leftrightarrow 2NOCl$
B) $2SO_2 + O_2 \leftrightarrow 2SO_3$

Q.204 The equation $N_{2g} + 3H_{2g}$
A) Contact process
B) Haber's process

Q.205 For a gaseous phase rea
equal:
A) The values of K_P and K
B) The value of K_P is grea

Q.206 Purification of table sa
solution is an example
A) Law of mass action
B) Hess's law

Q.200 For which of the following equilibrium reaction, Kc has no units: (2017)
A) $N_2 + 3H_2 \rightarrow 2NH_3$
B) $SO_2 + 2O_2 \rightarrow 2S_3O$
C) $CO + H_2O \rightarrow CO_2 + H_2$
D) $2NO_2 + O_2 \rightarrow 2NO_3$

Q.201 $Ca(OH)_2$ is sparingly soluble having solubility value 6.5 x 10-6. What'll be its solubility: (2017)
A) 2.75×10^{-2}
B) 2.75×10^{2}
C) 1.17×10^{-2}
D) 3.63×10^{3}

Q.202 According to Lowry – Bronsted Acid and Base Concept, H2O is (2018)
A) A salt
B) An Acid
C) A Base
D) An amphoteric Species

Q.203 Which of the following reaction has greater K_p than K_c ($K_p > K_c$)? (2020)
A) $2NO + Cl_2 \leftrightarrow 2NOCl$
B) $2SO_2 + O_2 \leftrightarrow 2SO_3$
C) $2\ NOCl \leftrightarrow 2NO + Cl_2$
D) $N_2 + 3H_2 \leftrightarrow 2NH_3$

Q.204 The equation $N_{2g} + 3H_{2g} \approx 2NH_{3g}$ represents: (2020)
A) Contact process
B) Haber's process
C) Solvay process
D) Avogadro's law

Q.205 For a gaseous phase reaction, when number of moles of reactants and products are equal: (2020)
A) The values of K_p and K_c are different
B) The value of K_p is greater than K_c
C) The value of K_c is greater than K_c
D) The values of K_p and K_c are the same

Q.206 Purification of table salt (NaCl) by passing HCl gas through its saturated aqueous solution is an example of: (2020)
A) Law of mass action
B) Hess's law
C) Common ion effect
D) Henry's law

ANSWERS

1.	B	2.	B	3.	D	4.	A	5.	A	6.	D	7.	B	8.	A	9.	A	10.	C
11.	D	12.	A	13.	A	14.	A	15.	D	16.	B	17.	A	18.	A	19.	B	20.	D
21.	A	22.	A	23.	B	24.	D	25.	D	26.	D	27.	C	28.	B	29.	B	30.	A
31.	B	32.	A	33.	A	34.	C	35.	C	36.	B	37.	D	38.	D	39.	B	40.	D
41.		42.	A	43.		44.	C	45.	D	46.	C	47.	C	48.	C	49.	D	50.	D
51.	B	52.	D	53.	B	54.	B	55.	B	56.	C	57.	B	58.	D	59.	B	60.	D
61.	A	62.	A	63.	D	64.	D	65.	D	66.	C	67.	B	68.	A	69.	B	70.	C
71.	D	72.	C	73.	C	74.	B	75.	C	76.	B	77.	B	78.	A	79.	A	80.	B
81.	C	82.	D	83.	C	84.	D	85.	D	86.	B	87.	C	88.	C	89.	B	90.	B
91.	D	92.	C	93.	B	94.	D	95.	D	96.	C	97.	C	98.	D	99.	D	100.	D
101.	B	102.	B	103.	A	104.	C	105.	A	106.	B	107.	C	108.	C	109.	C	110.	C
111.	B	112.	D	113.	C	114.	B	115.	A	116.	A	117.	B	118.	A	119.	A	120.	C
121.	C	122.	C	123.	D	124.	A	125.	D	126.	B	127.	D	128.	C	129.	B	130.	C
131.	B	132.	B	133.	C	134.	D	135.	A	136.	B	137.	D	138.	B	139.	A	140.	A
141.	D	142.	A	143.	C	144.	B	145.	D	146.	C	147.	D	148.	A	149.	A	150.	A
151.	C	152.	B	153.	C	154.	C	155.	B	156.	C	157.	B	158.	D	159.	D	160.	C
161.	C	162.	A	163.	C	164.	D	165.	D	166.	C	167.	A	168.	B	169.	C	170.	A
171.	A	172.	C	173.	C	174.	A	175.	D	176.	D	177.	D	178.	D	179.	C	180.	C
181.	A	182.	A	183.	A	184.	C	185.	A	186.	B	187.	B	188.	D	189.	B	190.	B
191.	A	192.	A	193.	D	194.	B	195.	C	196.	B	197.	B	198.	D	199.	C	200.	C
201.	C	202.	D	203.	C	204.	B	205.	D	206.	C	207.		208.		209.			

Q.1 The half-life of fran
this isotope to deca
A) 4.75 minutes
B) 9.5 minutes

Q.2 An equilibrium con
A) one that will yield
B) very favorable an
C) not very favorabl
D) This number doe

Q.3 If the concentrati
be _?_ times as f
A) 1/3
B) 2

Q.4 The log of the ra
A) Directly propor
B) Inversely prop
C) Not affected b
D) None of these

Q.5 Which of the fo
A) Rusting of iro
B) Decompositio

Q.6 A physical me
A) Neutralizatio
B) precipetatio

Q.7 K(Rate const
A) 1 atm & 25
B) 101325 Nm

Q.8 The order of
A) 2
B) 1

Q.9 Considered
A) Third
B) Second

Q.10 Which of
A) Chang
B) Chang

Q.11 The unit
is:
A) 3
B) 0

Q.12 If rate
A) Reac
B) Prod
C) Rea
D) Rea

Q.13 The e
A) 1
B) 2

Q.14 Rate
A) Fr
B) C
C) It
D) E

REACTION KINETICS

Q.1 **The half-life of francium-212 is 19 minutes. How many minutes will it take for 1 gram of this isotope to decay to 0.125 grams?**
A) 4.75 minutes
B) 9.5 minutes
C) 38 minutes
D) 57 minutes

Q.2 **An equilibrium constant of 1 for a reaction means that the reaction is...**
A) one that will yield 50% products and 50% reatants left over
B) very favorable and proceeds to mostly products with very little reactants left over
C) not very favorable and will not form very much product
D) This number does not relate to the favorability

Q.3 **If the concentration of a reactant in a chemical reaction is tripled, the reaction rate will be _?_ times as fast.**
A) 1/3
B) 2
C) 3
D) The reaction rate will stay the same

Q.4 **The log of the rate constant of a reaction is:**
A) Directly proportional to temperature changes
B) Inversely proportional to temperature
C) Not affected by temperature
D) None of these

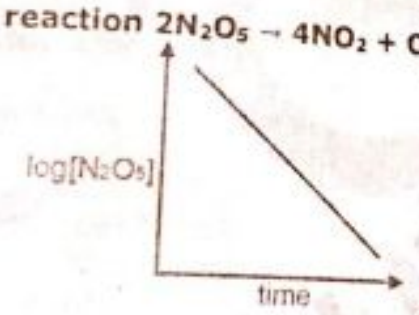
Q.5 **Which of the following reaction rate is measureable rate?**
A) Rusting of iron
B) Decomposition of $CaCO_3$
C) weathering of rocks
D) None

Q.6 **A physical method to measure reaction rate:**
A) Neutralization
B) precipetation
C) Conductometric method
D) None

Q.7 **K(Rate constant) is measured at :**
A) 1 atm & 25C°
B) 101325 Nm^{-2} & 298K
C) 760 torr & 25C°
D) All

Q.8 **The order of Nitrogen dioxide decomposition is :**
A) 2
B) 1
C) 0
D) 3

Q.9 **Considered the reaction $2N_2O_5 \rightarrow 4NO_2 + O_2$. What is the order of this reaction**



A) Third
B) Second
C) First
D) None of these

Q.10 **Which of the following may affect the rate constant (K) for a reaction?**
A) Change in concentration
B) Change in pressure
C) Change in pH
D) Change in temperature

Q.11 **The unit of rate constant K is $mole^{-1}\ dm^3\ s^{-1}$ for a chemical reaction, the order of reaction is:**
A) 3
B) 0
C) 1
D) 2

Q.12 **If rate law of an equation is written as: $\frac{-dx}{dt} = K[A][B]$?**
A) Reaction is independent of the concentration of A and B
B) Product is decreasing with passage of time
C) Reactant is decreasing with passage of time
D) Reactant is increasing with passage of time

Q.13 **The example of a photochemical reaction is photosynthesis, its order of reaction is:**
A) 1
B) 2
C) 0
D) 3

Q.14 **Rate law of an equation is obtained:**
A) From a balanced equation
B) Can be claculated theoretically as well as determined experimentally
C) It is only calculated theoretically
D) Experimentally

Q.15 **A pseudo uni-molecular reaction has order of reaction:**
A) 3
B) 2
C) 1
D) 0

Q.16 **The rate equation for a reaction is Rate = K[A]. what are units of K?**
A) $mol^{-1} dm^3 s^{-1}$
B) $mol\ dm^{-3} s^{-1}$
C) $mol\ dm^{-3}$
D) s^{-1}

Q.17 **The unit of the rate constant is the same as that of rate of reaction in:**
A) Third order reaction
B) Second order reaction
C) First order reaction
D) Zero order reaction

Q.18 **Half life period of a first order reaction is independent of:**
A) Presence of catalyst
B) Conditions of temperature
C) Initial concentration of the compound
D) All of above

Q.19 **The rate of reaction between two specific time intervals is called:**
A) Instantaneous rate of reaction
B) Average rate of reaction
C) Rate of a reaction
D) Minimum rate of a reaction

Q.20 **Dilatometer method is useful for the reaction that involve:**
A) Small volume changes in solutions
B) Change in refractive indices
C) Where reactants absorb U.V, visible or infrared radiation
D) Ionic species

Q.21 **The rate of reaction:**
A) Decreases as the reaction proceeds
B) Increases as the reaction proceeds
C) May decrease or increase as the reaction proceeds
D) Remains same as the reaction proceeds

Q.22 **The activation energy of a reaction is usually:**
A) Zero for exothermic reactions
B) Different for forward and backward reaction
C) Unaffected by the presence of a catalyst
D) Low for reaction that takes place slowly

Q.23 **The energy of activation of forward reactionis less than that of backward reaction in:**
A) Exothermic reactions
B) Isothermic reactions
C) Endothermic reactions
D) All reactions

Q.24 **A reaction has equal activation energy for forward and backward reaction which statement is correct:**
A) Enthalpy change is zero
B) Reaction is of zero order
C) Product has less energy than reactants
D) No catalyst has been used

Q.25 **In zero order reaction, the rate is independent of:**
A) Concentration of products
B) Concentration of reactants
C) Pressure of reaction
D) Temperature of reaction

Q.26 **Combustion occurs slowly in air but more rapidly in pure oxygen at same pressure:**
A) Concentration of oxygen has risen
B) Pure oxygen exerts more pressure
C) Reactivity of pure oxygen is more than oxygen of air
D) All of above

Q.27 **The substance that alters the rate of a chemical reaction but recovered unchanged at the end is called a:**
A) Catalyst
B) Reactant
C) Product
D) Promoter

Q.28 **The rate constant of a reaction depends on?**
A) temperature
B) mass
C) weight
D) time

Q.29 **The specific rate constant of a frist order reaction depend on ?**
A) concentration of the reactant
B) concentration of the product
C) Time
D) Temperature

Q.30 **The rate low for a reaction A + B →Product rate = $k [A]_1 [B]_2$. Which on of the following statements is false?**
A) of [B] is held constant while [A}
B) if [A] and [B] are both doubled, the reaction will proceed 8 time as fast
C) if [A} is held constant while [B] is reduced to one quarter, the rate will be halved
D) this is a third order reaction

Q.31 **The rate at which a substance reacts depends on its?**
A) Atomic weight
B) equivalent weight
C) Molecular weight
D) Mass

Q.32 For a certain decomposition, the rate is 0.30 M Sec^{-1} when the concentration of reactant is 0.20 M. if the reaction is second order, the rate (in M sec^{-1}) when concentration is increased 3 fold is?
A) 0.30
B)0.90
C) 0.60
D)2.70

Q.33 A 10° rise in temperature doubles the rate of reaction. This is because more molecules obtain?
A) activation energy
B) A catalyst
C) A new reaction path.
D) the rate = determining step

Q.34 The unit of rate constant for zero order reaction is?
A) litre sec^{-1}
B) lite $mole^{-1}$ sec^{-1}
C) mole $litre^{-1}$
D) mole se^{-1}

Q.35 In Arrhenius equation, the fraction of effective collisions is given by ?
A) $k = Ae^{-Ea/RT}$
B) A
C) $e^{-Ea/RT}$
D) none of these

Q.36 A zero order reaction one ?
A)whose rate is affected by concertation
B) in which reactants do not react
C) in which concentration of the reactants do not change with time
D) in which one of the reactant sis in large excess.

Q.37 For a first order reaction A →Product the concentration of [A] is reduced from M to 0 125 M in one hour, the $t_{1/2}$ of this reaction (in sec) is.?
A) 600
B)300
C) 1200
D)0.6963/1200

Q.38 For the chemical reaction A→B, it is found that the rate of reaction doubles when the concentration of A for this reaction is?
A) Two
B) one
C) Half
D) Zero

Q.39 For the reaction H_2 (g) + Br_2 = 2HBr(g) , the reaction rate = K[H_2] [Br] . which of the following statement is true about this reaction?
A) the reaction is of second order
B) Molecularity of the reaction is 3/2
C) the unit of K is sec^{-1}
D) Molecularity of the reaction is 2

Q.40 The half – life period for a certain first order reaction is 30 minutes. how long will it take for 1/32 of the reactant to be left behind?
A) 60 Min
B) 120 min
C) 90 min
D) 150 min

Q.41 In the reaction x + y → XY, If the concentration of X and Y are doubled, the rate of reaction will?
A) increase four time
B) increase two times
C) Decrease two times
D) decrease to one half

Q.42 Which order reaction obeys the expression $t_{1/2} = 1/ka$?
A) first
B) Second
C) third
D) Zero

Q.43 Which of the following statement is correct for a reaction X+ Y2 → Products , irrespective of order of reaction?
A) the rate of is disappearance of X = Twice
B) The rate of appearance of X products = twice the rate of disappearance of Y
C) The rat o disappearance of X = Rate of appearance of Products
D) The rate of appearance of Products = $\frac{2}{1}$ the rate of disappearance of X.

Q.44 The rate Constant (K) for the reaction 2A + B → Product was found to be 2.5 X 10^{-5} lit $mole^{-1}$ sec^{-1} after 15 sec 2.60 X 10^{-5} lit $mole^{-1}$ sec^{-1} after 30 sec and 2.55 X 10^{-5} lit mole $^{-1}$ sec^{-1} after 50 Sec. The order of reaction is?
A) Two
B) Three
C) Zero
D) One

Q.45 A graph between time t and substance consumed at any time (X) is found to be a straight line through the origin. This indicates that reaction is of?
A) Frist order
B) zero order
C) Third order
D) second order

Q.46 Under a given set of experimental conditions with increase in concentration of the reactions the rate of a chemical reaction ?
A) Increase
B) Decrease
C) Remains unchanged
D) Frist decrease and then increase

Q.47 The unit of rate constant is same as that of rate of reaction of ?
A) first order
B) zero order
C) second order
D) all are wrong

Q.48 The half-life period for a reaction at initial concentrations of 0.5 and 1.0 moles litre-1 are 200 sec and . 100 sec respectively. The order of the reaction is ?
A) zero
B) 1
C) 2
D) 3

Q.49 Tune required to decompose half of the substance for nth order is inversely proportional?
A) d^n
B) d^{n-1}
C) d^{n-1}
D) d^{n+1}

Q.50 Plot if log (a – X) against time t is straight line graph. This indicates that reaction of ?
A) second order
B) first order
C) zero order
D) third order

Q.51 If the rate of reaction becomes 2 times for every 10°X rise in temperature, by what factor the rate of reaction increase when temperature is increase form 30°C to 80°C?
A) 16
B)64
C) 64
D) 128

Q.52 If the concertation unit are reduced by M times, then the value of rat constant of first order will?
A) increase by M times
B) Decrease by Factor of M
C) No change
D) None

Q.53 The half time of first order is $t_{1/2}$ the half period will?
A) increase with increase in temp
B) Decrease with in crease in temp
C) remains unaffected
D) None

Q.54 In the reaction A→ B, if the concertation of reactant is increased by 4 times, the rate of reaction is increased by two times. The order of reaction is?
A) 0 5
B) 1
C) 2
D) 0

Q.55 Zero order reaction means?
A) one reactant will be more in it
B) Rate of reaction is proportional to velocity of molecules
C) Reactants do not participate in it
D) Reactant concentrations do not change with time

Q.56 The rate constant for a reaction is 10.8×10^{-5} mole lit^{-1} sec^{-1}. The reaction is?
A)first order
B) zero order
C) second order
D) half order

Q.57 According to Collison theory of reaction rates ?
A) every to Collison theory between o reactant lead to chemical reaction
B) Rat or reaction is proportional to velocity of molecules
C) all reaction which occur in gaseous phase are zero order reactions
D) Rate of reaction is proportional to number of Collison per second.

Q.58 The rate expression for a chemical reaction?
$2NO_2F \rightarrow 2NO_2 + F_2$ is given by rate = k [NO_2F] . the rate determining step may be?
A) $2NO_2F \rightarrow 2NO_2 + F_2$
B) $NO_2F + F \rightarrow NO_2 + F_2$
C) $NO_2F \rightarrow NO_2 + F$
D) $NO_2 + F \rightarrow NO_2F$

Q.59 For nth order reaction, the half-life period $t_{1/2}$ is proportional to initial concertation as?
A) $\frac{1}{a^n}$
C) a^{n-1}
C) an^{-1}
D) $\frac{1}{an-1}$

Q.60 In order to react, a molecule at the time of collision must have a minimum energy know as?
A) free energy
B) kinetic energy
C) activation energy
D)internal energy

Q.61 The power to which the on centration of a substance appears in the rate expression known as?
A) Rate of reaction
B) molecularity of reaction
C) order of reaction
D) order of reaction w.r.t that substance

Q.62 Which of the following in first order reaction?
A)$NH_4NO_2 \rightarrow N_2 + 2H_2O$
B) $2HI \rightleftharpoons H_2 + I_2$
C) $2NO_2 \rightarrow 2H(+ NO_2$
D) $2NO + O_2 \rightarrow 2NO_2$

Q.63 The rate of reaction between A and B increase by a factor of 100, when the concertation of A is increased by 10 fold. the order of reaction with respect to A is >
A) 10
B)1
C) 4
D)2

Q.64 The temperature coefficient of most of the reaction les between?
A) 1 and 3
B) 4 and 4
C) 2 and 3
D) 2 and 4

Q.65 The rate of cetain r
ltre-1 sec -1
0 2.8 x
10 2.78
20 2.81
30 2.79
The reaction is?
A) zero order
B) second order

Q.66 The hydrolysis of
$CH_3COOC_2H_5 = H_2O$
A) first order
B)n seconder orde

Q.67 The following da
Vol. of N_2 in cc.
6..25
9.00
11.40
13.65
35.05
The order reac
A) zero
B) one

Q.68 The rate for t
rate of the re
A) Doubled on
B) Halved on
C) Decreased
D) unaffected

Q.69 In the prese
0.20 to 0 1
A) Zero orde
B) first orde

Q.70 According
A) Number
B) concent
C) number
D) numbe

Q.71 The rete
A) Energy
B)some o
C) some
D) all are

Q.72 Which o
A) a fast
B) for a
C) for a
D) the h

Q.73 The eff
A) Arrh
B) gibb

Q.74 Half l
A) ind
B) inv
C) dir
D) Di

Q.75 The
A) th
B) ac

Q.76 Acc
A) c
B) a
C) a
D)

Q.65 The rate of cetain reaction (dc/dt) at different times are as follows. Time Rate (Mole litre-1 sec -1

0	2.8 x10^{-2}
10	2.78x 10^{-2}
20	2.81 x 10^{-2}
30	2.79 x 10^{-2}

The reaction is?
A) zero order
B) second order
C) first order
D) third oder

Q.66 **The hydrolysis of ethyl acetate?**
$CH_3COOC_2H_5 + H_2O \longrightarrow CH_3COOH + C_2H_5OH$
A) first order
B)n seconder order
C) third order
D) zero order

Q.67 **The following data are for the decomposition of ammonium in aqueous solution?**

Vol. of N_2 in cc.	Time in minutes
6..25	10
9.00	15
11.40	20
13.65	20
35.05	initially

The order reaction is ?
A) zero
B) one
C) tw0
D) zero order

Q.68 **The rate for the reaction RCl + NaOH (aq) → ROH + NaCl is given by Rate = K1 [RC] the rate of the reaction will be ?**
A) Doubled on doubling the concentration of NaOH
B) Halved on reducing the concentration of RCI to on half
C) Decreased on increasing the temperature of the reaction
D) unaffected by increasing the temperature of the reaction

Q.69 **In the presence of an acid, the initial concertation of cane sugar wars reduced from 0.20 to 0 10 molar in 5 hours and 0. 05 molar in 10 hours. The reaction is of?**
A) Zero order
B) first order
C) second order
D) third order

Q.70 **According to the collision theory, rate of reaction is equal to ?**
A) Number of collision
B) concentration of reactants.
C) number of effective collisions
D) number o collisions between reactants and products

Q.71 **The rete of the chemical reaction depends on the nature of chemical reactants, because?**
A) Energy of activation differs from on reactant to another
B)some of the reactants ae solid at room temperature
C) some of the reactants are colored
D) all are correct

Q.72 **Which of the following statements is false?**
A) a fast reaction has a larger rate constant and short half - life
B) for a first order reaction succession half-lives are equal
C) for a first order reaction, the half-life is independent of concentration
D) the half-life of a reaction is half the time required for the reaction to go to completion

Q.73 **The effect of temperature on the reaction rate is given by ?**
A) Arrhenius equation
B) gibbs Helmholtz equation
C) Kirchhoff ' equation
D) None

Q.74 **Half life period of a zero order reaction is ?**
A) independent of concentration
B) inversely proportional to concentration
C) directly proportional to initiaol concentration
D) Directly proportional to the Square of the concentration

Q.75 **The minimum energy necessary to permit a reaction to take place is?**
A) threshold
B) activation energy
C) free energy
D) kinetic energy

Q.76 **According to collision theory?**
A) collisions are sufficiently violent
B) all collisions are effective
C) all collision are responsible for reaction
D) only ighly energetic molecules have enough energy to react.

Q.77 **The rate of reaction between two atoms A and B is expressed a $^{dx}/_{dt} = k [A] [B]^2$ doubling the concentration of both the reactants A and B, the reaction rate is increased?**
A) CO is smaller in size that that of NO
B) the activation energy for the reaction $2NO + O_2 \rightleftarrows 2NO_2$
C) CO is poisonous
D) the intrinsie enrgy o the reaction $2NO + O_2 \rightleftarrows 2NO_2$ is less

Q.78 **Which is the fastest reaction**
A) Rusting of iron
B) Addition of Silver nitrate into sodium chloride solution
C) Hydrolysis
D) Fermentation of sugars

Q.79 **Half life of 3rd order reaction is related as**
A) $[t_{1/2}] \propto a$
B) $[t_{1/2}] \propto a^{-1}$
C) $[t_{1/2}] \propto a^{0}$
D) $[t_{1/2}] \propto a^{-2}$

Q.80 **Those substances which slow down a reaction are called?**
A) Accelerator
B) Inhibitors
C) Co-enzyme
D) Catalyst

Q.81 **Decomposition of formic acid into CO_2 and H_2 is catalyzed by:**
A) Cu
B) FeO_3
C) Al_2O_3
D) Both 'a' and 'b'

Q.82 **Glucose can be converted into ethyl alcohol during fermentation by the action of**
A) Diastase
B) Zymase
C) Invertase
D) Maltase

Q.83 **Which statement is incorrect**
A) Enzymes are biological catalyst
B) Enzymes can be crystallized
C) Enzymes are highly specific
D) Enzyme can resist the radiation

Q.84 **With increase of 10 K the rate of reaction doubles. This increase in the rate of reaction is due to**
A) decrease in activation energy of reaction
B) decrease in the number of collisions b/w reactants molecules
C) increase in activation energy of reactants
D) increase in number of effective collisions

Q.85 **The sum of the exponents of the conc. terms in the rate equation is called**
A) rate of reaction
B) specific rate constant
C) order of reaction
D) average rate

Q.86 **The Function of catalyst is**
A) To decrease Ea
B) To increase rate of forward as well as reverse reaction
C) To a accomplish equilibrium more quickly
D) All of these

Q.87 **When potential energy of the transition state is very high then which one of the result is prevailing?**
A) Low Ea and fast rate
B) Low Ea and slow rate
C) High Ea and slow rate
D) High Ea of faster rate

Q.88 **Log K = log $A^{-Ea/2.303RT}$, considering above equation which is incorrect:**
A) $K \propto T$
B) Value of A is independent of reactants and products
C) $K \propto 1/Ea$
D) $K \propto E_a$

Q.89 **Generally increase in temperature results in:**
A) Decrease of rate of exothermic reaction
B) Decrease of rate of endothermic reaction
C) Increase of rate of any reaction whether the reaction is an endothermic or exothermic
D) Decrease in number of effective collision

Q.90 The disintegration of radioactive $^{235}_{92}U$ has a half life of 710 million years. What will be amount of $^{235}_{92}U$ left behind after three half lives if initial amount of $^{235}_{92}U$ is 1Kg.
A) 500g
B) 250g
C) 125g
D) 62.5g

Q.91 The activation energy of forward reaction (E_{a_f}) is 75KJmol^{-1} and activation energy of reverse reaction (E_{a_r}) is 50 KJmol^{-1}.What will be enthalpy change for this reaction?
A) +25 KJmol^{-1}
B) -25 KJmol^{-1}
C) +125 KJmol^{-1}
D) -125 KJmol^{-1}

Q.92 It is experimentally found that a catalyst is used to:
A) Lower the activation energy
B) Increase the activation energy
C) Lower the pH
D) Decrease the temperature of reactants (2011)

Q.93 The rate of reaction
A) increases as the reaction proceeds
B) decreases as the reaction proceeds
C) remains the same as the reaction proceeds
D) may decrease or increase as the reaction proceeds

Q.94 In the reaction $S + T \longrightarrow$ Product if 'T' is taken in excess, then it is an example of
A) First order reaction
B) Zero order reaction
C) Pseudo first order reaction
D) Second order reaction

Q.95 Chemical kinetics deals with
A) Rate of reaction
B) Mechanism of the reaction
C) Factors affecting the reaction rate
D) All of these

Q.96 All kind of volumetric analysis methods are considered as _____ methods to study the reaction rate.
A) Physical
B) Numerical
C) Chemical
D) Non Valuable

Q.97 The energy of activation of forward reaction is less than that of backward reaction in:
A) Endothermic reactions
B) Isotherm reaction
C) Exothermic reaction
D) none of the above

Q.98 Which of the following chemical reaction has fractional order
A) Conversion of chloroform
B) Reduction of nitric oxide
C) Hydrolysis of ester
D) Thermal decomposition of N_2O_5

Q.99 $2A_{(g)} + B_{(g)} \rightleftharpoons C_{(g)} + D_{(g)}$. In this gaseous mixture, concentration of all is doubled, then equilibrium constant becomes
A) Half
B) Trice
C) Doubled
D) Remains the same

Q.100 Arrehenius equation describe the effect of
A) temp on rate of reaction
B) pressure on rate of reaction
C) volume on rate of reaction
D) all of above

Q.101 The addition of small amount of catalyst in a reaction is called
A) Catalytic deactivation
B) Both a & b
C) Catalytic poisoning
D) None

Q.102 The specific rate for a reaction is 1.0 × 10^{-4} mol dm^{-3}s^{-1} the order of reaction is
A) Zero
B) First
C) Second
D) Third

Q.103 the rate of decay of a radioactive substance 'Y' isotope decrease from 200 counts per minutes (cpm) to 25 counts per minutes (cpm) after 24hours what is the half life
A) four hours
B) Eight hours
C) Six hours
D) Three hours

Q.104 For a radioactive substance, Half-life period of a first order reaction is independent of:
A) Initial concentration of the reactant
B) Presence of catalyst
C) Conditions of temperature
D) All the above

Q.105 Decomposition of Ozone takes place according to the following equation to the following equation:
$2O_{3(g)} \rightarrow 3O_{2(g)}$ Rate equation for the reaction is Rate $K = [O_3]^2 [O_2]^{-1}$
What is the order of the reaction?
A) 3
B) 2
C) zero
D) 1

Q.106 For the reaction $2HI \rightleftharpoons H_2 + I_2$, the initial concentration of HI is 0.05M and K=0.02 $dm^3 mol^{-1}s^{-1}$ and the rate law is Rat $=k[HI]^2$, Then the half life of this reaction will be
A) 250 sec
B) 500 sec
C) 1000 sec
D) 2000 sec

Q.107 Which is the correct rate equation deduced from the data in the table

Sr. No.	[X]	[Y]	Initial rate
1	0.1	0.1	0.02
2	0.1	0.2	0.04
3	0.2	0.1	0.04
4	0.2	0.2	0.08

A) Rate $= k[X]^2$
B) Rate $= k[X][Y]$
C) Rate $= k[X][Y]^2$
D) Rate $= k[X]^2[Y]$

Q.108 The rate of a reaction is denoted by
A) . dc/dp
B) dc/dT
C) dc/dv
D) dc/dt

Q.109 Decrease in concentration is denoted by
A) dc/dt
B) +dc/dt
C) – dc/dt
D) None

Q.110 Calculate the order of the following reaction $W_2 + 2L \longrightarrow 2ML$

$[W_2]$	[L]	d_x/d_t(mol $dm^{-3}s^{-1}$)
0.1M	0.2M	1×10^{-2}
0.2M	0.2M	2×10^{-2}
0.2M	0.4M	8×10^{-2}

A) Zero
B) Second
C) First
D) Third

Q.111 For $2A + B \longrightarrow$ product If $[A] = 2.0M, [B] = 2.0M$ rate of reaction is 16 $moldm^{-3}s^{-1}$ then rate constant would be
A) 8
B) 2
C) 64
D) 4

Q.112 Poisoning of a catalyst may be temporary or permanent, in permanent poisoning:
A) Catalyst react with reaction
B) Catalyst does not react with the poison
C) Catalyst reacts with product
D) Physical state of catalyst changes

Q.113 When rate of reaction is retarded by adding a substance, it is said to be:
A) Catalyst
B) Auto catalyst
C) negative catalyst
D) none of the above

Q.114 Which of the following is the zero order reaction
A) $NO_2 + CO \longrightarrow NO + CO_2$
B) $NO + O_3 \longrightarrow NO_2 + O_2$
C) $3FeCl_3 + 6KI \longrightarrow 2FeI_2 + 6KCl + I_2$
D) $6CO_2 + 6H_2O \longrightarrow C_6H_{12}O_6$

Q.115 In zero order reaction the rate is independent of
A) Temperature of the reaction
B) Intensity of light
C) Concentration of the reactants
D) Surface area of reactant

Q.116 If the reactant of product of a chemical reaction can absorb ultraviolet, visible or infra-red radiation then the rate of a chemical reaction can be best be measured by which one of the following methods? (2014)
A) Chemical method
B) Graphical method
C) Spectrometry
D) Differential method

Q.117 The number of atoms, molecules or Ions whose conc. determine the rate of reaction is called
A) Rate constant
B) Order of reaction
C) Value or reaction
D) None

Q.118 For a reaction $2X + Y \longrightarrow M + N$, the rate law $Rate = k[X]^2[Y]$. If concentration of [Y] is constant and [X] is rippled, the change in rate of reaction will be
A) 3 times
B) 6times
C) 9 times
D) 27 times

Q.119 Hydrolysis of R_3CB r proceeds in two step
A) $R_3CBr \longrightarrow R_3C^+ + Br^-(Slow)$
B) $R_3C^+ + OH^- \longrightarrow R_3COH(Fast)$

Q.120 Which of the following is the rate equation consistence to the mechanism
A) $Rate = k[R3CBr][H_2O]$
B) $Rate = k[R_3CBr]$
C) $Rate = k[R_3CBr]^2$
D) $Rate = k[R_3C^+][OH^-]$

Q.121 Activation energy is the gap between energy states of:
A) Reactants and products
B) Reaction and activated complex
C) Products and activated complex
D) reactants and activated complex

Q.122 Radioactive disintegration are usually:
A) Zero order
B) 2nd order
C) first order
D) 3rd order

Q.123 The unit of rate constant for the second order reaction is
A) mol $dm^{-3}s^{-1}$
B) $mol^{-1}dm^{-3}s^{-1}$
C) $mol^{-1}dm^{+3}s^{-1}$
D) $mol^{-2}dm^{+6}s^{-1}$

Q.124 Which statement is incorrect
A) Unit of rate is independent of order of reaction
B) Rate constant depends upon the temperature
C) The slowest step is rate determining step
D) Unit of rate constant for the zero order reaction is s^{-1}

Q.125 The reaction may be
A) Third order
B) Both a and b
C) Forth order
D) None of these

Q.126 When the change in concentration is 6×10^{-4} moldm^{-3} and time for the change is 10 sec, the rate of reaction will be: (2015)
A) 6×10^{-3} moldm^{-3} sec $^{-1}$
B) 6×10^{-2} moldm^{-3} sec $^{-1}$
C) 6×10^{-4} moldm^{-3} sec $^{-1}$
D) 6×10^{-5} moldm^{-3} sec $^{-1}$

Q.127 Which is the correct expression of Arrhenius equation
A) $k = ae^{Ea/RT}$
B) $k = Ae^{RT/Ea}$
C) $k = Ae^{Ea/T}$
D) $k = Ae^{-Ea/RT}$

Q.128 Hydrolysis of ethyl ethanoate is carried out in the presence of sulphuric acid and reaction is Pseudo first order reaction. What is function of sulphuric acid
A) To maintain pH
B) To ensure reaction reaches equilibrium
C) To dissolve ethyl ethanoate
D) To increase the reaction rate

Q.129 A process is said to be a homogenous catalysis when:
A) Both reactants and products in same phase
B) Both reactants and reacting substances are in same phase
C) Both products and catalyst in same phase
D) Reactants, products and catalyst all are in same phase

Q.130 When concentration of reactants is doubled then half-life period of first order reaction:
A) Does not change
B) Increase and become doubled
C) decrease to one half
D) decrease to one third

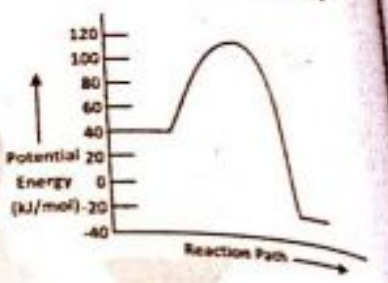
Q.131 What is the main reason for the increase in reaction rate with increasing temperature?
A) Activation energy increases rapidly with temperature
B) Heat acts as a catalyst
C) The fraction of high energy molecules increases exponentially
D) There is a dramatic increase in the number of collisions

Q.132 What is usually true concerning the activation energy of a reaction?
A) It is decreased by the addition of a catalyst
B) It is decreased by increasing the temperature of the system
C) It is equal to the ΔH of the reaction
D) It is equal to the sum of the energies of the reactants and products

Q.133 The rate of a reaction depends upon
A) P
B) Concentration
C) T
D) All of these

Q.134 Refractrometric method is used when
A) Reactions involving absorption of I.R. or U.V.
B) reactions involving change of refractive index
C) reactions involving ions
D) change of optical activity

Q.135 What activation energy is required for the forward reaction shown on the diagram?



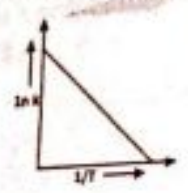
A) 40 kJ/mol
B) 100 kJ/mol
C) 80 kJ/mol
D) 120 kJ/mol

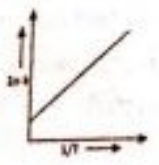
Q.136 Which conditions will cause a reaction to occur at the fastest rate?
A) high concentration of reactants and high temperature
B) high concentration of reactants and low temperature
C) low concentration of reactants and high temperature
D) low concentration of reactants and low temperature

Q.137 In optical rotation method the angle through which plane polarized light is rotated by the reaction mixture is measured by a:
A) Refractometer
B) Spectrometer
C) Polarimeter
D) Electrometer

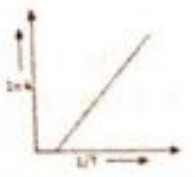
Q.138 The half-life of second order reaction is equal to:
A) $\frac{1}{K}$
B) $\frac{0.693}{K}$
C) $\frac{1}{Ka}$
D) $\frac{1.5}{Ka}$

Q.139 According to Arrhenius equation rate constant k is equal to $Ae^{-Ea / RT}$. Which of the following options represents the graph of ln k vs $\frac{1}{T}$?

A)


B)


C)


D)


Q.140 Consider the Arrhenius equation given below and mark the correct option.
$K = Ae^{-Ea / RT}$
A) Rate constant increases exponentially with increasing activation energy and decreasing temperature
B) Rate constant decreases exponentially with increasing activation energy and decreasing temperature
C) Rate constant increase exponentially with increasing decreasing activation energy and decreasing temperature
D) Rate constant increases exponentially with increasing decreasing activation energy and increasing temperature

Q.141 In the hydrolysis of $CH_3COOC_2H_5$ the acid produce act as
A) inhibitor
B) auto catalyst
C) catalyst
D) none of above

Q.142 If concentration time graph of a reactant indicates a constant half-life, then the order reaction with respect to that reactant is: (2018)
A) zero order
B) half order
C) second order
D) first order

Q.143 Which of the following statements is not correct about order of a reaction:
A) The order of a reaction can be a fractional number
B) Order of a reaction is experimentally determined quantity
C) The order of a reaction is always equal to the sum of the stoichiometric coefficients of reactants in the balanced chemical equation for a reaction
D) The order of a reaction is the sum of the powers of molar concentration of the reactants in the rate law expression

Q.144 Which of the following statement is not correct for the catalyst?
A) It catalyses the forward and backward reaction to the same extent
B) It alters ΔG of the reaction
C) It is a substance that does not change the equilibrium constant of a reaction
D) It provides an alternate mechanism by reducing activation energy between reactants and products

Q.145 The energy of activation always have _____ relationship with reaction rate:
A) direct
B) Exponential
C) inverse
D) None of these

Q.146 The unit of slope of the straight line obtained by plotting a graph between 1/T on x-axis and log K on y-axis, is:
A) K^{-1}
B) $K^{-}mol^{-1}$
C) $K_{mol^{-1}}$
D) K

Q.147 In general, what is the function of a catalyst?
A) to alter the activation energy and the reaction rate
B) to alter the heat content of the reactants
C) to oxidize unwanted waste products
D) to permit the reaction products to be filtered easily

Q.148 The activation energy for the decomposition of nitrosyl chloride is 100 kJ.
$NOC\ell_{(g)} \rightarrow NO_{(g)} + \frac{1}{2}C\ell_{2(g)} \Delta H = 38$ kJ
What is the activation energy for the reverse reaction?
A) 38 kJ
B) 62 kJ
C) 100 kJ
D) 138 kJ

Q.149 When a reaction proceeds in a sequence of steps, the overall rate is determined by:
A) Fastest step
B) Order of different steps
C) Slowest step
D) molecularity of the entire step

Q.150 $2NO_2 \rightarrow NO_2 + O_2$ **is order of reaction: rate α** $[NO_2]2$
A) Second
B) First
C) Third
D) zero

Q.151 The rate equation of the gaseous reaction $X_{(g)} + 2Y_{(g)} \longrightarrow Z_{(g)}$ **is** $Rate = [Y]^2[X]$ **If the pressure in the reaction vessels is doubled but the temperature remains constant then by what factor the rate of reaction increases**
A) Doubled
B) Quadrupled
C) Thrice
D) Remains the same

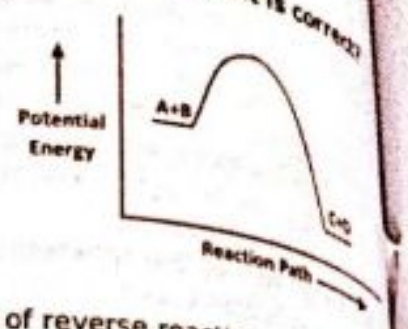
Q.152 What is the half life time of a radioactive substance if 75% of any given amount of the substance disintegrates in 100 minutes?
A) Fifty minutes
B) Ninety minutes
C) One hundred twenty minutes
D) Thirty minutes

Q.153 Electrical conductivity method is applied for rate determination when
A) reactants and products involve absorption of U.V. or I.R. radiation
B) reaction involving ions
C) reaction which involve change in refractive indices
D) reactions which involve small volume change

Q.154 The reaction rate in forward direction decreases with the passage of time because: (2012)
A) Concentration of reactants decrease
B) The order of reaction changes
C) Concentration of product decrease
D) Temperature of the system changes

Q.155 What is the detailed sequence of steps that leads to the net overall reaction called?
A) reaction coordinate
B) reaction mechanism
C) reaction potential
D) reaction rate law

Q.156 For the system described by the potential energy diagram, which statement is correct?



A) A and B or less stable than C and D
B) Activation energy for the forward reaction is greater than for the reverse reaction
C) The effect of a temperature change is greater for the forward reaction than for the reverse reaction.
D) The forward reaction is endothermic

Q.157 A catalyst:
A) Changes equilibrium position
B) Increases the rate of forward reaction and decreases the rate of reverse reaction.
C) Increases the rate of forward reaction
D) decreases the rate of both forward and reverse reactions.

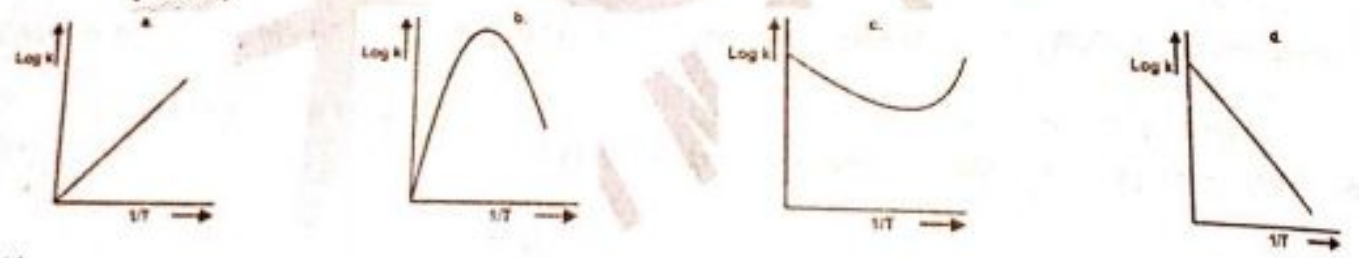
Q.158 Indicate the enzyme which catalyzes the following reaction?
$(NH_2)_2\,CO + H_2O \rightarrow 2NH_3 + CO_2$
A) Zymase
B) Urease
C) Invertase
D) Diastase

Q.159 In the presence of a catalyst, the heat evolved or absorbed during the reaction:
A) increases
B) decreases
C) remains unchanged
D) may increase or decrease

Q.160 Activation energy of a chemical reaction can be determined by:
A) determining the rate constant at standard temperature
B) determining the rate constants at two temperature
C) determining probability of collision
D) using catalyst

Q.161 In zero order reaction, the rate is independent of: (2013)
A) Concentration of the product
B) Temperature of the reactant
C) Concentration of the reactant
D) Surface area of the product

Q.162 By considering Arrhenius equation, the graph between 1/T and Log k gives a curve of the type. (2013)



A) a
B) b
C) c
D) d

Q.163 The value of rate constant of a pseudo first order reaction:
A) depends on the concentration of reactants present in small amount
B) depends on the concentration of reactants present in excess
C) is independent of the concentration of reactants
D) depends only on temperature

Q.164 Rate law for the reaction A + 2B → C is found to be Rate = k[A][B] Concentration of reactant 'B' is doubled, keeping the concentration of 'A' constant, the value of rate constant will be:
A) the same
B) doubled
C) quadrupled
D) halved

Q.165 If $T_2 > T_1$ which is incorrect for a reaction: A + heat → B
A) Greater number of activated complex formed
B) Rate of reaction increase
C) All molecules have energy greater than Ea
D) None of given

Q.166 How much rise in temperature approximately doubles the reaction rate?
A) 20 K
B) 30 K
C) 10 K
D) 5 K

Q.167 The role of a catalyst is to change:
A) gibbs energy of reaction
B) enthalpy of reaction
C) activation energy of reaction
D) equilibrium constant

Q.168 Consider a first order gas phase decomposition rraction given below

$A_{(g)} \longrightarrow B_{(g)} + C_{(g)}$

The initial pressure of system before decomposition was p_i. After lapse of time 't', total pressure of the system increased by x units and became 'p_t'. The rate constant k for the reaction is given as:

A) $k = \frac{2.303}{t} log \frac{p_i}{p_i - x}$
B) $k = \frac{2.303}{t} log \frac{p_i}{2p_i - p_t}$
C) $k = \frac{2.303}{t} log \frac{p_i}{2p_i + p_t}$
D) $k = \frac{2.303}{t} log \frac{p_i}{p_i + x}$

Q.169 The reaction rate is expressed in the units of
A) mol $dm^{-3}s^{-1}$
B) mol dm^{-3} N^{-1}
C) mol dm^{-3}
D) $dm^{-3}s^{-1}$

Q.170 An increase in conc. is related to number of collisions
A) Directly
B) No more
C) Indirectly
D) All

Q.171 Which of the following statements is correct?
A) The rate of a reaction decreases with passage of time as the concentration of reactants decreases
B) The rate of a reaction is same at any time during the reaction
C) The rate of a reaction is independent of temperature change
D) The rate of a reaction decreases with increase in concentration of reactant(s)

Q.172 Which of the following statements is incorrect about the collision theory of chemical reaction?
A) It considers reacting molecules or atoms to be hard spheres and ignores their structural features
B) number of effective collisions determines the rate of reaction
C) Collision of atoms or molecules possessing sufficient threshold energy results into the product formation
D) Molecules should collide with sufficient threshold energy and proper orientation for the collision to be effective

Q.173 Those substances which make a catalyst more effective?
A) Catalyst for a catalyst
B) Promoter
C) Inhibitors
D) both 'a' and 'c'

Q.174 When a reaction occurs in many steps than the slowest step is:
A) Mechanism determining step
B) Instantaneous rate of reaction
C) Average rate of a reaction
D) none of the above

Q.175 Rate of reaction depends upon:
A) Temperature
B) Pressure
C) Concentration
D) All above

Q.176 Which factors affect the initial rate of a reaction?
1) the nature of the reactants
2) the concentration of the reactants
3) the size of solid reactant particles
A) 1 and 2 only
B) 1 and 3 only
C) 2 and 3 only
D) 1, 2, and 3

Q.177 A first order reaction is 50% completed in 1.26×10^{14} s. how much time would it take for 100% completion?
A) 1.26×10^{15} s
B) 2.52×10^{14} s
C) 2.52×10^{28} s
D) infinite

Q.178 For the reaction $2NO + O_2 \rightarrow 2NO_2$ the rate equation for the forward reaction is: (2014)
A) Rate = K $[NO][O_2]$
B) Rate = K$[NO_2]^2$
C) Rate = K $[NO]^2[O_2]$
D) Rate = K $[NO_2]$

Q.179 The chemical reactions which may proceed slowly with measurable rate are called
A) Slow reactions
B) both a and b
C) Fast reaction
D) Moderate reactions

Q.180 Which is the correct relation between the half-life and third order reaction:
A) $[t_{1/2}] \times \frac{1}{a^2}$
B) $[t_{1/2}] \times \frac{1}{a^3}$
C) $[t_{1/2}] \times \frac{1}{a^3}$
D) $[t_{1/2}]_n \times \frac{1}{a^{n-1}}$

Q.181 Which statement is incorrect?
A) At the start of reaction, the instantaneous rate is higher than average rate.
B) As the time interval becomes smaller the average rate becomes closer to the instantaneous rate.
C) Average rate will be equal to the instantaneous when the time intervals approaches to zero
D) At the end of interval the average rate becomes lower than the average rate.

Q.182 If reaction rate increases four times on doubling the initial concentration of reactants then the reaction is:
A) First order
B) Second order
C) Third order
D) Zero order

Q.183 Compounds 'A' or 'B' were changed keeping the concentrations of one of the reactants constant and rates were measured as a function of initial concentration. Following results were obtained. Choose the correct option for the rate equations for this reaction.

Experiment	Initial concentration of [A]/mol L^{-1}	Initial concentration of [B]/mol L^{-1}	Initial rate of formation of [C]/mol L^{-1} s^{-1}
1	0.30	0.30	0.10
2	0.30	0.60	0.40
3	0.60	0.30	0.20

A) Rate = k $[A]^2$ [B]
B) Rate = k [A] $[B]^2$
C) Rate = k [A] [B]
D) Rate = k $[A]^2$ $[B]^0$

Q.184 In concentration time graph steepness of the graph indicates, rate of the reaction has _____ relationship with steepness:
A) direct
B) No
C) Inverse
D) None of these

Q.185 Which is incorrect for order of reaction?
A) Can be zero
B) Can be infraction
C) order of reaction and molecularity both arealways same
D) theoretical and experimental order not necessarily be same

Q.186 The protein part of an enzyme is called:
A) Cofactor
B) Apoenzyme
C) coenzyme
D) all of given

Q.187 Photochemical reaction usually has order
A) one
B) two
C) zero
D) three

Q.188 According to collision theory of bimolecular reactions in phase, the minimum amount of energy required for an effective collision is known as: (2011)
A) heat of reaction
B) rate of reaction
C) has no effect on the reaction
D) energy of activation

Q.189 Which statement about reaction rate is incorrect?
A) Reaction rate decreases with time
B) Reaction rate never remains uniform during the different time period
C) Reaction rate decreases continuously till the reaction rate ceases
D) None of the given

Q.190 The disintegration of radioactive $^{235}_{92}U$ is a:
A) Zero order reaction
B) Second order reaction
C) First order reaction
D) Third order reaction

Q.191 When the rate of reaction is entirely independent of the conc. of reactants molecule then order of reaction is
A) zero
B) second
C) first
D) third

Q.192 When a reaction occurs in many steps then the slowest step is the
A) main step
B)mechanism determining step
C) enthalpy determining step
D) rate determining step

Q.193 Which have moderate speed?
A) Ionic reactions
B) Free radical reaction
C) Molecular reactions
D) Neutralization reactions

Q.194 With the increase in temperature, the efficiency of a catalyst:
A) Decreases
B) increases to maximum and then decreases
C) increases constantly
D) Remains unaltered

Q.195 In some reactions, a product formed acts as a catalyst. This phenomenon is called: **(2012)**
A) Negative catalysis
B) Heterogeneous catalysis
C) Activation of catalyst
D) Autocatalysis

Q.196 The half life of N_2O_5 at ^0C is 24 minutes. How long will it take for sample of N_2O to decay to 25% of its original concentration? **(2015)**
A) 24 minutes
B) 72 minutes
C) 120 minutes
D) 48 minutes

Q.197 In zero order reaction the rate is independent of:
A) Temperature of reaction
B) Concentration of products
C) Concentration of reaction
D) none of these

Q.198 Formic acid is decomposed into CO and H_2O in the presence of:
A) Al_2O_3
B) Mn_2O_3
C) Cr_2O_3
D) MnO_2

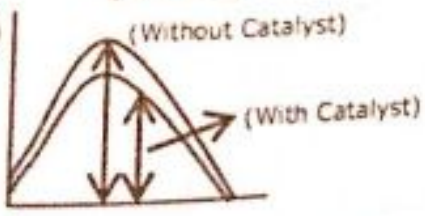
Q.199 Which one of the reaction Proceed at moderate rate?
A) Rusting of iron
B) Hydrolysis of an ester
C) White ppt of AgCl
D) Fermentation of sugars

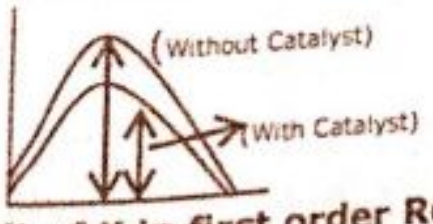
Q.200 $2A + B \rightarrow$ Product **(2016)**
If the reactant 'B' is in excess, the order of reaction with respect to 'A' in given rate law, Rate = $k[A]^2[B]$ is:
A) 2nd order reaction
B) 1st order reaction
C) Pseudeo 1st order reaction
D) 3rd order reaction

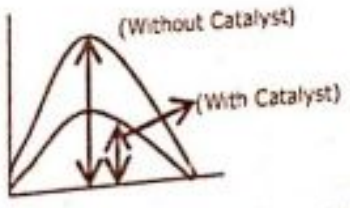
Q.201 The rate constant 'k' is 0.693 min-1. The half-life for the 1st order reaction will be: **(2016)**
A) 1 min
B) 2 min
C) 0.693 min
D) 4 min

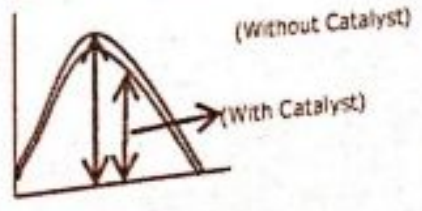
Q.202 Choose the type of catalysis in the following reaction: **(2017)**
$2SO_{3(g)} \xrightarrow{No3_g} 2SO_{2(g)}$
A) Homogenous Catalysis
B) Heterogenous Catalysis
C) Biological Catalysis
D) Gas Catalysis

Q.203 Which one of the following graphs is the representation for more rapid catalyzed reaction? **(2017)**

A)


B)


C)


D)


Q.204 Unit of K in first order Reaction is: **(2017)**
A) S^{-1}
B) moles dm^{-3} s^{-1}
C) moles dm^{-3}
D) mol^{-1} dm^3

Q.205 Rate of first order reaction depends on _____: (2017)
A) Concentration of one reactant
B) Concentration of two reactants
C) Concentration of three reactions
D) Independent of the initial concentration

Q.206 Gas is enclosed in a container of 20cm³ with the moving piston. According to kinetic theory of gases, what will be the effect on freely moving molecules of the gas if temperature is increased from 20°C in 100° C? (2018)
A) Volume will be increased
B) Pressure will become one half
C) Temprature has no effect on freely moving molecules
D) Colliding capability of molecule will become lower

Q.207 Role of a catalyst in a chemical reaction is to (2018)
A) increase rate of a reaction
B) decrease rate of a reaction
C) decrease yield of a reaction
D) increase yield of product

Q.208 All the collisions between the particles of gases are elastic in nature. What is the meant by Elastic collisions? (2019)
A) No change in the kinetic energy
B) No change in potential energy during the collisions
C) The velocity of the molecules changes
D) No change in mass during the collisions

Q.209 If the energy of activation of a chemical reaction is very low, the rate of that chemical reaction is observed to be very high because? (2019)
A) Concentration of the reaction becomes irrelevent
B) Reaction proceeds without any transition state
C) Number of efficient or fruitful collision increase
D) Molecules of the reaction move slowly

Q.210 The unit of the rate constant is the same as that of the rate of reaction in: (2020)
A) Zero order reaction
B) First order reaction
C) Second order reaction
D) Third order reaction

Q.211 The study of rates of chemical reactions and the factors that effect the rates of chemical reactions is known as: (2020)
A) Thermodynamics
B) Stoichiometry
C) Electrochemistry
D) Chemical kinetics

Q.212 For the reaction $A_{(g)} \rightarrow$ products
When the concentration of '$A_{(g)}$' doubles, the rate of reaction increases four folds, which means it is: (2020)
A) Negative order reaction
B) First order reaction
C) Zero order reaction
D) Second order reaction

Q.213 For which of the following order of the reaction, rate of reaction is inversely proportional to the concentration reaction? (2020)
A) 1st order reaction
B) 2nd order reaction
C) Negative order of reaction
D) Zero order of reaction

1.	A	2.	C	3.	A
11.	D	12.	C	13.	C
21.	A	22.	B	23.	A
31.	B	32.	C	33.	A
41.	A	42.	C	43.	C
51.	B	52.	B	53.	
61.	A	62.	A	63.	
71.	B	72.	B	73.	
81.	A	82.	B	83.	
91.	A	92.	A	93.	
101.	D	102.	A	103	
111.	B	112.	D	11	
121.	C	122.	C	12	
131.	A	132.	D	1	
141.	D	142.	C		
151.	A	152.	B		
161.	D	162.	A		
171.	C	172.	D		
181.	B	182.	B		
191.	D	192.	C		
201.	A	202.			
211.	D	212.			

ANSWERS

1.	A	2.	C	3.	A	4.	B	5.	B	6.	C	7.	D	8.	A	9.	A	10.	D
11.	D	12.	C	13.	C	14.	D	15.	C	16.	D	17.	D	18.	C	19.	B	20.	A
21.	A	22.	B	23.	A	24.	A	25.	B	26.	A	27.	A	28.	A	29.	D	30.	A
31.	B	32.	C	33.	A	34.	C	35.	D	36.	D	37.	B	38.	B	39.	B	40.	D
41.	A	42.	C	43.	C	44.	C	45.	C	46.	C	47.	D	48.	A	49.	A	50.	D
51.	B	52.	B	53.	C	54.	C	55.	A	56.	B	57.	D	58.	C	59.	D	60.	B
61.	A	62.	A	63.	D	64.	B	65.	B	66.	B	67.	D	68.	A	69.	D	70.	C
71.	B	72.	B	73.	C	74.	A	75.	B	76.	B	77.	D	78.	B	79.	D	80.	B
81.	A	82.	B	83.	D	84.	D	85.	C	86.	D	87.	C	88.	D	89.	C	90.	C
91.	A	92.	A	93.	B	94.	C	95.	D	96.	C	97.	C	98.	A	99.	D	100.	A
101.	D	102.	A	103.	B	104.	D	105.	D	106.	C	107.	B	108.	D	109.	C	110.	D
111.	B	112.	D	113.	C	114.	D	115.	C	116.	C	117.	B	118.	C	119.	B	120.	D
121.	C	122.	C	123.	D	124.	A	125.	D	126.	B	127.	D	128.	D	129.	A	130.	D
131.	A	132.	D	133.	B	134.	C	135.	A	136.	C	137.	C	138.	A	139.	D	140.	B
141.	D	142.	C	143.	B	144.	C	145.	D	146.	A	147.	D	148.	C	149.	A	150.	B
151.	A	152.	B	153.	A	154.	B	155.	A	156.	C	157.	B	158.	C	159.	A	160.	C
161.	D	162.	A	163.	B	164.	B	165.	C	166.	C	167.	B	168.	A	169.	A	170.	A
171.	C	172.	D	173.	D	174.	D	175.	D	176.	D	177.	C	178.	D	179.	D	180.	B
181.	B	182.	B	183.	A	184.	C	185.	B	186.	C	187.	D	188.	D	189.	C	190.	A
191.	D	192.	C	193.	B	194.	D	195.	D	196.	D	197.	A	198.	B	199.	A	200.	A
201.	A	202.	C	203.	A	204.	A	205.	A	206.	A	207.	A	208.	C	209.	C	210.	A
211.	D	212.	D	213.	C	214.		215.		216.		217.		218.		219.		220.	

THERMO-CHEMISTRY AND ENERGETICS OF CHEMICAL REACTIONS

Q.1 **Which of the following is not a state function?**
A) Enthalpy
B) Free energy
C) Entropy
D) Work

Q.2 **A Process in which no heat inters or leaves the system is called?**
A) isothermal
B) isobaric
C) Adiabatic
D) Isochoric

Q.3 **Which of the following is always true for an adiabatic expansion of gas(ideal or real)?**
A) Temperature
B) H=0
C) q = 0
D) w = 0

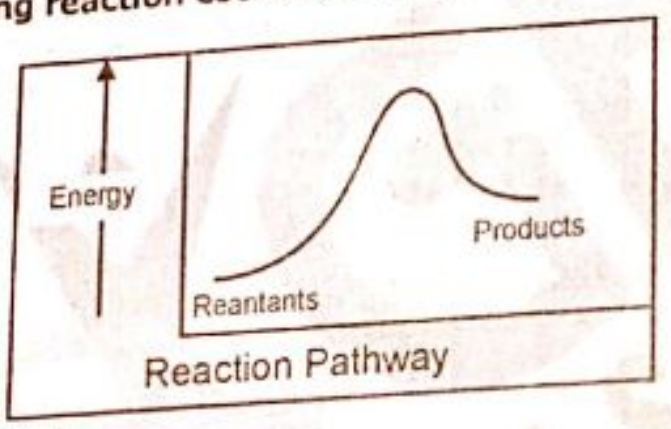
Q.4 **Which of the following is not a state function?**
A) q + w
B) E + PV
C) H/T
D) q/w

Q.5 **Enthalpy change of a reaction does not depend on?**
A) condition of a reaction
B) initial and final concentration
C) physical state of reactants and products
D) number o steps in the reaction

Q.6 **From the reaction P (white) →P (Red) ;__H=_18.4 kJ, it follows that?**
A) red P is readily formed from white P
B) white P is readily formed from red P
C) White P Cannot be converted to red P
D) WHITE p CAN BE OVERTED INTO RED P and red P is more stable

Q.7 **For expansion of a perfect gas into vacuum. Which is false?**
A) q = 0
B) w = 0
C) E and H = 0
D) S = 0

Q.8 **The following reaction coordinate diagram represents....**



A) an endothermic
B) an exothermic reaction
C) a reaction that is neither endothermic nor exothermic
D) a reaction in which a catalyst is used

Q.9 **Hess's law deals with?**
A) change in heat of a reaction
B) rates of reaction
C) Equilibrium constants
D) influence of pressure on volume of a gas

Q.10 **CO+ ½O2 → heat energy change of this chemical reaction is known as?**
A) heat of combustion
B) latent heat of CO2
C) latent heat of vapour
D) heat of formation

Q.11 **H2+ CI2 → 2HCI : Δ h = 44K Cals. In this reaction heat of formation of one mole of HCI in K. cals is?**
A) -44.0
B) +44.0
C) -22.0
D) +22.0

Q.12 **Given heat of combustion of carbon H^2 and CH^2 as -303.5, -285.7, -890 KJ $mole^{-1}$ respectively, the heat of formation of CH4 (in KJ) is ?**
A) -74.5
B) +74.5
C) -149.0
D) +149.0

Q.13 **An exothermic reaction is one which?**
A) Takes place on heating
B) is accompanied by flame
C) is accompanied by absorption of heat
D) Is accompanied by evolution of heat

Q.14 **The heat of neutralization is constant when dilute solutuoin of ?**
A) Strong acid and strong base react
B) Strong acid and weak base
C) Strong base and weak acid react
D) In all the cases

Q.15 **The heat of formation is the change in enthalpy accompanying the formation of a substance from its Element at 25°C and I atmosphere since the enthalpies of element are takein to be zero , the heat of formation (ΔH) of compound is ?**
A) always positive
B) always negative
C) zero
D) may be Positive or negative

Q.16 **Heat of solution is defined as?**
A) heat required to dissolve one gm molecules in large excess of water
B) heat evolved, when one gm molecule id dissolved in large excess of water
C) change in heat content of the system when one gm molecule of the solute so tha further dilution of solution causes no heat change.
D) None

Q.17 **Given heat of combustion of CH_4, C_2H_2, C_8H_{18} in k. cals mole -1 as -210.8 -368.43, -1302.7 respectively Decide which is a better rocket fuel?**
A) C_8H_{18}
B) CH_4
C) C_3H_6
D) C_2H_6

Q.18 **When an exothermic reaction is reversed?**
A) it becomes another exothermic reaction
B) it becomes an endothermic reaction
C) there is no change at all
D)it attains equilibrium

Q.19 **Which of the following is correct ?**
A) ΔH is positive for exothermic reaction
B) ΔH is negative for endothermic reaction
C) The enthalpy of fusion negative
D) the heat of neutralization of strong acid with strong base is always the same.

Q.20 **Change in enthalpy?**
A) is same as the change in heat content
B) is the total energy change at constant Pressure and temp
C) at constant volume is equal to change in internal energy
D) all are correct

Q.21 **How much heat is liberated when 100 mL of 0.1 M NaOH are completely neutralized by 100 mL of 0.1 M HCI?**
A) -57 kJ
B)-0.57 KJ
C)-05.7 KJ
D) -0.5 KJ

Q.22 **the best experimental values of thermodynamic date are obtained through measurement of?**
A) ΔH
B) Q_V
C) Q_P
D) P V

Q.23 **which of the following reactions I expected never to be spontaneous?**
A) $2O_3 \rightarrow 302$ $\Delta H = -_{ve}$, $\Delta S = +_{ve}$
B) $Mg = H_2 \rightarrow MgH_2$ ΔH =-ve , ΔS = -ve
C) BR_2 (I) → Br_2 (g) ΔH, = -ve ΔS= +ve
D) 2AG =$3N_2$ → ΔS =- ve

Q.24 **which of the following statements is wrong?**
A) An endothermic reaction must absorb energy before it can take place
B) during an exothermic reaction heat is evolved
C) if the hat of formation of a compound is negative, the compound is more stable than its elements
D) After A exothermic reaction ,there is no change I the temperature of the reaction mixture

Q.25 **an endothermic reaction A→ B proceeds spontaneously. Which of the following is correct for the reaction?**
A) ΔS is positive and TΔS >ΔH
B) ΔH is positive and ΔH>TΔS
C) ΔS is negative and TΔS > ΔH
D) ΔG and ΔH both are negative

Q.26 **in the reacdtion H_2 (g) $+\frac{1}{2}O_2$ (g) → H2O (I) the ΔH= -68.4 K. cals thus when one mole of 68.4 k. cals of heat is?**
A) Absorbed
B)Evolved
C) needed for initiating the reaction
D) None

Q.27 **The heat fof combustion of ethanol eterminded in a bomb calorimeter is -670.48 k> cal mole -1 at 25°C For the reaction ?**
A) -335.24
B)-669.25
C)-670.48
D) +670.48

Q.28 **The Standard heat of combustion of carbon is -94.0 k.Cals .Hence the heat of formation of CO_2 will be?**
A +94.0
B) -94.0
C)-26.0
D) -46.0

Q.29 **The solubility of NaCI in water at 25° C is about moles per line. suppose you add 1 mole of NaCI to a litre of water for reaction NaCI + H_2O→ Salt solution?**
A) ΔG>0 , ΔS > 0
B) ΔG < 0 , ΔS> 0
C) ΔG > 0 , ΔS >0
D) ΔG < 0 , ΔS < 0

Q.30 The reaction $CaO(S)+H_2O(I) \rightarrow Ca(OH)_2$ is spontaneous at 25° C / the reverse reaction becomes spontaneous at high temperature.
A) ΔH is $+_{ve}$, ΔS is $+_{ve}$
B) ΔH is $+_{ve}$, ΔS is $-^{ve}$
C) ΔH is $-^{ve}$, ΔS is $-^{ve}$
D) ΔH is $-_{ve}$, ΔS is $+_{ve}$

Q.31 Entropy change for an adabatic reversible process is ?
A) Positve
B) Zero
C) Negative
D) Positve or zero

Q.32 The heat change for the reaction $C(s) + 2S(s) \rightarrow CS_2(1)$ is called ?
A) Heat of reaction
B) heat of fusion
C) Heat of formation
D) heat of combustion

Q.33 The change ofr the reaction $H_2O(1) \rightarrow H_2O(g)$ is called ?
A)heat of vapouristation
B) heat of reatoin
C) Heat of fusion
D) heat of reaction

Q.34 Which of the following in not a state function?
A) Internal energy
B) entropy
C) work
D) heat absorbed under isochoric condition

Q.35 The temperature of the system decrease in an?
A) Adiabatic expansion
B) internal compression
C) Isothermal expansion
D) Adiabatic compression

Q.36 For which of the following equations is the enthalpy change is likely to be negative?
A) $Cl(g) + aq \rightarrow Cl^-(aq)$
B) $Cl(g) \rightarrow Cl^+(g) + e^-$
C) $\frac{1}{2}Cl_2(g) \rightarrow Cl(g)$
D) $Cl_2(I) \rightarrow Cl_2(g)$

Q.37 Whif of the following is always ture for an endothermic reaction?
A) $\Delta G = 0$
B) $\Delta S < 0$
C) $\Delta H < 0$
D) $\Delta H > 0$

Q.38 Which of the following is always s true for a spontaneous change at all temperatures?
A) $\Delta H > 0; \Delta S < 0$
B) $\Delta H < 0 \Delta S < 0$
C) $\Delta H < 0; \Delta S > 0$
D) $\Delta H > 0; \Delta S > 0$

Q.39 Any property whose magnitude is independent of amount of substance present is call a/an ?
A) Colligative property
B) intensive property
C)extensive Property
D) None of them

Q.40 Which of the following processes is reversible ?
A) Evaportion of water at 270 k and 1 atom
B) meling of ice at 10 C
C) mixing of two gases by diffusion
D) None

Q.41 What is Δ E for a system that dos 500 cal of work on the surrounding when 300 cals of heat are absorbed by the system?
A) -200 cals
B) +200 cals
C) +700 cals
D) -700 cals

Q.42 When a liquid boils there is an increase in ?
A) free energy
B) kinetic energy
C) potential energy
D) heat of vapourisation

Q.43 The difference in ΔH and ΔE for the combustion of methane at 25° Would be?
A) Zero
B) 2x 298x -2 cals
C) 2x 298x -3 cals
D) 2x 25 x -3 clas

Q.44 If $C(S) + O_2(g) \rightarrow CO_2(g)$, $\Delta H = R$ and $Co(g) = 1/2O_2(g) \rightarrow CO_2$, $\Delta H = S$, then heat of formation CO is?
A) R+S
B) R-S
C) S-R
D) RS

Q.45 For an ideal gas the relation between the enthalpy change and internal energy change at constant temperature is given by?
A) $H = E + PV$
B) $\Delta H = \Delta E + P\Delta V$
C) $\Delta H = \Delta E + \Delta nRT$
D) $\Delta H = \Delta G = T\Delta S$

Q.46 The heat change for the reaction $H_2O(G) \rightarrow H_2(I)$ Is called?
A) heat of fusion
B) Heat of reaction
C) Heat of vapourisation
D) heat of formation

Q.47 A person required 2870 k.cals of energy daily of heat of combustion of cane sugar is 1349 k.cals, then hid daily consumpation of sugar is?
A) 728
B)0.728
C) 342
D) 0.342

Q.48 The formation of water from $H_2(g)$ and $O_2(g)$ is an exothermic reaction ?
A) $H_2(g)$ $O_2(g)$ have highest chemical energy than water
B) energy consideration don not arise
C) $H_2(g)$ $O_2(g)$ have a lower chemical energy than water
D) $H_2(g)$ $O_2(g)$ have a higher temperature that water ?

Q.49 The heat change taking place in the reaction H_2O (I) → H_2O(g) is [Given by ΔH = $H_2O(g)$ = -57k cals, ΔH , = H_2O (I) = - 68.3 k cals]
A) +11.3 k.Cals
B) -11.3 k.Cals
C) -115.3 k.Cals
D)+115.3 k.Cals

Q.50 Which of the following is not an intensive puppetry
A) Entropy
B) Temperature
C) Chemical Potential
D) Molar volume

Q.51 For am adiabatic process. Which of the following is true?
A) q = 0
B) w = - Δ E
C) temperature fall
D) all of these

Q.52 Energy equivalent to one erg, one calorie and one joule is an the order?
A) 1 cal > 1 joule > 1 Erg
B) 1 Erg > 1 cal > 1 joule
C) 1 Joule > 1 cal > 1 Erg
D) 1 cal > 1 Erg > 1 Joule

Q.53 What will be the change in internal energy of system if work done by system is 50kJ and heat absorbed in 140J
A) 190kJ
B) -190kJ
C) 90kJ
D) -90kJ

Q.54 Oxidation state of nitrogen NH_2 and NO_2^+ is respectively
A) -3,+3
B) +3,+5
C) +3,-3
D) -3,+5

Q.55 In order to predict whether reaction is spontaneous or non-spontaneous we should study:
A) Enthalpy change of the system
B) Free energy change of the system
C) State of the system
D) Heat change of the system

Q.56 Which one of the following is incorrect to the first law of thermodynamics?
A) Heat lost by system is equal to heat gained by surrounding and vice versa
B) Energy can neither be created nor destroyed though it can be changed from one form to another form
C) Energy of the universe tends to be constant
D) Energy of the universe tends to be either maximum or minimum

Q.57 What will be the enthalpy of formation of HBr if hypothetical bond energy of H-H, Br-Br and H-Br are 300 kJ/mole, 100kJ/mole and 250kJ/mole respectively? Reaction is as under $H_2 + Br_2 \rightleftharpoons 2HBr$
A) -50 kJ/mole
B) +50 kJ/mole
C) -100 kJ/mole
D) +1000 kJ/mole

Q.58 State function is a macroscopic property that depends upon initial and final states but independent of path. Among the following, which is NOT state function
A) Heat
B) Temperature
C) Internal energy
D) Volume

Q.59 If an endothermic reaction is allowed to take place air. The temperature of the surrounding air
A) remains constant
B) decrease
C) increase
D) remain unchanged

Q.60 In endothermic reactions, the heat content of the
A) products is more than that of reactants
B) both (a) and (c)
C) reactants is more than that of products
D) None of the above

Q.61 During electrolysis of dilute aqueous solution of H_2SO_4,which specie is obtained at anode
A) O_2
B) SO_2
C) H_2
D) SO_3

Q.62 The metal which will act as cathode when connected to chromium
A) Al
B) Zn
C) Mg
D) Cu

Q.63 The enthalpy of ionic compounds is calculated best with:
A) Heat absorbed and product of pressure and volume
B) Born Haiber Cycle
C) First law of thermochemistry
D) None of these

Q.64 The enthalpy change when one mole of compound is formed its elements at standard state is called:
A) Enthalpy of decomposition
B) Enthalpy of formation
C) Enthalpy of combustion
D) Enthalpy of solution

Q.65 Sign of enthalpy change for exothermic and endothermic reactions is _____ and _____ respectively
A) Positive, negative
B) Negative, positive
C) Positive, positive
D) Negative , negative

Q.66 Enthalpy of formation for one mole of carbon dioxide is 400 kJ/mole. What will be heat of combustion for 6g of carbon
A) 100kJ
B) 300 kJ
C) 200 kJ
D) 400 kJ

Q.67 Enthalpy of neutralization of all the strong acids and strong bases has the same value because
A) neutralization leads to the formation of salt and H_2O
B) strong acid and bases are ionic substances
C) acids always give ride H^+ ions and bases always furnish OH^- ions
D) the net chemical change involve the combination of H^+ and OH^- ions to from water

Q.68 Lattice energy of an ionic crystal is the enthalpy of : (2011)
A) combustion
B) dissociation
C) dissolution
D) formation

Q.69 Total heat energy (q) can be calculated in a bomb calorimeter by using following formula
A) m x s
B) c x ΔT
C) s x ΔT
D) c x s x ΔT

Q.70 Which one of the following reactions will represent enthalpy of formation as well as enthalpy of combustion
A) $C_{(s)} + O_{2(g)} \longrightarrow CO_{2(g)}$
B) $C_{(s)} + \frac{1}{2}O_{2(g)} \longrightarrow CO_{(g)}$
C) $CO_{(g)} + \frac{1}{2}O_{2(g)} \longrightarrow CO_{2(g)}$
D) $CH_{4(g)} + 2O_{2(g)} \longrightarrow CO_{2(g)+2H_2O_{(g)}}$

Q.71 Total heat energy (q) can be calculated in a bomb calorimeter by using following formula
A) m x s
B) c x ΔT
C) s x ΔT
D) c x s x ΔT

Q.72 Which one of the following reactions will represent enthalpy of formation as well as enthalpy of combustion
A) $C_{(s)} + O_{2(g)} \longrightarrow CO_{2(g)}$
B) $C_{(s)} + \frac{1}{2}O_{2(g)} \longrightarrow CO_{(g)}$
C) $CO_{(g)} + \frac{1}{2}O_{2(g)} \longrightarrow CO_{2(g)}$
D) $CH_{4(g)} + 2O_{2(g)} \longrightarrow CO_{2(g)+2H_2O_{(g)}}$

Q.73 First law of thermodynamics may be denoted under various conditions as
A) $\Delta H = \Delta E$ if $\Delta n = 0$
B) $\Delta E = q_v$ if $\Delta V = 0$
C) $\Delta H = q_p$ if $\Delta p = 0$
D) All are correct

Q.74 Glass calorimeter reaction is one is which we measure
A) enthalpy of combustion
B) pressure-volume work
C) enthalpy of formation
D) none of above

Q.75 In standard enthalpy of atomization (ΔH_n), heat of surrounding: (2011)
A) remains unchanged
B) increases
C) increases then decreases
D) decreases

Q.76 For the given reaction, $q = c\Delta T$, the unit of heat capacity will be
A) kJ g^{-1}
B) kJ
C) kJ K^{-1}
D) K kj^{-1}

Q.77 Spontaneous reaction are:
A) Reversible
B) Always endothermic
C) Non-real
D) Unidirectional

Q.78 Using the hypothetical information given in the table below

Reactions	ΔH
$K_{(s)} + \frac{1}{2}Br_{2(l)} \longrightarrow KBr_{(s)}$	-400kJmol-1
$K_{(s)} \longrightarrow K_{(g)}$	+100kJmol-1
$K_{(g)} \longrightarrow K^{+}_{(g)} + e^{-}$	+400 kJmol-1
$\frac{1}{2}Br_{2(l)} \longrightarrow Br_{(g)}$	+100 kJmol-1
$Br_{(g)} + e^{-} \longrightarrow Br^{-}_{(g)}$	-350 kJmol-1

Calculate the lattice energy of formation of potassium bromide.
A) +672kJmol-1
B) -672kJmol-1
C) +650 kJmol-1
D) -650 kJmol-

Q.79 **Spontaneous processes:**
A) Are always in equilibrium
B) Move from equilibrium
C)Reach to an equilibrium after equimolar point
D) Move from non-equilibrium to equilibrium state

Q.80 **Which of the following process is an exothermic:**
A) Sublimation of ice
B) Boiling of liquid water
C) Freezing of liquid water
D) Melting of ice to liquid water

Q.81 **Enthalpy of neutralization of which reaction is minimum:**
A) Reaction between HCl and NaOH
B) Reaction between HCl and NH_4OH
C) Reaction between acetic acid and NaOH
D) Reaction between acetic acid and NH_4OH

Q.82 **When Ammonium chloride dissolves in water this process is**
A) endothermic process
B) simple hydration
C) exothermic process
D) none of the above

Q.83 **'ΔH' will be given a negative sign in:**
A) Exothermic reactions
B) Dissociation reactions
C) Decomposition reactions (2012)
D) Endothermic reactions

Q.84 **If an exothermic reaction is allowed to take place very rapidly in the air, the temperature of system:**
A) Remains
B) Increase
C) Decrease
D) 1st increases then decreases

Q.85 **Which one of the following enthalpy terms will always have a negative sign?**
A) Enthalpy of atomization
B) Enthalpy of solution
C) Enthalpy of combustion
D) enthalpy of reaction

Q.86 **The highest energy releasing step in Born Haber's Cycle is:**
A) Ionization
B) Ionization potential
C) Atomization
D) Lattice energy

Q.87 **The value of ΔV being very small, the term Δ(PV) can be neglected, for processes involving:**
A) Liquids and gases
B) Solids and liquids
C) Gases and solids
D) none of given

Q.88 **State function is a macroscopic property that depends upon initial and final states but independent of path. Among the following, which is not state function?**
A) Heat
B) Internal energy
C) Temperature
D) Volume

Q.89 **In a chemical reaction, if products are less stable then:**
A) ΔH = + ve
B) Δ = -ve
C) ΔH = 0
D) ΔH = maybe +ve and -ve

Q.90 **The condition for standard enthalpy change is**
A) I atm 30°C
B) I atm 25°C
C) I atm 50°C
D) 760 atm 25°C

Q.91 **Lattice energy of NaCl is**
A) +500 kj/mole
B) - 787 kj/mole
C) +344 kj/mole
D) +411 kj/mole

Q.92 **A well stoppered thermos flask contains some ice cubes. This is an example of a:**
A) closed system
B) isolated system
C) open system
D) non-thermodynamic system

Q.93 At the standard condition i.e. 25°C and at 1 atmospheric pressure, the enthalpy value of all elements is taken as:
A) Zero
B) One
C) Positive
D) Negative

Q.94 Energetically a chemical reaction is independent of its path according to _____ law of thermochemistry :
A) First
B) Third
C) Second
D) Forth

Q.95 For the reaction $NH_4Cl_{(s)}$ + aq $\rightarrow NH_4Cl_{(aq)}$ the enthalpy change is called:
A) Heat of reaction
B) Heat of solution
C) Heat of ionization
D) Heat of decomposition

Q.96 ΔN: will be given a negative sign in:
A) Exothermic reactions
B) Decomposition reactions
C) Dissociation reaction
D) Endothermic reactions

Q.97 Enthalpy change for exothermic and endothermic reaction is _____ and respectively:
A) Positive, positive
B) Positive, negative
C) Negative, positive
D) Negative, negative

Q.98 Bond energy is the energy for breakage of one mole of bonds to form. (2012)
A) Ions
B) Gaseous ions
C) Molecules
D) Neutral atoms

Q.99 The amount of heat evolved or absorbed by keeping reactants and products at one atmospheric pressure at room temp. is called
A) Heat of formation
B) Standard enthalpy change
C) Standard heat of formation
D) None

Q.100 Heat of neutralization of NH_4OH and $HC\ell$ is:
A) 13.7 kcal/mole
B) > 13.7 kcal/mol
C) < 13.7 kcal/mole
D) zero

Q.101 Heat of neutralization of a strong acid and a strong base is nearly equal to:
A) 10 KJ/mole
B) -57 kJ/mole
C) 10 Cal/mole
D) -57 Cal/mole

Q.102 The total heat contents of the system is called:
A) Internal energy
B) Enthalpy
C) Pressure volume work
D) Neutralization

Q.103 Heat evolved or absorbed during reaction can be measured by using which formula:
A) $q = m \times \Delta T$
B) $q = s \times \Delta T$
C) $\Delta H = \Delta E + P\Delta V$
D) $q = mc\Delta T$

Q.104 The total heat contents of the system is known as
A) Entropy
B) Enthalpy
C) Work
D) Free energy

Q.105 Born-Haber cycle is used to determine the
A) Lattice energy
B) Enthalpy of formation
C) Enthalpy of ionization
D) Enthalpy of dissociation

Q.106 For the reaction $CH_3COOH \rightarrow CH_3COO^- + H^+$ the change in enthalpy is called:
A) Enthalpy of decomposition
B) Enthalpy of formation
C) Enthalpy of ionization
D) Enthalpy of neutralization

Q.107 It is common observation that as a result of chemical reaction, the energy is either evolved or absorbed in the form of:
A) Electric current
B) Any form of energy
C) Heat
D) none of given

Q.108 The spontaneous endothermic reaction is:
A) $N_{2(g)}+O_{2(g)} \rightleftharpoons 2NO_{2(g)}$
B) $2H_2O_{(l)} \rightarrow H_{2(g)} + O_2$
C) $H_2O_{(l)} \rightarrow H_2O_{(g)}$
D) $NaOH_{(aq)} + HC\ell_{(aq)} \rightarrow + H_2O_{(l)}$

Q.109 Mathematical representation of first law of thermodynamics is:
A) $\Delta E = q + w$
B) $\Delta G = \Delta H - T\Delta S$
C) $\Delta H = \Delta E + \Delta n\ RT$
D) $-\Delta G = 2.303\ RT \log K$

Q.110 Bond energies and heat of hydration is measured in terms of
A) 1 Nm
B) Joule / mole
C) 1 kg/s
D) None of these

Q.111 If activation energy of fo
reaction will be
A) Exothermic & spontaneo
B) Endothermic&non spon

Q.112 In standard enthalpy of
A) Remains unchanged
B) Decreases

Q.113 Heat of reaction at con
A) Change in internal ene
B) External work done

Q.114 Enthalpy of neutraliza
A) ΔN
B) $\Delta H_n°$

Q.115 Hess's law of constan
A) Free
B) Dependent

Q.116 For complete combus
$C_6H_5OH_{(l)}+3O_{2(g)} \rightarrow$
The amount of heat
25°c. Assuming idea
($R=8.314JK^{-1}mol^{-1}$)
A) -1366.95 kJ mol-1
B) -1460.50 kJ mol-

Q.117 The heat contents
A) 1
B) 0

Q.118 Heat of formation
A) -394 KJ/Mole
B) -294 KJ/Mole

Q.119 For a spontaneous
A) positive
B) either positive o

Q.120 A chemical reacti
A) entropy of the s
B) internal energy

Q.121 We can keep the
fitted with pisto
A) Keeping tempe
B) Fixing the posi

Q.122 Born Haber's Cy
A) Covalent com
B) Ionic compou

Q.123 In which of t
highest?
A) NH_4OH and H
B) CH_3COOH an

Q.124 An exothermi
A) Have more e
B) Have less en
C) Have the sa
D) Are at a hig

Q.125 $2H_2 + O_2 \rightarrow 2$
A) 285.5 Kg/m
B) -285.5 KJ/

Q.126 The heat of
A) 0.00
B) +3.7

Q.111 If activation energy of forward reaction is greater than backward reaction then the reaction will be
A) Exothermic & spontaneous
B) Endothermic&non spontaneous
C) Exothermic &non spontaneous
D) Endothermic & spontaneous

Q.112 In standard enthalpy of atomization, heat of surrounding:
A) Remains unchanged
B) Decreases
C) Increases
D) May increase of decrease

Q.113 Heat of reaction at constant volume is the:
A) Change in internal energy
B) External work done
C) Change in enthalpy
D) Change in entropy

Q.114 Enthalpy of neutralization is represented as:
A) ΔN
B) ΔH_n°
C) ΔH
D) ΔH_n

Q.115 Hess's law of constant summation is mechanism :
A) *Free*
B) Dependent
C) *Indipendent*
D) *None of these*

Q.116 For complete combustion of ethanol,
$C_0H_5OH_{(l)} + 3O_{2(g)} \longrightarrow 2CO_{2(g)} + 3H_2O_{(l)}$
The amount of heat produced as measured in bomb calorimeter, is 1364.47 kJ mol^{-1} at 25°c. Assuming ideality the enthalpy of combustion ΔH_c for the reaction will be ($R=8.314JK^{-1}mol^{-1}$)
A) -1366.95 kJ mol^{-1}
B) -1460.50 kJ mol^{-1}
C) -1361.95 kJ mol^{-1}
D) -1350.50 kJ mol^{-1}

Q.117 The heat contents of all the elements in their standard states are taken to be
A) 1
B) 0
C) 2
D) None

Q.118 Heat of formation (ΔH°_f) for CO_2 is:
A) -394 KJ/Mole
B) -294 KJ/Mole
C) +394 KJ/Mole
D) -390 KJ/Mole (2013)

Q.119 For a spontaneous chemical process, the free energy change is:
A) positive
B) either positive or negative
C) negative
D) zero

Q.120 A chemical reaction will be spontaneous if it is accompanied by a decrease of:
A) entropy of the system
B) internal energy of the system
C) enthalpy of the system
D) free energy of the system

Q.121 We can keep the volume of a system constant, consisting of gas enclosing in a cylinder fitted with piston, by:
A) Keeping temperature constant
B) Fixing the position of piston
C) Decreasing external pressure
D) Increasing external pressure

Q.122 Born Haber's Cycle is applicable to :
A) Covalent compounds
B) Ionic compounds
C) Polar compounds
D) None of given

Q.123 In which of the following neutralization reaction, the heat of neutralization will be highest?
A) NH_4OH and H_2SO_4
B) CH_3COOH and KOH
C) $HC\ell$ and NaOH
D) CH_3COOH and NH_4OH

Q.124 An exothermic reaction is one in which the reacting substances:
A) Have more energy than the products
B) Have less energy than the products
C) Have the same energy as the products
D) Are at a higher temperature than the products

Q.125 $2H_2 + O_2 \rightarrow 2H_2O + 285.5$ KJ mol^{-1}. What will be the change in the above reaction? (2014)
A) 285.5 Kg/mol
B) -285.5 KJ/mol
C) zero KJ/mol
D) 1 KJ/mol

Q.126 The heat of formation of graphite and P(white) is _____ K J/mole.
A) 0.00
B) +3.7
C) -273.0
D) 813.99

Q.127 Evaporation of water is:
A) An exothermic change
B) An endothermic change
C) A process where no heat changes occur
D) A process accompanied by chemical reaction

Q.128 At constant T and P which one of the following statement is correct for the reaction $S_{8(s)} + 8O_{2(g)} \rightarrow 8SO_{2(g)}$ of the physical state of the reactants:
A) $\Delta H < \Delta E$
B) $\Delta H > \Delta E$
C) $\Delta H = \Delta E$
D) ΔH is independent

Q.129 Which is the symbol of standard heat of formation?
A) ΔE
B) ΔH_f°
C) ΔH
D) ΔH_f

Q.130 For which of the following equations does the enthalpy change represent the lattice energy of sodium chloride?
A) $Na(s) + \frac{1}{2}Cl_2(g) \rightarrow NaCl(s)$
B) $Na(g) + Cl(g) \rightarrow NaCl(s)$
C) $Na^+(aq) + Cl^-(aq) \rightarrow NaCl(aq)$
D) $Na^+(g) + Cl^-(g) \rightarrow NaCl(s)$

Q.131 For the transition $C_{(diamond)} \rightarrow C_{(graphite)}$; $\Delta H = -1.5$ kJ. It follows that:
A) diamond is exothermic
B) graphite is stabler than diamond
C) graphite is endothermic
D) diamond is stabler than graphite

Q.132 Heat of neutralization is least when:
A) NaOH is neutralized by CH_3COOH
B) NH_4OH is neutralized by CH_3COOH
C) NaOH is neutralized by $HC\ell$
D) NH_4OH is neutralized by HNO_3

Q.133 The heat of combustion is measured by
A) Calorimeter
B) Bomb calorimeter
C) Colorimeter
D) None

Q.134 The amount of heat required to convert one mole of a solid directly into its vapour state at STP is called as
A) Molar heat of vaporization
B) Heat of reaction
C) Standard heat of sublimation
D) Heat of neutralization

Q.135 Energy required to dissociate 4g of gaseous hydrogen into free gaseous atoms is 208 kcal at 25°C. the bond energy of H–H bond will be:
A) 104 kcal
B) 1040 kcal
C) 10.4 kcal
D) 104 kcal

Q.136 Which is the correct expression for lattice energy:
A) $K_{(s)} + \frac{1}{2}C\ell_2 \rightarrow KC\ell_{(s)}$
B) $K^+_{(g)} + C\ell^-_{(g)} \rightarrow KC\ell_{(s)}$
C) $2K_{(s)} + 2C\ell_2 \rightarrow 2KC\ell_{(s)}$
D) $KL^+_{(g)} + C\ell^-_{(g)} \rightarrow KC\ell_{(g)}$

Q.137 Which value would be required to estimate the lattice energy for the hypothetical ionic compound MgH_2?
A) the electron affinity of hydrogen
B) the first ionization energy of hydrogen
C) the magnesium-hydrogen bond energy
D) the standard enthalpy change of formation of MgH_2

Q.138 Heat exchanged in a chemical reaction at constant temperature and pressure is called:
A) entropy
B) internal energy
C) enthalpy
D) free energy

Q.139 Which equation represents the change corresponding to the enthalpy change of atomization of iodine?
A) $\frac{1}{2}I_2(s) \rightarrow I(g)$
B) $I_2(I) \rightarrow 2I(g)$
C) $I_2(s) \rightarrow 2I(g)$
D) $I_2(g) \rightarrow 2I(g)$

Q.140 Equal volumes of molar hydrochloric acid and sulphuric acid are neutralized by dil. NaOH solution and x kcal and y kcal heat are liberated respectively. Which of the following is true?
A) $x = y$
B) $x = 2y$
C) $x = \frac{1}{2}y$
D) None of these

Q.141 The enthalpy change (ΔH) for the neutralization of 1M $HC\ell$ by caustic potash in dilute solution at 298 K is:
A) 68 kJ
B) 57.3 kJ
C) 65 kJ
D) 50 kJ

Q.142 Combustion of graphite to form CO_2 can be done by two ways, reaction are given as follows: (2014)

$C + O_2 \rightarrow CO_2$ $\quad \Delta H = -393.7$ KJ/mol
$C + 1/2O_2 \rightarrow CO$ $\quad \Delta H_1 = ?$
$CO + \frac{1}{2} O_2 \rightarrow CO_2$ $\quad \Delta H_2 = -283$ KJ/mol

What will be enthalpy of formation of CO?
A) 676 KJ/mol
B) 110 KJ/mol
C) -110 KJ/mol
D) 676 KJ/mol

Q.143 When water is added to quick lime, the reaction is:
A) explosive
B) exothermic
C) endothermic
D) photochemical

Q.144 Ionic charge has _____ relationship with lattice energy;
A) Inverse
B) exponentially direct
C) direct
D) none of these

Q.145 The potential energy of a system include:
A) All the types of bonds
B) Only Covalent bonds
C) Vander Waals forces present the particles
D) 'a' and 'b'

Q.146 Internal energy of system will always be positive if:
A) Reaction is exothermic and work is done by the system
B) Reaction is exothermic and work is done on the system
C) Reaction is endothermic and work is done by the system
D) Reaction is endothermic and work is done on the system

Q.147 Enthalpy of combustion per mole of carbon is 40 KJ/mol. What will be the enthalpy of combustion for 60g of carbon:
A) 100 KJ
B) 200 KJ
C) 300 KJ
D) 400 KJ

Q.148 What is the ΔH of the reaction having ΔT value 10 and 5 kg mass when value of c=1?
A) 50
B) 500
C) 5
D) 100

Q.149 The equation that represents standard enthalpy of atomization of hydrogen is: (2015)

A) $\frac{1}{2}H_2O_{(g)} \longrightarrow H_{2(g)} + \frac{1}{2} O_{(g)}$ $\quad + 218$ KJMol^{-1}
B) $\frac{1}{2} H_{2(g)} \longrightarrow H_{(g)}$ $\quad + 218$ KJMol^{-1}
C) $\frac{1}{2} H_2O_{(g)} \longrightarrow H_{2(g)} + \frac{1}{2} O_{(g)}$ $\quad - 218$ KJMol^{-1}
D) $\frac{1}{2} H_{2(g)} \longrightarrow H_{(g)}$ $\quad - 218$ KJMol^{-1}

Q.150 Total heat energy (q) can be calculated in a bomb calorimeter by using following formula:
A) $m \times s$
B) $s \times \Delta t$
C) $c \times \Delta t$
D) $c \times s \times \Delta t$

Q.151 In the combustion of 20g of methane, 104.5 KJ heat is liberated. The heat of combustion of methane would be:
A) +41.8 kJ/mol
B) -83.6 kJ/mol
C) +125.4 kJ/mol
D) 16.72 kJ/mol

Q.152 Which is not possible to measure?
A) ΔE
C) ΔV
C) ΔH
D) Absolute value of internal energy of a system

Q.153 Which one of the following equations correctly defines the enthalpy change of formation of carbon monoxide?
A) $C(s) + \frac{1}{2}O_2(g) \rightarrow CO(g)$
B) $C(s) + CO_2(g) \rightarrow 2CO(g)$
C) $C(s) + O(g) \rightarrow CO(g)$
D) $C(g) + \frac{1}{2}O_2(g) \rightarrow CO(g)$

Q.154 A balloon filled with oxygen is placed in a freezer. Identify system:
A) Balloon
B) Freezer
C) Oxygen
D) All of these

Q.155 A bomb calorimeter is used in calorimetry at:
A) Constant volume
B) Constant pressure
C) Both a and b
D) Constant temperature

Q.156 Which one of the following enthalpy change is always exothermic?
A) Enthalpy of combustion
B) Enthalpy of formation
C) Enthalpy of atomization
D) Enthlpy of solution (2018)

Q.157 Which is used as a correct symbol for standard heat of combustion?
A) ΔH
B) ΔH°_c
C) ΔH_c
D) ΔH_f

Q.158 The relation between enthalpy (H), pressure (P), volume (V) and internal energy (E) given by:
A) E = H + PV
B) H = E − PV
C) H = E + PV
D) H = E + P + V

Q.159 The heat of formation of the compound in the following reaction is:
$H_{2(g)} + C\ell_{2(g)} \rightarrow 2HC\ell_{(g)} + 44kcal$
A) −44 kcal mol^{-1}
B) 11 kcal mol^{-1}
C) −22 kcal mol^{-1}
D) −88 kcal mol^{-1}

Q.160 A bomb calorimeter is used to determine the accurate enthalpy of:
A) Solution
B) Combustion
C) Neutralization
D) Atomization

Q.161 Which statement about internal energy is incorrect?
A) It is equal to sum of K.E. and P.E.
B) At constant volume $\Delta E = q_v$
C) It is expressed in Newton or Dynes
D) With the increase in internal energy the temperature of the system also increases

Q.162 The internal energy change when a system goes from state A to B kJ / mole. If the system goes from A to B by a reversible path and returns to state A by an irreversible path what would be the net change in internal energy?
A) 40 kJ
B) < 40 kJ
C) > 40 kJ
D) Zero

Q.163 The enthalpies of combustion of carbon and carbon monoxide are −393.5 and −283kJmol^{-1} respectively. The enthalpy of formation of carbon monoxide per mole is:
A) 110.5 kJ
B) −676.5 kJ
C) 676.5 kJ
D) −110.5 kJ

Q.164 In a reversible isothermal process, the change in internal energy is:
A) zero
B) negative
C) positive
D) none of the above

Q.165 The compound with negative heat of formation is known as:
A) endothermic compound
B) endoergonic compound
C) exothermic compound
D) none of the above

Q.166 Hesse's law is a special case of
A) First law of the thermodynamics
B) Third law of the thermodynamics
C) Second law of thermodynamics
D) None

Q.167 Reactants have high energy than products in:
A) Exothermic reactions
B) Endothermic reactions
C) photochemical reactions
D) Non − spontaneous reaction (2013)

Q.168 For which one of the following equations is $\Delta H^\circ_{reaction}$ equal to ΔH°_f for the product?
A) $N_{2(g)} + O_{3(g)} \rightarrow N_2O_{3(g)}$
B) $Xe_{(g)} + 2F_{2(g)} \rightarrow XeF_{4(g)}$
C) $CH_{4(g)} + 2C\ell_{2(g)} \rightarrow CH_2C\ell_{2(\ell)} + 2HC\ell_{(g)}$
D) $2CO_{(g)} + O_{2(g)} \rightarrow 2CO_{2(g)}$

Q.169 Consider the following reactions:
$N_2 + 2O_2 \rightarrow 2\ NO_2 \Delta H = 92$ KJ
$2NO + O_2 \rightarrow 2\ NO_2 \Delta H = 158$ KJ
Calculate the enthalpy of reaction of NO
$N_2 + O_2 \rightarrow 2NO\ \Delta H =$ KJ
A) 250
B) −250
C) −66
D) +66

Q.170 Which one of the following processes is endothermic?
A) the condensation of steam
B) the freezing of water
C) the electrolysis of water
D) $Ca(s) + 2H_2O(I) \rightarrow Ca(OH)_2(aq) + H_2(g)$

Q.171 From which of the following reactions can the bond energy of the C – F bonds be determined by using only the standard enthalpy change of the reaction?
A) $CF_4(g) \rightarrow C(g) + 4F(g)$
B) $CF_4(s) \rightarrow CF_4(g)$
C) $CF_4(g) \rightarrow CF_2(g) + F_2(g)$
D) $2F_2(g) + C(s) \rightarrow CF_4(g)$

Q.172 Which statement about the standard enthalpy change of formation of carbon dioxide is correct?
A) it is equal to the standard enthalpy change of combustion of carbon
B) it is equal to twice the bond energy of the C=O bond.
C) It is the energy released when one mole of carbon dioxide is formed from carbon at the temperature of combustion of the carbon
D) it is the same for carbon dioxide produced from graphite and pure diamond.

Q.173 The enthalpies of combustion of carbon and carbon monoxide are -393.5 and -283 kJ mol^{-1}respectively. The enthalpy of formation of carbon monoxide per mole is:
A)110.5 kJ
B)-676.5 kJ
C) -110.5 kJ
D) 676.5 kJ

Q.174 The species which by definition has zero standard molar enthalpy of formation at 298 K is
A) $Br_{2(g)}$
B) $H_2O_{(g)}$
C) $Cl_{2(g)}$
D) $CH_{4(g)}$

Q.175 Given that: $C + O_2 \longrightarrow CO_2$ $\quad \Delta H^\circ = -x$ kj
$2CO + O_2 \longrightarrow 2CO_2$ $\quad \Delta H^\circ = -y$ kj
The enthalpy of formation of carbon monoxide will be:
A) y-2x
B) $\frac{2-2x}{2}$
C) $\frac{2x-y}{2}$
D) 2x -y

Q.176 The neutralization of a strong acid by a strong base liberates and amount of energy per mole of H^+:
A) depends upon which acid and base are involved
B) depends upon which catalyst is used
C) depends upon the temperature at which the reaction takes place
D) is always the same

Q.177 Standard enthalpy of combustion of graphite at 25° C is – 393.51 kJmol^{-1} and that of diamond is -395.41 kJmol^{-1}. The enthalpy change for graphite is: (2015)
A) -1.91
B) -2.1
C) +2.1
D) + 1.91

Q.178 Born-Haber cycle is only applicable to
A) Ionic compounds
B) Gases
C) Liquids
D) Covalent compounds

Q.179 Standard enthalpy of $A\ell_2O_3$ cannot be measured experimently because:
A) It does not catch fire
B) Protective layer of oxide covers the surface
C) It reacts with CO_2
D) It dissolve in water

Q.180 To determine the enthalpy of reaction indirectly which of the following is used?
A) Glass calorimeter
B) Bomb calorimeter
C) Hess's law
D) All of these

Q.181 Given the following enthalpy changes
$I_2(g) + 3Cl_2(g) \rightarrow 2ICl_3(s)$; $\quad \Delta H^\theta = -214$ kJ
$I_2(s) \rightarrow I_2(g)$; $\quad \Delta H^\theta = +38$ kJ
What is the standard enthalpy change of formation of iodine trichloride, ICl_3 ?
A) +176 kJ mol^{-1}
B) -88 kJ mol^{-1}
C) +138 kJ mol^{-1}
D) -138 kJ mol^{-1}

Q.182 The following questions each represent a step in the Born-Haber cycle for the enthalpy change of formation of sodium chloride. Which changes have a negative ΔH value?
A) $Cl(g) + e^- \rightarrow Cl^-(g)$
B) $Na(s) \rightarrow Na(g)$
C) $\frac{1}{2} Cl(g) \rightarrow Cl(g)$
D) None these of these

Q.183 The enthalpy change for a reaction does not depend upon the:
A) Physical states of reactants and products
B) Use of different reactants for the same product
C) Nature of intermediate reaction steps
D) Difference in initial or final temperatures of involved substances

Q.184 Heat of combustion of a compound is:
A) positive
B) zero
C) negative
D) positive or negative

Q.185 During a chemical process which one is valid:
A) Total energy of the products and that of the reactants are equal
B) Total energy of the products is never equal to that of reactants
C) Both 'a' and 'b'
D) All of the above

Q.186 During an endothermic reaction:
A) Temperature of the surrounding will decrease and energy of the system will increase
B) Temperature of the system rises above the initial temperature
C) Temperature of the system does not changes
D) None of the above

Q.187 The energy units in which heat changes are expressed in *SI* system are:
A) Joule
B) Calories
C) Kilo Joule
D) Both a & b

Q.188 The barrier to exothermic non-favorable chemical reaction is
A) Energy releasing step
B) Energy absorbing step
C) High energy release
D) All of these

Q.189 To predict the spontaneity of reaction. It is necessary to study:
A) State of a reactions
B) Catalyst involved
C) Temperature and pressure and reactions
D) Free energy of the system

Q.190 The value of the enthalpy change for the process represented by the equation $Na(s) \rightarrow Na^+(g) + e^-$ is equal to:
A) the first ionization energy of sodium
B) the enthalpy change of vaporization of sodium.
C) The sum of the first ionization energy and the electron affinity of sodium.
D) the sum of the enthalpy change of atomization and the first ionization energy of sodium.

Q.191 If at 298 K the bond energies of C - H, C - C, C = C and H - Hbonds are respectively 414, 347, 615 and 435 kJmol^{-1}. The value of enthalpy change for the reaction $CH_2 = CH_{2(g)} + H_{2(g)} \rightarrow H_3C - CH_{3(g)}$ at 298 K will be.
A) +250 kJ
B) +125 kJ
C) −250 kJ
D) −125 kJ

Q.192 Thermo chemistry gives us information about:
A) Energy of heat contents of the compound
B) Energy involved in chemical bonding
C) Energy changes occurring in chemical equilibrium
D) All of the above

Q.193 Which is the Non spontaneous process?
A) Acid-base reaction
B) Evaporation of water
C) Burning of a candle
D) Reaction of N_2 and O_2

Q.194 Determine the value of Enthalpy of formation of NH4Cl: (2017)
A) -788 kJmol^{-1}
B) -314.55 kJmol^{-1}
C) -692 kJmol^{-1}
D) None of these

Q.195 $\frac{1}{2}H_{2(g)} \rightarrow H_{(g)}$ $\Delta H = 218$ kJmol^{-1}
In this reaction ΔH will be called: (2016)
A) Enthalpy of atomization
B) Enthalpy of decomposition
C) Enthalpy of formation
D) Enthalpy of dissociation

Q.196 $Mg + \frac{1}{2}O_{2(g)} \rightarrow MgO_{(s)} + -692$ kJmol^{-1} at STP
Enthalpy of the above reaction will be called: (2016)
A) ΔH°_{at}
B) ΔH°_s
C) ΔH°_{sol}
D) ΔH°_f

Q.197 Enthalpy is measured at _____. (2017)
A) 300 K and 2 atm
B) 300 K and 1 atm
C) 298 K and 1 atm
D) 295 K and 1 atm

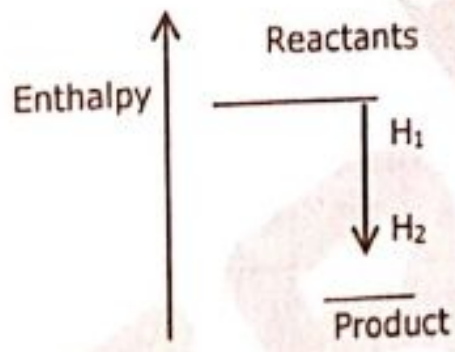
Q.198 Reaction of water with quick lime result in the rise in the temperature of the system. Using the concept of energy change, indicate the nature of the reaction? (2018)
A) Endothermic reaction
B) Third Order reaction
C) Exothermic reaction
D) Non spontaneous reaction

Q.199 Which one of the following enthalpy change is always exothermic? (2018)
A) Enthalpy of atomization
B) Enthalpy of combustion
C) Enthalpy of solution
D) Enthalpy of formation

Q.200 Which of the equations shows the same "twice" the enthalpy change of neutralization as the following equation. (2019)
$HCl + NaOH \rightarrow NaCl + H_2O$
A) $MgCO_3 + 2HCl \rightarrow MgCl_2 + CO_2 + H_2O$
B) $NH_4Cl + NaOH \rightarrow NaCl + H_2O + NH_3$
C) $KOH + HCl \rightarrow KCl + H_2O$
D) $H_2SO_4 + Mg(OH)_2$ $MgSO_4 + 2H_2O$

Q.201 Which enthalpy change is relevant in the following process: (2019)
$Na_{(s)} \rightarrow Na_{(g)}$ $\Delta H = ?$
A) Enthalpy of atomization
B) Enthalpy of fusion
C) Enthalpy of vaporization
D) Enthalpy of solution

Q.202 The given diagram shows the enthalpy changes during a chemical reaction. (2019)



This diagram represent
A) An endothermic reaction
B) An exothermic reaction
C) An isothermic process
D) A non-spontaneous process

Q.203 What is the measure of activation energy in an endothermic reaction? (2019)
A) The energy of activation of backward reaction is less than that of forward reaction
B) The energy of activation of backward reaction is more than that of forward reaction
C) The energy of activation of forward reaction is less than of backward reaction
D) The energy of activation of forward-backward reaction is same

Q.204 The thermal energy at constant pressure is called: (2020)
A) Enthalpy
B) Internal energy
C) Heat capacity
D) work done

Q.205 Born-Haber-cycle is used to determine the lattice energies of: (2020)
A) Molecular solids
B) Metallic solids
C) Ionic solids
D) Covalent solids

Q.206 One calorie is equal to:
A) 4.18 KJ
B) 4.18 J
C) 0.418 KJ mol^{-1}
D) 0.418 KJ

ANSWERS

1.	D	2.	A	3.	C	4.	D	5.	D	6.	D	7.	D	8.	C	9.	A	10.	A
11.	C	12.	A	13.	D	14.	A	15.	D	16.	C	17.	B	18.	B	19.	D	20.	D
21.	B	22.	C	23.	D	24.	D	25.	A	26.	B	27.	C	28.	B	29.	B	30.	C
31.	B	32.	C	33.	A	34.	C	35.	A	36.	A	37.	D	38.	C	39.	B	40.	A
41.	A	42.	D	43.	B	44.	B	45.	B	46.	A	47.	A	48.	A	49.	A	50.	A
51.	D	52.	A	53.	C	54.	D	55.	B	56.	D	57.	A	58.	A	59.	B	60.	A
61.	A	62.	D	63.	B	64.	B	65.	B	66.	C	67.	D	68.	D	69.	B	70.	A
71.	B	72.	A	73.	D	74.	C	75.	D	76.	C	77.	D	78.	D	79.	D	80.	C
81.	D	82.	A	83.	A	84.	D	85.	C	86.	D	87.	B	88.	A	89.	A	90.	B
91.	B	92.	B	93.	A	94.	C	95.	B	96.	A	97.	C	98.	D	99.	B	100.	C
101.	B	102.	B	103.	D	104.	B	105.	A	106.	C	107.	C	108.	C	109.	A	110.	B
111.	B	112.	B	113.	A	114.	D	115.	B	116.	C	117.	B	118.	A	119.	C	120.	D
121.	B	122.	B	123.	C	124.	A	125.	B	126.	A	127.	B	128.	C	129.	B	130.	D
131.	B	132.	B	133.	B	134.	C	135.	A	136.	B	137.	D	138.	C	139.	A	140.	C
141.	B	142.	C	143.	B	144.	B	145.	D	146.	D	147.	B	148.	A	149.	B	150.	C
151.	B	152.	D	153.	A	154.	C	155.	A	156.	A	157.	B	158.	C	159.	A	160.	B
161.	C	162.	D	163.	D	164.	A	165.	C	166.	A	167.	A	168.	B	169.	C	170.	C
171.	A	172.	A	173.	C	174.	C	175.	C	176.	D	177.	D	178.	A	179.	B	180.	C
181.	B	182.	A	183.	B	184.	C	185.	B	186.	A	187.	A	188.	B	189.	D	190.	D
191.	D	192.	D	193.	D	194.	B	195.	A	196.	D	197.	C	198.	C	199.	B	200.	D
201.	A	202.	B	203.	A	204.	A	205.	C	206.	B	207.		208.		209.			

Q.1 What is the oxi
A) 0
B) 1

Q.2 The modern de
A) loss of oxyge
B) gain of oxyge

Q.3 In the followir
thoxidizing ag
A) aluminum....
B) bromine....br

Q.4 Which of the
A) Fluorine
B) Iodine

Q.5 Electrochemi
energy in:
A) Galvanic ce
B) Electrolytic

Q.6 The conversi
A) Electrolytic
B) Galvanic ce

Q.7 Metals are c
A) Light weig
B) Immobility

Q.8 Metallic con
A) Ionic cond
B) Protonic c

Q.9 Electrolytes
A) Light
B) Electricity

Q.10 Electrolysis
A) Manufact
B) Refining

Q.11 In an elect
A) Cathode
B) Cathode

Q.12 When aqu
A) H^+
B) Na^+

Q.13 In electro
A) Either sp
B) Always
C) Always
D) More sp

Q.14 Which of
A) NaCl fu
B) $NaCl_{(aq}$

Q.15 During el
A) Reduct
B) Both (a

Q.16 During e
A) Lost by
B) Gained

Q.17 The func
A) To inc
B) To inc

Q.18 Which o
A) Electr
B) Electr

Q.19 What ar
A) Chlor
B) Hydr

ELECTRO CHEMISTRY

Q.1 What is the oxidation number of oxygen in the molecule O_2?
A) 0
B) 1
C) 2
D) 4

Q.2 The modern definition of oxidan is...
A) loss of oxygen
B) gain of oxygen
C) loss of one or more electrons
D) gain of one or more electrons

Q.3 In the following reaction, the element that is oxidized is _?_ and the element that is thoxidizing agent is_?_ $2Al + 3Br_2 \rightarrow 2AlBr_3$
A) aluminum.....aluminum
B) bromine....bromine
C) aluminum....bromine
D) bromine....aluminum

Q.4 Which of the followiı.g is most powerul oxidizing agent?
A) Fluorine
B) Iodine
C) Hydrogen
D) Carbon

Q.5 Electrochemistry is concerned with the conversion of electrical energy into chemical energy in:
A) Galvanic cell
B) Electrolytic cell
C) Voltaic cell
D) both (a) and (c)

Q.6 The conversion of chemical energy into electrical energy requires:
A) Electrolytic cell
B) Galvanic cell
C) Voltaic cell
D) Both (b) and (c)

Q.7 Metals are conductors of electricity because of the:
A) Light weight
B) Immobility of the electrons
C) Lustrous surfaces
D) Relatively free movement of their electrons

Q.8 Metallic conduction is also called as:
A) Ionic conduction
B) Protonic conduction
C) Electronic conduction
D) Super conduction

Q.9 Electrolytes in the form of solution or in the fused state have the ability to conduct:
A) Light
B) Electricity
C) Ions
D) Electrons

Q.10 Electrolysis is used for:
A) Manufacture of caustic soda
B) Refining of copper
C) Electroplating
D) All of above

Q.11 In an electrolytic cell, the electrons flow from:
A) Cathode to anode or opposite
B) Cathode to anode
C) Anode to cathode
D) Radom flow

Q.12 When aqueousNaCl is electrolyzed, which of the following ions get discharged at anode?
A) H^+
B) Na^+
C) OH^-
D) Cl^-

Q.13 In electrolytic cells, the chemical changes may be:
A) Either spontaneous or non-spontaneous
B) Always spontaneous
C) Always non-spontaneous
D) More spontaneous and less non-spontaneous

Q.14 Which of the following cannot conduct electricity?
A) NaCl fused
B) $NaCl_{(aq)}$
C) $NaCl_{(solid)}$
D) Both (b) and (c)

Q.15 During electrolysis, the reaction that takes place at cathode is:
A) Reduction
B) Both (a) and (c)
C) Oxidation
D) No reaction occurs

Q.16 During electrolysis, electrons are:
A) Lost by anions and gained by cations
B) Gained by anions and lost by cations
C) Gained only
D) Lost only

Q.17 The function of salt bridge is:
A) To increase movement of ions
B) To increase the emf of cell
C) To decreasethe temperature
D) To maintain electrical neutrality

Q.18 Which of the following yield both hydrogen and chlorine on electrolysis?
A) Electrolysis of acidified water
B) Electrolysis of molten NaCl
C) Electrolysis of concentrated aqueous NaCl
D) Electrolysis of saline water

Q.19 What are the products of electrolysis of aqueous sodium chloride at two electrodes?
A) Chlorine at anode and oxygen at cathode
B) Hydrogen at anode and chlorine at cathode
C) Chlorine at anode and hydrogen at cathode
D) Chlorine at anode and sodium at cathode

Q.20 **Sodium can be obtained by:**
A) Electrolysis of acidified water
B) By heating NaCl and water at 100°
C) Electrolysis of molten sodium chloride
D) Electrolysis of aqueous sodium chloride

Q.21 **A cell in which electric current is produced as a result of spontaneous redox reaction is called:**
A) Dry cell
B) Electrolytic cell
C) Galvanic cell
D) Half cell reaction

Q.22 **A cell which produces electrical current by an oxidation-reduction reaction is known as:**
A) Electrolytic cell
B) Voltaic cell
C) Reversible cell
D) Standard cell

Q.23 **The cell in which a non-spontaneous redox reaction takes place as a result of electricity is known as:**
A) Electrolytic cell
B) Voltaic cell
C) Daniel cell
D) Dry cell

Q.24 **When fused $PbBr_2$ is electrolyzed:**
A) Lead appears at anode
B) Lead appears at cathode
C) Bromine appears at cathode
D) Lead appears at both electrodes

Q.25 **When aluminium electrode is coupled with copper electrode in a galvanic cell:**
A) Reduction takes place at aluminium electrode
B) Oxidation takes place at copper electrode
C) Reduction takes place at copper electrode
D) Both (a) and (b)

Q.26 **K, Ca and Li metals may be arranged in decreasing order of their reduction potential as:**
A) Li, K, Ca
B) Li, Ca, K
C) Li, Ca, K
D) K, Ca, Li

Q.27 **The best electrode used in salt bridge is KCl. Which other electrolyte can also be used for the purpose:**
A) NaCl
B) NH_4NO_3
C) KNO_3
D) $NaNO_3$

Q.28 **Reduction or oxidation potential of standard hydrogen electrode is:**
A) 0.0 volt
B) 1.0 volt
C) 0.8 volt
D) 1.8 volt

Q.29 **A half reaction can be defined as:**
A) It always occurs at cathode
B) Involves only half of a mole of electrolyte
C) Occurs at one of the electrode
D) Goes only half way to completion

Q.30 **Which of the following statement is incorrect about SHE:**
A) Reduction potential of Cu^{+2} is more than H^+ ions when it is coupled with copper electrode
B) H^2 gas is passed in it at I atm pressure
C) Its oxidation potential and reduction potential is zero
D) It is made of a platinum wire dipped in HCl solution

Q.31 **The difference of potential of two electrodes when concentration of solution is 1M each at 25°C and 1 atm is called:**
A) Cell reaction
B) Electrode potential
C) Cell voltage
D) Standard cell potential

Q.32 **Standard hydrogen electrode has an arbitrarity fixed potential:**
A) 1.0 volt
B) 0.34 volt
C) 0.0 volt
D) 0.84 volt

Q.33 **The overall positive value for the reaction potential predicts that process is energetically:**
A) Impossible
B) Not feasible
C) Feasible
D) Both (a) and (b)

Q.34 **Value of standard reduction potential for strong reducing agents is:**
A) Large negative value
B) Zero
C) Large positive value
D) Negligibily small

Q.35 **The standard reduction potential of Zn is -0.76V. The standard oxidation potential of Zn will be:**
A) >0.76
B) -0.76
C) +0.76
D) <-0.76

Q.36 **The standard reduction potential of silver is about 0.8V. This value gives information that:**
A) Ag^+ has tendency to be oxidized
B) Ag has tendency to be oxidized to Ag^+ ion
C) Ag^+ ions have tendency to be converted to Ag metal atom
D) Both (b) and (c)

Q.37 **A reaction will be**
A) Positive or nega
B) Negative

Q.38 **Emf of the cell is**
A) Sum or differen
B) Sum of two ele
C) Difference of t
D) Always zero

Q.39 **A single cell vo**
A) 2.5 volt
B) 1.3 volt

Q.40 **In Daniel cell,**
A) Increase rapi
B) Increases gr

Q.41 **The gain of el**
A) Dehydration
B) Oxidation

Q.42 **In a chemical**
A) Gains electr
B) Loses as we

Q.43 **In which cor**
A) MnO
B) MnO_2

Q.44 **When piece becomes blu**
A) Formation
B) Oxidation

Q.45 **Which pur**
A) Molten Na
B) Molten K

Q.46 **Most activ**
A) with Al
B) with ca

Q.47 **In down's cathode is**
A) $2Cl^- \rightarrow$
B) $Na^+ +$

Q.48 **The ions**
A) H^+
B) OH^-

Q.49 **How ma**
A) 6.0 x
B) 6.0 x1

Q.50 **The rea**
A) Cl^-
B) $2H^+ -$

Q.51 **In an e**
A) from
B) from

Q.52 **How m of sam**
A) sam
B) 1 ;

Q.53 **In ele**
A) Tim
B) Res

Q.54 **Stand 0.32**
A) Cu
B) Cu

Q.55 **The**
A) $\frac{}{4V}$
B) Fa

Q.37 A reaction will be spontaneous if its calculated emf is:
A) Positive or negative
B) Negative
C) Zero
D) Positive

Q.38 Emf of the cell is:
A) Sum or difference of two electrode potentials
B) Sum of two electrode potentials
C) Difference of two electrode potentials
D) Always zero

Q.39 A single cell voltage in lead storage battery is:
A) 2.5 volt
B) 1.3 volt
C) 2.0 volt
D) 2.3 volt

Q.40 In Daniel cell, if salt bridge is removed between two half cells, the voltage:
A) Increase rapidly
B) Increases gradually
C) Does not change
D) Drops to zero

Q.41 The gain of electron is known as:
A) Dehydration
B) Oxidation
C) Reduction
D) Dehydrogenation

Q.42 In a chemical reaction, an oxidising agent:
A) Gains electron
B) Loses as well as gains electron
C) Loses electron
D) None of above

Q.43 In which compound the oxidation number of Mn is +6?
A) MnO
B) MnO_2
C) K_2MnO_4
D) $KMnO_4$

Q.44 When piece of copper wire is immersed in solution of $AgNO_3$, the colour of solution becomes blue. It is due to:
A) Formation of Ag – Cu alloy
B) Oxidation of Ag
C) Reduction of Cu
D) Oxidation of Cu

Q.45 Which pure substance will not conduct electricity?
A) Molten NA
B) Molten KOH
C) Liquefied HCI
D) liquid Hg

Q.46 Most active metals are extractd from their ores by the process of reduction?
A) with AI
B) with carbon
C) with H_2
D) by electrolysis

Q.47 In down's method, sodium is prepared by electricity of molten NACI. The reaction cathode is?
A) $2CI^- \rightarrow CI^2(g) = 2e$
B) $Na^+ + e \rightarrow Na\ (S)$
C) $Na(S) \rightarrow Na^+ + e$
D) $Na^+\ (aq) + e \rightarrow Na\ (s)$

Q.48 The ions discharged at anode by the electrolysis of very dilute H_2SO_4 solution are?
A) H^+
B) OH^-
C) HSO_4^-
D) SO_4^{2-}

Q.49 How many electrons are there in one coulomb?
A) 6.0×10^{28}
B) 6.0×10^{18}
C) 6.0×10^{23}
D) 6.0×10^{21}

Q.50 The reaction at cathode during the electrolysis of aqueous solution of NaCI is ?
A) CI^-
B) $2H^+ \rightarrow H_2$
C) $2OH^-\ H_2 + O_2$
D) $Na^+ \rightarrow Na$

Q.51 In an electrolytic cell current flows?
A) from cathode to anode in outer circuit
B) from anode to cathode outside the cell
C) From cathode to anode inside the cell
D) from anode to cathode inside the cell

Q.52 How many moles each of Ag^+ ion, Cu^{2+} ion and FE^{3+} ions would be deposited by passage of same quantity of electricity through solutions of their salts?
A) same number of moles of each
B) 1 ; ½ ; 1/3 : moles
C) 1/3 : ½ : 1
D) none of these

Q.53 In electrolysis mass of discharged ion is not proportional to ?
A) Time
B) Resistance
C) Quantity of electricity
D) Chemical equivalent of ion

Q.54 Standard EMF of the cell Fe II Fe^{2+} is + 0.44 V and standard EMf of cell Cu II Cu^{2+} is - 0.32 V . then?
A) Cu oxidises Fe^{2+} ion
B) Cu^{2+} oxidises Fe
C) Cu reduce Fe^{2+} ion
D) Cu^{2+} ion reduces Fe

Q.55 The unit of electric charge is equal to ?
A) $\frac{Fraday}{Av\ Number}$
B) Farady x A.v Number
C) $\frac{Av\ Number}{Fraday}$
D) None

Q.56 In the electrolysis of $CuSO_4$, $CU^{2+} + 2e^- \rightarrow Cu$ take place at ?
A) Anode
B) Cathode
C) In solution
D) None

Q.57 How long will it take for current of 3 amperes to decompose 36 g of water ?
A) 36 Hours
B) 18 hours
C) 9 hours
D) 4.5 Hours

Q.58 The number of electrons required to depsot one g – equivalent of Al from a solution of $AlCl_3$
A) N
B) 2N
C) 3N
D) N/9

Q.59 Molten NaCl conducts electricity due to the Presence of ?
A) free electrons
B) fee molecules
C) free ions
D) Atoms of Na and CI

Q.60 Electrolytes when dissolved in water dissociate into ions, because?
A)the are unstable
B) the forces of repulsion increase
C) the water dissolves them
D)the forces of electrostatic attraction are broken down by water.

Q.61 The degree of ionization of a substance depends on?
A) size of solute molecules
B) nature of solute molecule
C) nature of vessel used
D) quantity of electricity passed

Q.62 Three fardasys of electricity are passed through molten AI^2O^3 aqueous solution of $CuSO^4$ and molten NaCI solutions .the amounts of Cu and Na deposited at the cathodes will be in the ratio of moles indicated?
A) 1; 2 ; 3
B)1 ; 5 ; 2 ; 3
C) 1 ; 1.5 ; 3
D) 1 ;3 ;2

Q.63 During electrolysis of fused NaCI, which reaction accure at anode?
A) CI^- ions are oxidise
B) Na^+ ions are oxidized
C) CI^- ions are reduced
D) Na^+ ions are reduced

Q.64 The material used in solar cell contain?
A) Cs
B)Sn
C) Si
D) Ti

Q.65 In the electrolysis of a fused satl, the weight of the depot on the electrode will not depend on?
A) temperature of bath
B) current intensity
C)Time of electrolysis
D)Electrochemical equivalent

Q.66 In the electrolysis of dilute H^2SO^4 using platinum electrode?
A) H_2 is liberated at cathode
B) O^2 is produced at cathode
C) CI^2 is obtain at cathode
D) NH^3 is produced at cathode

Q.67 The standard reduction potentials of metal electrodes A, B, C and D are +0.14 v, +0.34V, following is the best reducing agent?
A) A
B) B
C) C
D) D

Q.68 When a lead storage battery is discharged?
A) SO^2 is evolved
B) Pb is formed
C) $PbSO_4$ is consumed
D) H_2SO_4 is consume

Q.69 The standard reduction potentials at 25° of Li^+ I Li, Ba^{2+} I Ba, Na^+ I Na and Mg^{2+} I Mg are -3.05 -2.73, -2.71 and -2.37 V respectively which one of the following is strongest oxidizing agent?
A) Li^+
B)Na^+
C) Ba^{2+}
D)Mg^{2+}

Q.70 Electrolytes when dissolved in water dissociates into their constituent ions, The degree of dissociation of an electrolyte increase with?
A) increasing concentration of of electrolyte
B) decreasing temperature
C) Decreasing concentration of electrolyte
D The presence of substances yielding common ions

Q.71 A solution containing one mole per litre of each $Cu(NO_3)_2$ $AgNO_3$: Hg $(NO_3)_2$ Mg $(NO_3)_2$ given standard reduction, potential values $Ag^+ + e^- \rightarrow Ag$ 0.80V; $Cu^{2+} + 2e^- \rightarrow Cu$ 0.34 v $Mg^{2+} + 2e^- \rightarrow Mg$ -2.37v , $Hg^{2+} + 2e^- \rightarrow Hg$ 0.79 v with increasing voltage, the sequence of deposition of metals at the cathode will be?
A) Ag, Hg, Cu, Mg,
B) Ag, Mg, Hg, Cu
C) Mg , Ag, Hg, Cu
D), Cu, Mg, Ag, Hg

Q.72 If mercury is used as cathode in the electro synthesis of aqueous NaCl solution, the ions discharge at cathode are?
A) H^+
B) OH^-
C) Na^+
D) CI^-

Q.73 The passage of current through a solution of certain electrolyte results in the liberation of H_2 at cathode
A) water
B) NaCl in water
C) H_2SO_4
D) $CuCl_2$ in water

Q.74 One passing electrical current through Cu (II) sulphate solution when platinum is used as anode?
A) O_2 is liberate at anode
B) H_2 liberated at anode
C) SO_4 is liberated at anode
D) copper is discharged at anode

Q.75 In the Cell (10 g) Cu; $CuSO_4$ (1M) ll $AgNO_3$: Ag (10g) (1M) The cathode is
A) Ag^0
B) Cu^0
C) Ag^+
D) Cu^{2+}

Q.76 In the above cell the oxidizing agent and reducing agent are?
A) Cu ; Ag^+
B) Cu^0
C) Cu^{2+} ; Ag^+
D) Ag ; Cu

Q.77 Solid NaCl is bad conductor of electricity because?
A) in Solid NaCl is covalent
B) Solid NaCl is covalent
C) In solid NaCl, there is no velocity of ions
D) in solid NaCl there are no electrons

Q.78 In a standard Weston cell the cathode is ?
A) Cd /Hg
B) Hg
C) Pt
D) C

Q.79 An electrolyte?
A) from complex ions in solution
B) gives ions only when electricity is passed
C) possesses ion seven in slid state
D) give ions only when dissolved in water

Q.80 The electrolyte of aqueous solution of NaCl produced at cathode and anode respectively?
A) H_2 CI_2
B) Na_2 CI_2
C) H_2 O_2
D) Na CI_2

Q.81 The reaction taking place at anode and cathode are respectively?
A) oxidation reduction
B) Reduction oxidation
C) reduction, hydrolysis
D)oxidation , hydrolysis

Q.82 In th electroylysis of which of the following H^+ ions are discharged in preference to CI^- ions?
A) Dil NaCI
B) conc . NaCI
C) Fused NaqCi
D)Solid NaCi

Q.83 Three metals which can donate electrons to H^+ (aq) are ?
A) Cu, Ag , Au
B) Ba, Pb, Au
C) Na, Cr, Ag
D) Ba, Al , Fe

Q.84 The electrode through which electrons enter the electrolytic solution is?
A) Cathode
B) anode
C) may be anode or cathode
D) None

Q.85 In which of the following reaction cathode is used?
A) $cu^{2+} + 2e \rightarrow cu$
B)$Cu + 2e \rightarrow Cu^{2+}$
C) $Hg + O_2 \rightarrow HgO$
D) $Mg + O_2 \rightarrow MgO$

Q.86 Which is not correct ? the degree of dissociation (a) of an electrolyte depends on ?
A) nature of electrolyte
B) catalytic action
C) Dilution
D) Temperature

Q.87 The reaction taking place at anode when an aqueous solution of $CuSo^4$ is electrolyzed using inert Pt elected
A) $2SO_4^{2} \rightarrow SO_3^{2} + 2e$
B) Cu^{2+} 2 e $\rightarrow$ cu
C) $2H_2O \rightarrow O_2 + 4H^+ + 4e$
D) $2H^+ + 2e + \rightarrow H^2$

Q.88 Which of the following has highest electrode potential?
A) BE
B) Mg
C) Ca
D) Ba

Q.89 Cu (II) sulphate solution is treated separately with KCl, and KI which case , Cu^{2+} be reduced to Cu?
A) with KCI
B) With KI
C) treated with both
D) None

Q.90 Arrange Mg, k , Ba and Ca in order of their decreasing electrode potentials?
A) k, Ba, Ca, Mg
B) Ba, Ca , k, Mg
C) Ca Mg , k ,Ba
D) Mg, Ca, k ,Ba

Q.91 The degree of dissociation of weak electrolyte increasing as?:
A) pressure increases
B) dilution decrease
C) dilution increases
D) None

Q.92 Which process occurs in the electrolysis of aqueous solution of nickel chloride with nickel electrode the oxidation reaction will be ?
A) $Ni^{2+} + 2e^- + Ni$
B) $2H^+ \ 2e^- \rightarrow H_2$
C) $2Cl^- \rightarrow Cl_2 + 2e^-$
D) $Ni \rightarrow Ni^{2+} + 2e^-$

Q.93 Spontaneous reaction is
A) $Pb + Cu^{2+} \longrightarrow Cu + Pb^{2+}$
B) $Br^2 + 2Cl \longrightarrow Cl_2 + 2Br^-$
C) $H_2 + Mg^{2+} \longrightarrow Mg + 2H^+$
D) $2Ag + Cu^{2+} \longrightarrow Cu + 2Ag^+$

Q.94 The species that can act as oxidizing as well as reducing agent
A) Na^+
B) MnO_4^{-1}
C) HNO_2
D) HNO3

Q.95 Which element in the reaction below in oxidized?
$2FeSO_4 + Cl_2 + H_2SO_4 \rightarrow Fe_2(SO_4)_3 + 2HCl$
A) Chlorine
B) Iron
C) Hydrogen
D) Sulphur

Q.96 What happens when a copper atom becomes a copper (II) ion?
A) It is oxidized by losing two electrons.
B) It is oxidized by gaining two electrons.
C) It is reduced by gaining two electrons.
D) It is reduced by losing two electrons.

Q.97 the sum of all kinds of energies of atoms, ions or molecules of a system is known as
A) Kinetic energy
B) Potential energy
C) Internal energy
D) Lattice energy

Q.98 Which is the correct expression for lattice energy
A) $K_{(s)} + 1/2Cl_{2(g)} \longrightarrow KCl_{(s)}$
B) $K^+_{(g)} + Cl^-_{(g)} \longrightarrow KCl_{(s)}$
C) $2K_{(s)} + 2Cl_{2(g)} \longrightarrow 2KCl_{(s)}$
D) $K^+_{(g)} + Cl^-_{(g)} \longrightarrow KCl_{(g)}$

Q.99 During electrolysis of KNO_3, H_2 is evolved at
A) anode
B) both a and b
C) cathode
D) None

Q.100 In an oxidation reactions, atoms of an element in a chemical species lose electrons and increases their:
A) oxidation state
B) reduction
C) electrode
D) negative charge

Q.101 The value of "x" for the given reaction is $C_2O_4^{2-} \longrightarrow 2CO_2 + x$ electrons
A) 2
B) 6
C) 4
D) 8

Q.102 Correct representation of Daniel cell is
A) $Zn / Zn^{+2}(aq)1M \| Cu^{+2}(aq)1M / Cu$
B) $Zn^{+2}(aq)1M / Zn \| Cu / Cu^{+2}(aq)1M$
C) $Cu^{+2}(aq)1M / Cu \| Zn / Zn^{+2}(aq)1M$
D) $Cu / Cu^{+2}(aq)1M \| Zn^{+2}(aq)1M / Zn$

Q.103 Chlorine is manufactured commercially by the electrolysis of aqueous sodium chloride (brine). Which other important products are made in this process?
A) Hydrochloric acid and hydrogen.
B) Hydrogen and sodium hydroxide.
C) Hydrogen and sodium.
D) Sodium and sodium hydroxide.

Q.104 An electric current is passed through aqueous potassium sulphate. K_2SO_4 What is formed and liberated at the cathode?
A) Hydrogen
B) Oxygen
C) Potassium
D) Sulphur

Q.105 The oxidation number of chromium in $K_2Cr_2O_7$ is
A) +14
B) +6
C) +12
D) none of these

Q.106 In electrolytic cell a salt bridge is used in order to:
A) pass the electric current
B) mix- solution of two half cells
C) prevent the flow of ions in air
D) allow movement of ions between two half cells

Q.107 Electrode potential depends on
A) Temperature
B) Concentration
C) Pressure
D) All of these

Q.108 Standard reduction potential of Zn^{+2}/Zn and Ni^{+2} /Ni are -0.76V and -0.25V
A) +0.51V
B) +1.01V
C) -0.51V
D) -1.01V

Q.109 In which pair both the electropositive elements are possessing same oxidation state in both compounds?
A) Cu_2Cl_2 and NaCl
B) Fe_2O_3 and $FeSO_4$
C) H_2S and SO_2
D) MnO_2 and $MnCl_2$

Q.110 Which change takes pla
A) Copper is deposited at t
B) Oxygen is evolved at th
C) Sulphate ions move tow
D) Both a and b

Q.111 Stronger the oxidizing
A) A greater is the standa
B) Lesser is the standard

Q.112 Molten $CuCl_2$ is electro is
A) $Cu_{(s)} \longrightarrow Cu^{2+} + 2e^-$
B) $Cl_{2(g)} + 2e^- \longrightarrow 2Cl^-$

Q.113 During a redox react
A) gains electrons
B) loses electrons

Q.114 In $MgCl_2$, the oxidat
A) zero
B) -2

Q.115 e.m.f of the cell is
A) Difference of two
B) Sum of two electr
C) May be sum (or)
D) Depends upon th

Q.116 In electrochemica in the increasing
A) Cell voltages
B) Reduction pote

Q.117 Which one of the
A) pure distilled w
B) dilute solution

Q.118 In electrolysis
A) Sodium
B) Lead

Q.119 Incorrect state
A) It is zero in f
B) It may be ne

Q.120 Conduction du
A) Electrolytic
B) Electronic co

Q.121 Zinc-Copper
A) Salt bridge
B) Both a & b

Q.122 The potentia
A) Ammeter
B) Voltmeter

Q.123 Oxidizing ag
$2MnO_4^- + 3C$
A) MnO_4^-
B) H_2O

Q.124 In which
A) $MnO_4^- \rightarrow$
B) MNO_4^{2-}

Q.125 In hydrog
A) Solid ca
B) Hollow

Q.126 In Hydro with:
A) Co
B) Ni

Q.127 The rea
A) oxida
B) dispr

solution of nickel chloride with

$Cl_2 + 2e^-$

$^{2+} + 2e^-$

$\longrightarrow Cl_2 + 2Br^-$

$^{2+} \longrightarrow Cu + 2Ag^+$

ing agent

II) ion?

d by gaining two electrons.

d by losing two electrons.

ules of a system is known as

rgy

gy

$\longrightarrow 2KCl_{(s)}$

$\longrightarrow KCl_{(g)}$

al species lose electrons and

electrons

$Zn / Zn^{+2}(aq)IM$

$^{+2}(aq)IM / Zn$

aqueous sodium chloride

ess?

um.

hydroxide.

ate. K_2SO_4 What is

d -0.25V

e oxidation state

Q.110 Which change takes place when aqueous copper (II) sulphate is electrolyzed?
A) Copper is deposited at the negative electrode
B) Oxygen is evolved at the positive electrode
C) Sulphate ions move towards the negative electrode
D) Both a and b

Q.111 Stronger the oxidizing agent
A) A greater is the standard reduction potential
B) Lesser is the standard reduction potential
C) Greater is the standard oxidation potential
D) Both A and B

Q.112 Molten $CuCl_2$ is electrolyzed using platinum electrodes. The reaction occurring at anode is
A) $Cu_{(s)} \longrightarrow Cu^{2+} + 2e^-$
B) $Cl_{2(g)} + 2e^- \longrightarrow 2Cl^-$
C) $Cu^{2+} + 2e^- \longrightarrow Cu_{(s)}$
D) $2Cl^- \longrightarrow Cl_{2(g)} 2e^-$

Q.113 During a redox reaction, an oxidizing agent
A) gains electrons
B) loses electrons
C) is oxidized
D) is hydrolyzed

Q.114 In $MgCl_2$, the oxidation state of 'Cl' is:
A) zero
B) -2
C) +2
D) -1

Q.115 e.m.f of the cell is the:
A) Difference of two electrode potentials
B) Sum of two electrode potential
C) May be sum (or) difference of two electrode potentials
D) Depends upon the nature of cell

Q.116 In electrochemical series, the electrodes are compared with SHE and they are arranged in the increasing order of their:
A) Cell voltages
B) Reduction potential
C) Ionization potentials
D) Oxidation potential

Q.117 Which one of the following will be good conductor of electricity?
A) pure distilled water
B) dilute solution of glucose
C) molten NaCl
D) chloroform

Q.118 In electrolysis of aqueous $CuCl_2$ the metal deposited at cathode is:
A) Sodium
B) Lead
C) Aluminium
D) Copper

Q.119 Incorrect statement about oxidation state is
A) It is zero in free state
B) It may be negative
C) It is always equal to valency
D) It may be in fraction

Q.120 Conduction due to free ions is called
A) Electrolytic conduction
B) Electronic conduction
C) Metallic conduction
D) There is no conduction due to free ions

Q.121 Zinc-Copper galvanic cell may be formed by
A) Salt bridge
B) Both a & b
C) Porous partition
D) None of these

Q.122 The potential difference of an electrochemical cell is measured by
A) Ammeter
B) Voltmeter
C) Galvanometer
D) Calorimeter

Q.123 Oxidizing agent in the following reaction is

$2MnO_4^- + 3ClO_3^- + H_2O \longrightarrow 3ClO_4^- + 2MnO_2 + 2OH^-$

A) MnO_4^-
B) H_2O
C) $3ClO_3^-$
D) MnO_2

Q.124 In which of the following changes, there is transfer of five electrons?
A) $MnO_4^- \rightarrow Mn^{2+}$
B) $MNO_4^{2-} \rightarrow MnO_2$
C) $CrO_4^{2-} \rightarrow Cr^{3+}$
D) $Cr_2O_7^{2-} \rightarrow 2Cr^{3+}$

Q.125 In hydrogen –oxygen fuel cell the two electrodes are:
A) Solid carbon rods
B) Hollow and nonporous carbon rods.
C) Porous solid carbon rods
D) Hollow and porous carbon rods.

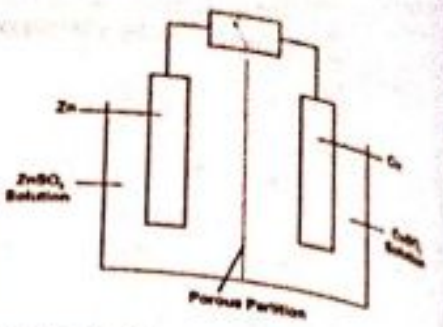
Q.126 In Hydrogen –oxygen fuel cell the hollow and porous carbon tubes are impregnated with:
A) Co
B) Ni
C) Cu
D) Pt

Q.127 The reaction $3C\ell O^-_{(aq)} \rightarrow C\ell O^-_{3(aq)} + 2C\ell^-_{(aq)}$ is an example of:
A) oxidation reaction
B) disproportionation reaction
C) reduction reaction
D) decomposition reaction

Q.128 Which of the following agents is the most reducing?
A) Mg
B) K
C) Na
D) Br_2

Q.129 Metallic conduction is due to the
A) movement of free electrons
B) both a and b
C) movement of ions
D) none of these

Q.130 In the figure given below, the electron flow in external circuit is from:



A) Copper to zinc electrode
B) Right to left
C) Porous partition to zinc electrode
D) Zinc to copper electrode

Q.131 The e.m.f. of Daniel cell can be increased by:
A) increasing the area of electrode
B) increasing the concentration of reducing ion in the solution
C) increasing the concentration of oxidizing ion in the solution
D) adding the dil H_2SO_4

Q.132 Greater the value of standard reduction potential of a species indicates:
A) greater its tendency to accept electrons
B) greater tendency to lose electrons
C) lesser tendency to accept electrons
D) none of these

Q.133 In which one of the following reactions does hydrogen behave as an oxidizing agent?
A) $H_2 + Cl_2 \rightarrow 2HCl$
B) $C_2H_4 + H_2 \rightarrow C_2H_6$
C) $2Na + H_2 \rightarrow 2NaH$
D) $N_2 + 3H_2 \rightarrow 2NH_3$

Q.134 What changes in oxidation number of copper takes place when copper reacts with concentrated nitric acid to give a blue solution and a brown acidic gas?
A) +1, -1
B) +2, 0
C) 0, +1
D) 0, +2

Q.135 The electrode with more negative value of reduction potential acts as:
A) cathode
B) electrode
C) anode
D) none of these

Q.136 Metals which are above SHE in electrochemical series:
A) can liberate H_2 from acid
B) cannot always liberate H_2 from acid
C) cannot liberate H_2 from acid
D) none of these

Q.137 The value of SHE as cathode and anode is always taken to be
A) One
B) Different
C) Zero
D) Same

Q.138 Study the following facts

$Zn \rightarrow Zn^{+2} + 2e^-$ $\quad E^0 = +0.76V$
$Cu \rightarrow Cu^{+2} + 2e^-$ $\quad E^0 = -0.34V$

A) $Cu + Zn^{+2} \rightarrow Cu^{+2} + Zn$
B) $Cu^{+2} + Zn \rightarrow Cu + Zn^{+2}$
C) $Cu^{+2} + Zn^{+2} \rightarrow Cu + Zn$
D) $Cu^{+2} + Zn^{+2} \rightarrow Cu + Zn^{+2}$

Q.139 Which of the following is not a reducing agent?
A) SO_2
B) CO_2
C) H_2O_2
D) NO_2

Q.140 Given:

$$Fe^{3+}_{(aq)} + e^- \rightarrow Fe^{2+}_{(aq)} ; E^\circ = +0.77V$$
$$A\ell^{3+}_{(aq)} + 3e^- \rightarrow A\ell_{(s)} ; E^\circ = -1.66V$$
$$Br_{2(aq)} + 2e^- \rightarrow 2Br^- ; E^\circ = +1.09V$$

Considering the electrode potentials, which of the following represents the correct order of reducing power?
A) $Fe^{2+} < A\ell < Br^-$
B) $Br^- < Fe^{2+} < A\ell$
C) $A\ell < Br^- < Fe^{2+}$
D) $A\ell < Fe^{2+} < Br^-$

Q.141 e.m.f produced by a galvanic cell is called
A) electrode potential
B) reduction potential
C) oxidation potential
D) cell potential

Q.142 The strongest oxidizing agent is.
A) Li
B) H_2
C) F
D) I_2

Q.143 Consider the metals: Mn, Mg, Zn, Ag, Cu. Based on their reactivity order, pick the correct statement:
A) All five metals produce hydrogen gas on reacting with acids
B) Ag will substitute Cu from its aqueous solution
C) Mn will substitute Zn from its aqueous solution
D) Cu will substitute Mg from its aqueous solution

Q.144 **Alkali metal have:**
A) lower value of reduction potential than coinage metals
B) equal values of reduction potential to coinage metals
C) higher value of reduction potential than coinage metals
D) none of these

Q.145 **Keeping in mind the electrode potential, which one of the following reaction is feasible?**
A) $Zn^{+2} + Cu \rightarrow Cu^{+2} + Zn$
B) $Fe + CuSO_4 \rightarrow FeSO_4 + Cu$
C) $Zn + MgSO_4 \rightarrow ZnSO_4 + Mg$
D) $Cd + MgSO_4 \rightarrow CdSO_4 + Mg$

Q.146 **Strong reducing agents have**
A) greater positive value of standard reduction potential
B) greater negative value of standard reduction potential
C) lesser positive value of standard reduction potential
D) none of these

Q.147 **Standard reduction potentials of four hypothetical metals W,X,Y and Z are +0.34V, -1.05V, -2.12V and +1.37V respectively, which is most reactive metal**
A) W
B) Y
C) X
D) Z

Q.148 **Cathodic reaction during electrolysis of aqueous $CuSO_4$ is**
A) $Cu \longrightarrow Cu^{2+} + 2e^-$
B) $Cl_2 + 2e^- \longrightarrow Cl^{2-} + 2Cl^-$
C) $2Cl^- \longrightarrow Cl_2 + 2e^-$
D) $Cu^{2+} + 2e^- \longrightarrow Cu$

Q.149 **The reaction at cathode in the electrolysis of dil H_2SO_4 with Pt electrodes is**
A) Reduction
B) Both a & b
C) Oxidation
D) None

Q.150 **Stronger the oxidizing agent, greater is the**
A) Oxidation potential
B) Redox potential
C) Reduction potential
D) E.M.F of cell

Q.151 **Several blocks of magnesium are fixed to the bottom of a ship to:**
A) Keep away the sharks
B) prevent action of water and salt
C) make the ship lighter
D) prevent puncturing by undersea rocks

Q.152 **During the process of electrolytic refining of copper, some metals present as impurity settle as "anode mud". These are**
A) Sn and Ag
B) Pb and Zn
C) Ag and Au
D) Fe and Ni

Q.153 **Strong oxidizing agents have**
A) greater positive value of standard reduction potential
B) lesser positive value of standard reduction potential
C) greater negative value of standard reduction potential
D) none of these

Q.154 **On the basis of oxidizing power of halogens, which reaction is possible?**
A) $I^2 + 2Cl^- \rightarrow Cl^2 + 2I^-$
B) $Cl_2 + 2F^- \rightarrow F_2 + 2Cl^-$
C) $Br_2 + 2I^- \rightarrow I_2 + 2Br^-$
D) $I_2 + 2Br^- \rightarrow Br_2 + 2I^-$

Q.155 **Weakest oxidizing agent in the electrochemical series is:**
A) Li
B) H_2
C) F_2
D) I_2

Q.156 **Fuel cells are the means by which chemical energy may be converted into:**
A) heat energy
B) mechanical energy
C) electrical energy
D) sound energy

Q.157 **Oxidizing power of an element depends upon its**
A) electrode potential
B) ionization energy
C) oxidation potential
D) electron affinity

Q.158 **The value of SHE is arbitrarily taken as**
A) - 2.87 V
B) +2.87 V
C) +3.87 V
D) none

Q.159 **Corrosion reactions are:**
A) spontaneous redox reactions
B) spontaneous acid-base reactions
C) non-spontaneous redox reactions
D) none of these

Q.160 **Given the equation: $2Cr_{(s)} + 3Pb^{2+}_{(aq)} \rightarrow 2Cr^{3+}_{(aq)} + 3Pb_{(s)}$, which is the correct reduction half reaction?**
A) $Cr_{(s)} \rightarrow Cr^{3+}_{(aq)} + 3e^-$
B) $Cr_{(s)} + 3e^- \rightarrow Cr^{3+}_{(aq)}$
C) $Pb^{2+}_{(aq)} \rightarrow Pb_{(s)} + 2e^-$
D) $Pb^{2+}_{(aq)} + 2e^- \rightarrow Pb_{(s)}$

Q.161 **During electrolysis of $H_2SO_{4(aq)}$ O_2 is evolved at**
A) cathode
B) both a and b
C) anode
D) none of these

Q.162 Which element acts as a reducing agent in the reaction? $Zn + H_2SO_4 \rightarrow ZnSO_4 + H_2$
A) Zn
B) S
C) H
D) O

Q.163 The standard heat of formation is measured at 1 atmosphere and
A) 273 K
B) 20°C
C) 293°C
D) 298 K

Q.164 Which one indicate enthalpy of atomization
A) $K_{(l)} \longrightarrow K_{(g)}$
B) $K_{(g)} \longrightarrow K^+_{(g)}$
C) $K_{(l)} \longrightarrow K^+_{(g)}$
D) $K_{(s)} \longrightarrow K_{(g)}$

Q.165 The oxidation number of S in $Cr_2(SO_4)_3$ is:
A) +6
B) +5
C) -6
D) +2

Q.166 In electrochemical series F_2 has value:
A) Large negative value
B) small positive value
C) Large positive value
D) small negative value

Q.167 Internal energy of system will always be positive if
A) Reaction is exothermic and work is done by the system
B) Reaction is exothermic and work is done on the system
C) Reaction is endothermic and work is done by the system
D) Reaction is endothermic and work is done on the system

Q.168 Salt bridge contains a gel with an aqueous solution of
A) NaCl
B) KCl
C) $CuSO_4$
D) $ZnSO_4$

Q.169 Standard hydrogen electrode has the standard reduction potential
A) Unity
B) Positive
C) Zero
D) Negativ

Q.170 Which cell is not possible?
A) E^o cell = - 0.76 volts
B) E^o cell = 1.10 volts
C) E^o cell = 2.20 volts
D) None of these

Q.171 Electric current passes through both molten and solution form of NaCl because of
A) ionic bonding
B) ions of water
C) Na^+ and Cl^- ions
D) hydration of ions

Q.172 Which of the following values of heat of formation indicated that the product is least stable.
A) -94 kJ
B) -231.6 kJ
C) +21.4 kJ
D) +70 kJ

Q.173 Specie which discharge at anode during electrolysis of aqueous solution of KCl
A) OH^{-1}
B) O_2
C) H_2
D) Cl^{-1}

Q.174 In galvanic cell the flow of electron is normally from:
A) Solvent only
B) Anode to cathode
C) Cathode to anode
D) All of these

Q.175 In galvanic cell the flow of current is normally from:
A) Cathode to anode
B) Both a & b
C) Anode to cathode
D) None of these

Q.176 The oxidation number of carbon in $CH_2C\ell_2$ is:
A) –4
B) 0
C) +4
D) –2

Q.177 Standard reduction electrode potentials of three metals A, B and C are respectively +0.5V, –3.0V and –1.2V. the reducing powers of these metals are:
A) B > C > A
B) A > B > C
C) C > B > A
D) A > C > B

Q.178 The process in which ionic compound when fused or dissolved in water split up into charged particles is called
A) electrolysis
B) ionization
C) hydration
D) conduction

Q.179 The reaction in a galvanic cell is
A) spontaneous
B) acid-base
C) non-spontaneous
D) none of these

Q.180 The species which can act as oxidizing as well as reducing agent:
A) Na^+
B) H_2O_2
C) MnO_4^{-1}
D) HNO_3

Q.181 Standard reduction polentas of four hypothetical metals W, X, Y and Z are +0.34V, −1.05V, −2.12V and + 1.37V respectively, which is most reactive metal?
A) W
B) X
C) Y
D) Z

Q.182 In hydrogen-oxygen fuel cell, the two electrodes are hollow tube made of porous compressed carbon impregnated with platinum which act as?
A) Inhibitor
B) Catalyst
C) Reducing agent
D) Oxidizing agent

Q.183 The electrode with more negative value of reduction potential acts as
A) cathode
B) salt bridge
C) anode
D) none

Q.184 The value of "x" of the following reaction $C_2O_4^{2-} \rightarrow 2CO_2 + X$ electrons:
A) 2
B) 4
C) 6
D) 8

Q.185 In a hydrogen-oxygen fuel cell, combustion of hydrogen occurs to:
A) generate heat
B) create potential difference between the two electrodes
C) produce high purity water
D) remove adsorbed oxygen form electrode surface

Q.186 Oxidation number of sulphur in $S_2O_3^{2-}$ is
A) + 6
B) + 2
C) − 2
D) + 4

Q.187 Which one of the following is redox reaction?
A) $NaCl + AgNO_3 \rightarrow NaNO_2 + AgCl_2$
B) $2Na + Cl_2 \rightarrow 2NaCl$
C) $2Cl^- \rightarrow Cl_2 + 2e^-$
D) $Na^+ + 1e \rightarrow Na$

Q.188 The cell potential, E°, for an oxidation-reduction reaction was found to equal 1.10V. What can be said about this reaction?
A) at equilibrium
B) nonspontaneous
C) endothermic
D) spontaneous

Q.189 In galvanic cell, a salt bridge is used in order to:
A) Maintain flow of electric current through external circuit
B) Keeps electrical neutrality in each half cell
C) Prevent mixing of two solutions
D) All of the above

Q.190 If the salt bridge is not used between two half cells, then the voltage
A) Decrease rapidly
B) Decrease slowly
C) Does not change
D) Drops to zero

Q.191 In which of the following changes there is a transfer of five electrons
A) $MnO_4^{2-} \rightarrow MnO_2$
B) $CrO_4^{-2} \rightarrow Cr^{+3}$
C) $MnO_4^- \rightarrow Mn^{+2}$
D) $Cr_2O_7^{-2} \rightarrow 2Cr^{+3}$

Q.192 Select the wrong statement
A) Chemical reaction is breaking of old bonds and making of new bonds
B) Temperature is the measure of average kinetic energy of the all particles of a system
C) Non-spontaneous process never happens in the universe
D) The enthalpy of element in standard state is zero

Q.193 Which species is the oxidizing agent in the following reaction?

$$Cl_{2(aq)} + 2I^-_{(aq)} \rightarrow I_{2(aq)} + 2Cl^-_{(aq)}$$

A) Cl_2
B) I_2
C) I^-
D) Cl^-

Q.194 Greater the value of standard reduction potential of a species indicates
A) greater its tendency to accepted electrons
B) greater tendency to lose electrons
C) lesser tendency to accept electrons
D) none of these

Q.195 Coinage metals Cu, Ag and Au are the least reactive because they have
A) Negative reduction potential
B) Negative oxidation potential
C) Positive reduction potential
D) Positive oxidation potential

Q.196 The overall positive value for the reaction potential predicts that process is energetically.
A) not feasible
B) impossible
C) feasible
D) no indication

Q.197 Fuel cells are the means by which chemical energy may be converted into?
A) Heat energy
B) magnetic
C) Electric energy
D) sound energy

Q.198 Enthalpy change which is always exothermic and in which one mole of reactant is consumed
A) Enthalpy of combustion
B) Enthalpy of solution
C) Enthalpy of formation
D) Enthalpy of atomization

Q.199 Hydrogen gas is not liberated when following metal added to dilute solution of HCl:
A) Mg
B) Sn
C) Ag
D) Zn

Q.200 In standard hydrogen electrode which condition is relevance?
A) 1.0M HCl solution
B) H_2 gas at 1atm pressure
C) platinum electrode
D) all of above

Q.201 The best reducing agent is:
A) F^{-1}
B) Br^{-1}
C) Cl^{-1}
D) I^{-1}

Q.202 The oxidation number of free element is always taken to be
A) 0
B) 2
C) 1
D) −1

Q.203 Strongest reducing agent in the electrochemical series is
A) Li
B) H_2
C) F
D) I_2

Q.204 Fuel cells provide:
A) Oxygen for astronauts
B) Both oxygen and water for astronauts
C) Water for astronauts
D) Pollutants dangerous for astronauts

Q.205 In Hydrogen – Oxygen fuel cell the:
A) Cathode is Zn and Ph is anode.
B) PbO_2 is anode and carbon is cathode.
C) Carbon is cathode and ZnO is anode.
D) Both cathode and anode are of carbon.

Q.206 Which statement about conduction of electricity is correct?
A) Electricity is conducted is aqueous solution by electrons.
B) Electricity is conducted in a molten electrolyte by electrons.
C) Electricity is conducted in an acid solution by ions.
D) None of these

Q.207 Aqueous Copper (II) Sulphate is electrolyzed using copper electrodes.

	At anode(+ve)	At cathode(-ve)	Electrolyte
A	Anode dissolves	Pink solid forms	Blue colour fades
B	Anode dissolves	Pink solid forms	No change
C	Colour less gas forms	Colourless gas forms	No change
D	Colour less gas forms	Pink solid forms	Blue colour

Q.208 Which one of the following cells is used for extraction of Na?
A) Nelson's cell
B) Down's cell
C) Galvanic cell
D) none of given

Q.209 The oxidation potential of SHE is:
A) 0.02V
B) 0.00V
C) 0.10V
D) 0.20V

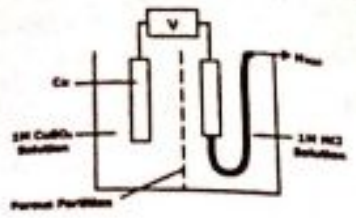
Q.210 Electrochemistry is a branch of chemistry which deals with study of inter-conversion of:
A) kinetic energy and potential energy.
B) electrical energy and chemical energy.
C) physical energy and chemical energy.
D) chemical energy and kinetic energy.

Q.211 Which one of the following explains why copper conducts electricity?
A) Cu^{+2} ions move to the cathode when a current is passed.
B) The bonding electrons in the crystal lattice move when a potential difference is applied.
C) The crystal lattice break down on applying a potential difference.
D) The electric current causes the electrons to combine with Cu^{+2} ions.

Q.212 Electrical energy is produced by a simple cell as a result of:
A) the formation of covalent bonds between atoms.
B) the formation of negative ions from atoms.
C) the positive and negative ions coming together.
D) the transfer of electrons from a more reactive to a less reactive element.

Q.213 Which statement about highly reactive metals like Li, Na K etc. is incorrect?
A) These have large negative values of reduction potential.
B) These are present as the top of electrochemical series.
C) These react rapidly with water to liberate hydrogen gas.
D) These are strong oxidizing agents.

Q.214



The diagram shows a galvanic cell. The current will flow from: (2016)

A) Hydrogen electrode to copper electrode
B) Copper electrode to hydrogen electrode
C) Hydrogen electrode to HCl solution
D) $CuSO_4$ solution to hydrogen electrode

Q.215 Study the following redox reaction:

$$10Cl^- + 16H^+ + 2MnO_4^- \rightarrow 5Cl_2 + 2Mn^{+2} + 8H_2O$$

A) Manganese is oxidized from +7 to +2
B) Chlorine ions are reduced from -1 to zero
C) Chlorine is reduced from zero to -1
D) Manganese is reduced from +7 to +2

Q.216 In NO_3^- the oxidation number of N is: (2017)

A) +5
B) +2
C) +3
D) -3

Q.217 The E^o Value of the standard copper half cell is +0.34, measured when it is connected with SHE i.e standard hydrogen Electrode. In this case the half cell reaction taking place at SHE is (2017)

A) $2H^+_{(aq)} + 2e \rightarrow H_{2(g)}$
B) $H_2 \rightarrow 2H^+_{(aq)} + 2e^-$
C) $2H^+ + 2e \rightarrow 2H_{(g)}$
D) $H^2 \rightarrow 2H_{(g)} + 2e^-$

Q.218 During space flights, astronauts obtained water from _____: (2017)

A) Nickel cadmium cells
B) Fuel cells
C) Lead accumulator
D) Alkaline battery

Q.219 For the purification of copper, impure copper is made the _____: (2017)

A) Cathode
B) Anode
C) Solution
D) Both A & B

Q.220 The standard electrode potential of hydrogen is arbitrarily taken at 298 K is _____ (2018)

A) 1.00 volt
B) 0.00 volt
C) 10.0 volt
D) 0.10 volt

Q.221 The potential difference of an electrochemical cell is measured by (2018)

A) Calorimeter
B) voltmeter
C) Galvanometer
D) Ammeter

Q.222 (2019)

$Mg^{2+} + 2e^- \; Mg$	E = - 2.37 V
$Zn^{2+} + 2e^- \; Zn$	E = - 0.76 V
$2H^+ + 2e^- \; H_2$	E = 0.000 V
$Cu^{2+} + 2e^- \; Cu$	E = + 0.34 V
$Cl_2 + 2e^- \; 2C1^-$	E = + 1.36 V
$Au^{3+} + 2e^- \; Au$	E = + 1.50 V

Keeping in view the values of standard reduction potential given above which one of the following would you select as a feasible redox chemical reaction?

A) $2Cr + I_2Cl + 2r$
B) $Cu + Zn^{2+} \; Cu^{2+} + Zn$
C) $Mg + 2H^+ \; Mg^{2+} + H_2$
D) $2Au + 6H^+ \; 2Au^{3+} + 3H_2$

Q.223 The oxidation state of "S" in the $(S_2O_3)^{-2}$ is: (2020)

A) +4
B) +6
C) -2
D) +2

Q.224 The common oxidation number of halogens is: (2020)

A) -1
B) +1
C) -2
D) 0

Q.225 During oxidation process, oxidation number of an element: (2020)

A) Decreases
B) Increase
C) Remains constant
D) Both A & B

ANSWERS

1.	A	2.	C	3.	A	4.	A	5.	B	6.	D	7.	D	8.	C	9.	B	10.	D
11.	C	12.	D	13.	C	14.	C	15.	A	16.	A	17.	D	18.	C	19.	C	20.	C
21.	C	22.	B	23.	A	24.	B	25.	C	26.	D	27.	B	28.	A	29.	C	30.	A
31.	D	32.	C	33.	C	34.	A	35.	C	36.	C	37.	D	38.	B	39.	C	40.	D
41.	C	42.	A	43.	C	44.	D	45.	C	46.	D	47.	B	48.	B	49.	B	50.	B
51.	A	52.	B	53.	C	54.	B	55.	A	56.	B	57.	A	58.	A	59.	C	60.	D
61.	B	62.	C	63.	A	64.	C	65.	A	66.	A	67.	C	68.	D	69.	D	70.	C
71.	D	72.	B	73.	B	74.	A	75.	A	76.	C	77.	C	78.	B	79.	C	80.	A
81.	A	82.	A	83.	D	84.	A	85.	A	86.	C	87.	C	88.	C	89.	B	90.	A
91.	C	92.	D	93.	A	94.	C	95.	B	96.	A	97.	C	98.	B	99.	C	100.	A
101.	A	102.	A	103.	B	104.	A	105.	B	106.	D	107.	D	108.	A	109.	A	110.	D
111.	A	112.	D	113.	A	114.	D	115.	B	116.	B	117.	C	118.	D	119.	C	120.	A
121.	B	122.	B	123.	A	124.	A	125.	D	126.	D	127.	B	128.	B	129.	A	130.	D
131.	C	132.	A	133.	C	134.	D	135.	C	136.	A	137.	C	138.	B	139.	B	140.	B
141.	D	142.	C	143.	C	144.	A	145.	B	146.	B	147.	B	148.	D	149.	A	150.	C
151.	B	152.	C	153.	A	154.	C	155.	A	156.	C	157.	D	158.	D	159.	A	160.	D
161.	C	162.	A	163.	D	164.	B	165.	A	166.	C	167.	D	168.	B	169.	C	170.	A
171.	C	172.	D	173.	D	174.	B	175.	A	176.	B	177.	A	178.	B	179.	A	180.	B
181.	C	182.	B	183.	C	184.	A	185.	A	186.	B	187.	B	188.	D	189.	D	190.	D
191.	C	192.	C	193.	A	194.	A	195.	C	196.	C	197.	C	198.	A	199.	C	200.	D
201.	D	202.	A	203.	A	204.	C	205.	D	206.	C	207.	B	208.	B	209.	B	210.	B
211.	B	212.	D	213.	D	214.	A	215.	D	216.	A	217.	B	218.	B	219.	B	220.	B
221.	B	222.	C	223.	D	224.	A	225.	B	226.		227.		228.		229.		230.	

Q.1: **Which compound**
A) Ammonium chlor
B) Carbon dioxide

Q.2: **Which substance**
A) Diamond
B) Graphite

Q.3: **Which electron a**
A) 2,1
B) 2,4

Q.4: **Which ion has th**
A) Al^{3+}
B) Be^{2+}

Q.5: **How does a ma**
A) By giving one
B) By sharing on
C) By sharing tw
D) None of these

Q.6: **In which subst**
A) Carbon dioxid
B) Diamond

Q.7: **Hydrogen can**
hydrogen form
A) Carbon
B) Chlorine

Q.8: **Every atom c**
A) Helium ator
B) Ordinary hy

Q.9: **Layers of car**
A) Van der Wa
B) Free electr

Q.10: **Arrange the**
F-H...O, N-H
A) O-H...Cl <
B) O-H...Cl <

Q.11: **Which state**
A) They both
B) They hav
C) Equal ma
completely
D) None of

Q.12: **Which sub**
A) KI
B) NaF

Q.13: **Which one**
A) High me
B) Deform

Q.14: **The Aufb**
A) Coulom
B) Electro

Q.15: **Elements**
A) Lantha
B) Haloge

Q.16: **Which o**
A) B...Cl
B) C...Cl
E) P...Br

Q.17: **Which**
A) CH_3C
B) CH_3C

Q.18: **Which**

A) A no
B) A bo

CHEMICAL BONDING

Q.1: Which compound has both Ionic and covalent bonds?
A) Ammonium chloride
B) Carbon dioxide
C) Ethyl ethanoate
D) Sodium chloride

Q.2: Which substance does not have a macromolecular structure?
A) Diamond
B) Graphite
C) Silicon dioxide
D) NaCl

Q.3: Which electron arrangement is that of a metallic element?
A) 2,1
B) 2,4
C) 2,5
D) 2,7

Q.4: Which Ion has the most shells that contain electrons?
A) Al^{3+}
B) Be^{2+}
C) N^{3-}
D) S^{2-}

Q.5: How does a magnesium atom form a bondwith an oxygen atom?
A) By giving one pair of electrons to the oxygen atom.
B) By sharing one pair of electrons, both electron provided by the magnesium atom.
C) By sharing two pair of electrons each atom donating one pair of electrons.
D) None of these

Q.6: In which substance is each carbon atom covalently bonded to only three other atoms?
A) Carbon dioxide
B) Diamond
C) Graphite
D) Methane

Q.7: Hydrogen can form both ionic and envalent compounds with which element will hydrogen form an ionic compound?
A) Carbon
B) Chlorine
C) Nitrogen
D) Sodium

Q.8: Every atom consista of electrons, protons and neutrons except:
A) Helium atom
B) Ordinary hydrogen atom
C) Boron atom
D) Calcium atom

Q.9: Layers of carbon atom in graphite are held by:
A) Van der Waal's forces
B) Free electrons
C) Double bond
D) Covalen bond

Q.10: Arrange the following hydrogen bond in order of increasing strength OH...Cl, O-H...N, F-H...O, N-H...O:
A) O-H...Cl < F-H...O < O-H...N < N-H...O
B) O-H...Cl < N-H...O < O-H...N < F-H...O
C) N-H...O < O-H...N < F-H...O < O-H...Cl
D) None of these

Q.11: Which statement best confirms that two substances are allotropes of sulphur?
A) They both reduce heated iron (III) oxide to iron
B) They have different crystalline structure
C) Equal masses of the substance give equal masses of sulphur dioxide and no other product when completely burnt in oxygen
D) None of these

Q.12: Which substance has greates lattice energy?
A) KI
B) NaF
C) CuBr
D) MgO

Q.13: Which one of the following characteristics is not usually attributable to ionic substance?
A) High melting point
B) Deform when struck
C) Fragility
D) Three dimensional structure

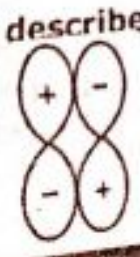
Q.14: The Aufbau principle is one that governs:
A) Coulomb potential
B) Electronic configuration
C) Vapour pressure
D) The entropy

Q.15: Elements of group VII-A are called:
A) Lanthanide
B) Halogens
C) Actinides
D) Transition metal

Q.16: Which of the following bonds (...) is least polar?
A) B...Cl
B) C...Cl
E) P...Br
C) H...I
D) C...I

Q.17: Which of the following compounds participate in hydrogen bonding?
A) CH_3Cl
B) CH_3OCH_3
C) CH_3NH_2
D) CH_3CH_2Cl

Q.18: Which of the following best describes the diagram below of molecular orbital?



A) A non-bonding orbital
B) A bonding σ-orbital
C) An anti-bonding α-orbital
D) An anti-bonding π-orbital

9.	B	10.	D
19.	C	20.	C
29.	C	30.	A
39.	C	40.	D
49.	B	50.	B
59.	C	60.	D
69.	D	70.	C
79.	C	80.	A
89.	B	90.	A
99.	C	100.	A
109.	A	110.	D
119.	C	120.	A
129.	A	130.	D
139.	B	140.	B
149.	A	150.	C
159.		160.	D
169.		170.	A
179.		180.	B
189.		190.	D
199.		200.	D
209.		210.	B
219.		220.	B
229.			

Q.19: Which of the following is least inert?
A) Helium
B) Neon
C) Argon
D) Xenon

Q.20: Which pair of elements will combine to form an ionic compound?
A) Carbon and chlorine
B) Fluorine and sodium
C) Hydrogen and oxygen
D) Oxygen and carbon

Q.21: A covalent bond is unlikely to exist in the product of which of the following reactions?
A) $H^+ + H^+ \rightarrow H_2$
B) $Br^- + Br^- \rightarrow Br_2$
C) $Se + H_2 \rightarrow SeH_2$
D) $Ca + O_2 \rightarrow CaO$

Q.22: Which of the following substance has the least ionic character in its bond?
A) CCl_4
B) KCl
C) NaCl
D) $BaCl_2$

Q.23: What is the bond order of F_2 according to molecular orbital theory?
A) 1
B) 2
C) 3
D) 4

Q.24: Layers of carbon atom in graphite are held by:
A) Van der Waal's forces
B) Free electrons
C) Double bond
D) Covalent bond

Q.25: Which one of the following characteristics is not usually attributable to ionic substance?
A) High melting point
B) Deform when struck
C) Fragility
D) Three dimensional structure

Q.26: The stability of molecule is related to the strength of its covalent bonds. Based on this, select the most stable molecules:
A) O_2
B) Cl_2
C) CH_4
D) HF

Q.27: What type of orbital hybridization and geometry is used by the central atom of NH_2?
A) sp^2 hybridization and trigonal planar
B) sp^2 hybridization and tetrahedral geometry
C) sp^3 hybridization and trigonal planar
D) sp^3 hybridization and tetrahedral geometry

Q.28: Which of the following compounds has most likely been formed by covalent onding of atom?
A) CaF_2
B) MgO
C) SiH_4
D) RbCl

Q.29: Which of the compounds below has dipole moment zero?
A) CH_4
B) NH_3
C) HF
D) H_2O

Q.30: Identify the compound given below which has bonds formed by overlapping of sp and p orbitals:
A) BF_3
B) $BeCl_2$
C) NH_3
D) H_2O

Q.31: The atomic number of silicon is 14. What is its ground state electronic configuration?
A) $1s^2 2s^2 2p^6 3s^2$
B) $1s^2 2s^2 2p^6 3s^4$
C) $1s^2 2s^2 2p^6 3s^2 3p^2$
D) $1s^2 2s^2 2p^6 3s^2$

Q.32: Which statement is not true for the reaction? $Fe^{3+} + e^- \rightarrow Fe^{+2}$
A) Fe^{+3} is being reduced
B) Oxidation state of Fe has changed
C) Fe^{+3} could be referred to as an oxidizing agent in this reaction
D) Both Fe^{+3} and Fe^{+2} called anions

Q.33: Which of the following compounds participate in hydrogen bonding?
A) CH_3Cl
B) CH_3OCH_3
C) CH_3NH_2
D) CH_3CH_2Cl

Q.34: Which of the following compounds does not contain a covalent bond?
A) PH_3
B) $GeCl_4$
C) H_2S
D) CsF

Q.35: Which of the following compound contain no covalent bonds? KCl, PH_3, O_2, B_2H_6, H_2SO_4
A) KCl, B_2H_6, PH_3
B) KCl, H_2SO_4
C) KCl, B_2H_6
D) KCl

Q.36: An ionic bond is formed between two ions. Which of the following has no effect on the strength of the bond?
(I) Doubling the charge on both ions
(II) Doubling the temperature
(III) Doubling the radii of both ions
A) I only
B) II only
C) I and II
D) I, II and III

Q.37: Which of the following should have the largest dipole moment?
A) Carbon tetra chloride
B) Cis-stilbene
C) Cis-dichloroethylene
D) Trans-stilbene

Q.38: Which of the following compo
A) CH_3F
B) CH_3I

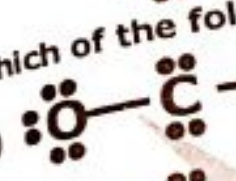
Q.39: Which of the following does
A) Diamond
B) LiF

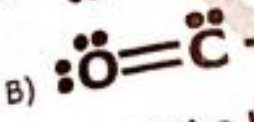
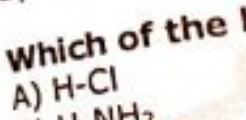
Q.40: Which of the following mol
A) H_2O
B) NO_2

Q.41: A neutral atom of $^{14}_{6}C$ cont
A) 6, 14, 14
B) 6, 8, 6

Q.42: Which of the followi:g is
A) Mn_2O_7
B) ZnO
E) H_2CrO_4

Q.43: Which of the following
A)

B)


Q.44: Which of the follow
A)

B)


Q.45: Which of the bon
A) H-Cl
B) $H-NH_2$

Q.46: What is the maj
A) dipole-dipole i
B) electrostatic i
C) hydrogen-bon
D) physical enta

Q.47: What happens
A) A proton is g
B) A proton is l
C) An electron
D) An electron

Q.48: Which of the
A) $H - CH_3$
B) $H - NH_2$

Q.49: What is the
A) dipole-dip
B) electrosta
C) hydrogen
D) there are

Q.50: The geome
A) Two lone
B) One lon

Q.51: The type
A) ionic
B dative

Q.52: All of fol
A) Coval
B) Dativ

Q.38: Which of the following compounds has the shortest carbon halogen bond?
A) CH_3F
B) CH_3I
C) CH_3Cl
D) CH_3Br

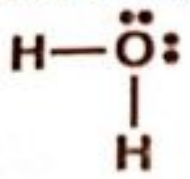
Q.39: Which of the following does not show a fetrahedral structure?
A) Diamond
B) LiF
C) Zinc blend
D) Ice

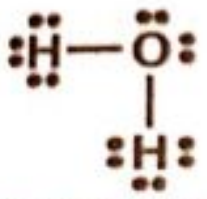
Q.40: Which of the following molecules is a linear?
A) H_2O
B) NO_2
C) ClO_2
D) NO_2^+

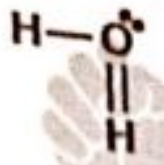
Q.41: A neutral atom of $^{14}_{6}C$ contains respectively how many protons, neutrons and electrons?
A) 6, 14, 14
B) 6, 8, 6
C) 6, 6, 8
D) 8, 6, 7

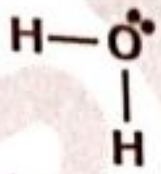
Q.42: Which of the following is an ionic oxide?
A) Mn_2O_7
B) ZnO
E) H_2CrO_4
C) H_2O_2
D) CO

Q.43: Which of the following is the correct electron-dot formula for water?

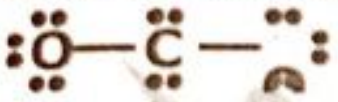
A) 

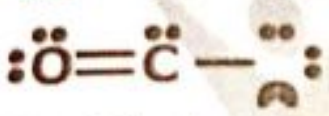
B) 

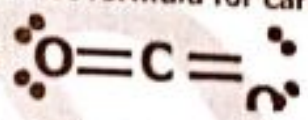
C) 

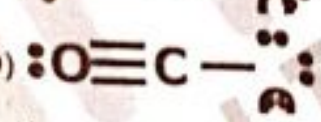
D) 

Q.44: Which of the following is the correct electron-dot formula for carbon dioxide?

A) 

B) 

C) 

D) 

Q.45: Which of the bonds, shown by the dash, has the greates polarity?
A) H-Cl
B) $H-NH_2$
C) H-OH
D) H-SH

Q.46: What is the major attraction between water molecules in the solid physical state?
A) dipole-dipole interactions
B) electrostatic interactions between charged atoms
C) hydrogen-bonds
D) physical entanglement of the molecules

Q.47: What happens when a fluorine atom becomes a fluoride ion in a chemical reaction?
A) A proton is gained by the nucleus
B) A proton is lost by the nucleus
C) An electron is lost from one of the outer orbitals
D) An electron is added to one of the outer orbitals

Q.48: Which of the bonds shown by a dash – has the greatest polarity?
A) $H - CH_3$
B) $H - NH_2$
C) H – OH
D) H – F

Q.49: What is the major attraction between water molecules in the liquid state?
A) dipole-dipole interactions
B) electrostatic attractions
C) hydrogen-bonds
D) there are no attractions between the water molecules, that is why it is a liquid

Q.50: The geometry of the molecule and the geometry of the molecule is always same, if :
A) Two lone pairs are present
B) One lone pair is present
C) No lone Pairs are present
D) Bond pair is repelled by lone pair

Q.51: The type of bonding which may be inter or intra-molecular is:
A) ionic
B dative
C) covalent
D) metallic

Q.52: All of following are directional bond except one, identify that one.
A) Covalent Bond
B) Dative Bond
C) Hydrogen Bond
D) Ionic Bond

Q.53: Indicate the most favorable condition for the formation of ionic compound.
A) Low Charge on ions, small cations and Small Anions
B) High Charge on ions, Large cations and Large Anions
C) High Charge on ions, small cations and Large Anions
D) Low Charge on ions, Large cations and small Anions

Q.54: During the formation of chemical bond, the potential energy of the system
A) decreases
B) does not change
C) increases
D) none of these

Q.55: The angle between unhybridized p-orbital and three sp^2 hybrid orbitals of each carbon atom is. (2011)
A) 120°
B) 109.5°
C) 90°
D) 180°

Q.56: The correct dot cross formula for CO_2 molecule is .....
A) $O::C::O$
B) $:O::C::O:$
C) $O::C::O$
D) $O::C::O$

Q.57: How can you calculate the number of lone pairs on central atom while determining the shape of a molecule?
A) $\frac{Bond\ Pairs - Valence\ electrons}{2}$
B) $\frac{Bond\ Pairs + Valence\ electrons}{2}$
C) $\frac{Valence\ electrons - Bond\ Pairs}{2}$
D) $\frac{Valence\ electrons + Bond\ Pairs}{2}$

Q.58: The process in which electron is removed from gaseous atom is called:
A) Catenation
B) Ionization
C) Sublimation
D) Dissociation

Q.59: If ΔEN of two bonded atom is equal to 1.7 then bond is:
A) Polar covalent
B) 100% Ionic
C) 100% covalent
D) 50% ionic and 50% covalent

Q.60: The common features among the species O_3, SO_4^{2-}, H_3O^+ and $AlCl_3$ is that.....
A) They contain only Ionic Bond
B) They contain Covalent bond
C) They contain Dative Bond
D) They contain both Covalent and Ionic bonds

Q.61: Which of following are Iso-structural?
A) SO_2 and CO_2
B) BCl_3 and $CHCl_3$
C) H_2O and SO_2
D) Both A and C

Q.62: Which of the following involve Ionic bonding only?
A) Li_3N
B) NCl_3
C) NaCl
D) O_2

Q.63: The ability of an atom in a covalent bond to attract the bonding electrons is called: (2011)
A) Ionization energy
B) Ionic bond energy
C) electronegativity
D) electron affinity

Q.64: Which of following has a distorted molecular geometry?
A) NF_3
B) SF_6
C) PH_4^+
D) SO_4^{2-}

Q.65: one of following has intra-molecular hydrogen bonding?
A) HF
B) H_2O
C) p-Nitrophenol
D) o-Nitrophenol

Q.66: If an element of II-A group react with an element of VII-A group then the bond between then will be:
A) Coordinate covalent
B) Covalent
C) Ionic
D) Non-polar

Q.67: A bond between two non-metal atoms:
A) Is an ionic bond
B) Is non-polar covalent bond
C) Is polar covalent bond
D) May be a polar or non-polar covalent bond

Q.68: One of following is not planner?
A) Benzene
B) Ethene
C) Ethyne
D) Propene

Q.69: The lowest p character is present in the hybridized orbitals of which compound....
A) 2-Butene
B) 2-Chloro-1-Butene
C) 1,3-Butadiene
D) 2-Butyne

Q.70: Which of the following molecules has a net dipole moment?
A) CO_2
B) SO_2
C) CS_2
D) CCl_4

Q.71: The bond between H-H i
A) stronger than the bond
B) Weaker than the bond
C) neither stronger nor we
D) none of these

Q.72: The % of dative bond c
A) 16.5%
B) 33.3%

Q.73: Which of following is
A) ClO_2
B) BCl_3

Q.74: The percentage of io
A) 60%
B) 85%

Q.75: Which one of the fol
A) NH_3
B) SnH_2

Q.76: Which of following
A) H_2^{1+}
B) He_2^{3+}

Q.77: The stable electro
A) Neon
B) Argon

Q.78: Which one of the
A) $LiAlH_4$
B) NaCl

Q.79: Which one of the
A) $S=C=S$
B) $S=\ddot{C}=S$

Q.80: In an unknown bonding is pres
A) Covalent
B) Metallic

Q.81: The shape of h
A) Planar
B) See-saw

Q.82: Lateral overla
A) σ- bond
B) Ionic bond

Q.83: Linear overla
A) Pi bond
B) Ionic bond

Q.84: The correct
A) Si—Si >
B) C—C <

Q.85: The correct
A) Si—Si
B) C—C >

Q.86: The proper
A) Ionic bon
B) Hydroge

Q.87: According the electr
A) Lone pa
B) Lone pa
C) Bond pa
D) Lone p

Q.88: Which of
A) Bond
B) Bond

Q.89: Which o
A) NO
B) CO

Q.71: The bond between H-H is
A) stronger than the bond between H-Cl
B) Weaker than the bond between H-Cl
C) neither stronger nor weaker than the bond between H-Cl
D) none of these

Q.72: The % of dative bond character in oxalate $C_2O_4^{2-}$ is .....
A) 16.5%
B) 33.3%
C) 0%
D) 66.6%

Q.73: Which of following is unstable according to Lewis concept of bonding?
A) ClO_2
B) BCl_3
C) $BeCl_2$
D) All of these

Q.74: The percentage of ionic character in NaCℓ is:
A) 60%
B) 85%
C) 72%
D) 56%

Q.75: Which one of the following will not be able to form coordinate covalent bond?
A) NH_3
B) SnH_2
C) PH_3
D) CH_4

Q.76: Which of following has a complete duplet
A) H_2^{1+}
B) He_2^{3+}
C) H_2 molecule
D) Li atom

Q.77: The stable electronic configuration of potassium is similar to which of following?
A) Neon
B) Argon
C) Kr
D) Xe

Q.78: Which one of the following involve ionic bonding in its structure?
A) $LiAlH_4$
B) NaCl
C) $CuSO_4.5H_2O$
D) All of the above

Q.79: Which one of the following is correct Lewis structure of CS_2 molecue.
A) $\ddot{S}=C=\ddot{S}$
B) $\ddot{S}=\ddot{C}=\ddot{S}$
C) $:\ddot{S}=C=\ddot{S}:$
D) $:\ddot{S}=\ddot{C}=\ddot{S}:$

Q.80: In an unknown rocks, the salt obtained has a very low melting point, what type of bonding is present in it.
A) Covalent
B) Metallic
C) Ionic
D) Dative

Q.81: The shape of hydronium ion H_3O^+ is:
A) Planar
B) See-saw
C) Trigonal planar
D) Trigonal pyramidal

Q.82: Lateral overlapping is expected in:
A) σ- bond
B) Ionic bond
C) π- bond
D) Metallic bond

Q.83: Linear overlapping of two p-orbitals form:
A) Pi bond
B) Ionic bond
C) Sigma bond
D) Polar bond

Q.84: The correct order of bond length is .....
A) Si—Si > C—C
B) C—C < N—N
C) N—N > F—F
D) Both A and B

Q.85: The correct order of bond energy is .....
A) Si—Si > C—C
B) C—C > N=N
C) N=N >F—F
D) Both A and B

Q.86: The properties of a substance are determined in part by
A) Ionic bond
B) Hydrogen bond
C) Covalent bond
D) Chemical bond

Q.87: According to valence shell Electron Pair Repulsion Theory, the repulsive forces between the electron pairs of central atom of a molecule are in the order. (2013)
A) Lone pair – Lone pair > Lone pair – Bond pair> Bond pair – Bond Pair
B) Lone pair – Bond pair > Lone pair – Lone pair> Bond pair – Bond Pair
C) Bond pair – Bond pair > Lone pair – Lone pair > Lone pair – Bond pair
D) Lone pair – Bond pair > Bond pair – Bond pair > Lone pair – Lone pair

Q.88: Which of following is a correct relation?
A) Bond Length $\propto \Delta EN$
B) Bond Energy $\propto \Delta EN$
C) Bond Length $\propto$ Bond Order
D) Both A and C

Q.89: Which of the following has the highest bond polarity?
A) NO
B) CO
C) CN^-
D) All have same bond order

Q.90: The charge of a cation M is +2 and on anion A is -3. The compound formed has the formula:
A) M_2A
B) M_3A_2
C) MA_2
D) M_2A_3

Q.91: Which of the following is an example of odd molecule as far as boning is concerned:
A) NH_3
B) CO_2
C) PH_3
D) CO

Q.92: CO_2 is a nonpolar molecular (μ=0) whereas SO_2 is polar (μ=1.62D). This difference is due to the fact that:
A) CO_2 has an even number of double bonds whereas SO_2 has an odd number of double bonds
B) C and O are in different groups whereas S and O are in the same group
C) The C-O bond is nonpolar while the S-O bond is polar
D) CO_2 is linear whereas SO_2 is non-linear

Q.93: Arrange the following bonds in order of increasing bond polarity[C-F, C-Br, C-I, C-Cl]
A) C-F < C-Cl < C-Br < C-I
B) C-I < C-Br < C-Cl < C-F
C) C-Br < C-I < C-Cl < C-F
D) C-I < C-Br < C-F < C-Cl

Q.94: Formation of MgO is an example of
A) Ionic bond
B) Polar bond
C) Covalent bond
D) Double Covalent bond

Q.95: The inter-nuclear distance at which the energy of the two atoms bonded together is minimum as compared to the isolated atoms is called
A) Equilibrium bond distance
B) Both a & b
C) Bond length
D) None

Q.96: In the molecules $HC \equiv C-CH=CH_2$, Carbon # 2 is .....
A) sp^2hybridized
B) sp hybridized
C) sp^3 hybridized
D) dsp^3 hybridized

Q.97: According to which theory all the electrons participate in bond formation?
A) VBT
B) VSEPR
C) MOT
D) Lewis Theory

Q.98: Which has linear structure?
A) Alkyne
B) Alkene
C) Alkane
D) Both alkane and alkene

Q.99: If central atom is surrounded by two electron pairs then the shape of molecule will be:
A) Trigonal planar
B) Bent
C) Linear
D) Tetrahedral

Q.100: Boiling point of organic compounds of similar molecular weight are given in the table below, what information about their bonding is correct?

I	II	III	IV	V
-39.1°C	-139.1°C	139.1°C	45°C	100°C

A) III & II are most non polar
B) I, II and IV do not possess polar character
C) III & IV are most polar
D) Inter molecular forces of attractions are the strongest in III

Q.101: Which of the following molecules or ions is non-planar?
A) BH_3
B) SO_3
C) NF_3
D) CO_3^{2-}

Q.102: In 'H – F' bond electronegativity difference is '1.9'. What is the type of this bond? (2012)
A) Polar covalent bond
B) pi Bond
C) Non – polar covalent bond
D) Co – ordinate covalent bond

Q.103: If two lone pairs are present then bond angle of tetrahedral compound reduces to _____degrees.
A) 109.5°
B) 104.5°
C) 107.5°
D) None

Q.104: In which of the following Bond length is the longest between carbon to carbon?
A) Acetylene
B) n-Hexane
C) CO_2
D) Ethylene

Q.105: The type(s) of bonding present in a sample of sodium chloride is/are:
A) Electron pair bonds
B) Both Dative and Electron pair bonds
C) Eletcrovalent bonds only
D) Both Electrovalent and Dative bonds

Q.106: The geometry of the molecule will be regular if central atom is surrounded by:
A) Lone pairs only
B) Both lone and bond pairs
C) Bond pairs only
D) All of given

Q.107: The bond angle in NF_3 is :
A) 107.5°
B) 102°
C) 120°
D) 109.5°

Q.108: What is best correct for the shape and polarity H_2S molecule?
A) Bent and polar
B) Pyramidal and polar
C) Linear and non-polar
D) Bent and non-polar

Q.109: The Largest bond angle is exhibited by which of the following molecules?
A) CO_2
B) H_2O
C) CH_4
D) NH_3

Q.110: Coordinate covalent bond is always
A) Unidirectional
B) Non-directional
C) Bi-directional
D) Multi-directional

Q.111: The suitable representation of dot structure of chlorine molecule is: (2014)
A) :Cl :Cl: (dots above C1 on both sides)
B) :Cl : Cl: (dots above and down on C1 both sides)
C) :Cl : : Cl (dots on above C1 on both sides)
D) Cl : Cl (dots " on only above of C1 at both sides)

Q.112: In SO_2 and in SO_3, sulphur atom is sp^3 hybridization, what is the geometry of molecules?
A) Trigonal Planner & bent
B) Tetrahedral and bent
C) Square Planner tetrahedral
D) Bent and trigonal planner

Q.113: The compounds which contain both Ionic and covalent bonds are:
A) KCN, $Na_2Cr_2O_7$
B) H_2, CH_4
C) KCl, $AlCl_3$
D) $CHCl_3$, CCl_4

Q.114: In hybridization the percentage of P character has _____ relationship with the bond length:
A) direct
B) no relationship
C) inverse
D) may be a or b

Q.115: VSEPR fails to explain:
A) Molecular geometry
B) Bond angle
C) Formation of covalent bonds
D) Arrangement of electron pairs around central atom

Q.116: Which of the following do not obey octet rule?
A) $BeCl_2$ and BF_3
B) PCl_5 and SO_3
C) $BeCl_2$ and PCl_5
D) All of these

Q.117: The total number of orbital's taking part during the formation of AB_4 type molecules with no lone pairs are
A) 2
B) 4
C) 3
D) 5

Q.118: The Ionic bonds are formed between atoms of
A) Low I.E and low E.A
B) Low I.E and high E.A
C) high I.E and high E.A
D) high I.E and low E.A

Q.119: Which one of the molecule has maximum repulsion between electron pairs.
A) CH_4
B) H_2S
C) NH_3
D) H_2O

Q.120: What is correct for H_2O, NH_3 and CH_4?

		A)	B)	C)	D)
Water	No. of Lone Pairs	3	2	2	0
	Shape	Bent	Bent	Pyramidal	Tetrahedral
Ammonia	No. of Lone Pairs	1	1	1	1
	Shape	Pyramidal	Pyramidal	Bent	Pyramidal
Methane	No. of Lone Pairs	2	0	0	2
	Shape	Tetrahedral	Tetrahedral	Tetrahedral	Bent

Q.121: One of the electronic configurations of Copper-29 is regarded as symmetrical, identify form the followings.
A) $[_{18}Ar]\ 4s^2, 3d^9$
B) $[_{18}Ar]\ 4s^2, 3d^2$
C) $[_{18}Ar]\ 4s^1, 3d^{10}$
D) $[_{18}Ar]\ 4s^9, 3d^9$

Q.122: H_2S has similar geometry with:
A) $SnCl_2$
B) CO_2
C) CS_2
D) H_2O

Q.123: Many ionic compounds do not dissolve in water. Only those ionic compounds are soluble in water, for which:
A) Hydration energy is less than lattice energy
B) Hydration energy is greater than lattice energy
C) Hydration energy is equal to lattice energy
D) all of these

Q.124: Which orbital can form sigma bond only?
A) sp
B) dsp^3
C) s
D) All of these

Q.125: The orbital responsible for ionic bond?
A) p_x
B) p_z
C) $2p_y$
D) No special orbital is required for ionic bonding

Q.126: An example of dative bonding with molecular additions is supported only in the presence of
A) Electron deficient molecules
B) Electropositive Atoms
C) Electronegative Atoms
D) Noble Gases

Q.127: The covalent bonds are
A) Unidirectional
B) Non-directional
C) Bi-directional
D) Multi-directional

Q.128: The total number bonding electrons are there in AB_4 type molecules
A) 8
B) 4
C) 6
D) 5

Q.129: If two bond pairs and two lone pairs are there at central atom then shape of this specie would be .....
A) Tetrahedral
B) Linear
C) Angular
D) Pyramidal

Q.130: Benzene –hexane pair is soluble in:
A) H_2O
B) $CHCl_3$
C) C_2H_5OH
D) CCl_4

Q.131: $SnCl_4$ is likely to be possessing _____ geometry and hybridization:
A) linear and Sp^2
B) Tetrahedral and Sp
C) trigonal planer and Sp^2
D) Tetrahedral and Sp^3

Q.132: Water is formed by the neutralization of strong acid and strong Base, the bonding in these three species.....
A) Covalent in all three
B) Covalent and ionic in first two and covalent in later
C) Ionic in first two and covalent in later two
D) Covalent in first two and ionic in later one

Q.133: Maximum type of repulsions are present in?
A) H_2O
B) H_3O^+
C) H_2S
D) Both A and C

Q.134: PH_3 has _____ shape.
A) Trigonal
B) Tetrahedral
C) Pyramidal
D) Linear

Q.135: Fused ionic compounds
A) Insulators
B) Conduct electricity
C) Used as semiconductors
D) Do not conduct electricity

Q.136: The highest melting point may be exhibited by.....
A) LiF
B) KBr
C) NaCl
D) RbI

Q.137: When Silver nitrate solution is poured in sodium chloride solution, white ppt of silver chloride is formeD) The type of bonding shown by the precipitates (silver chloride).....?
A) Ionic bonding
B) Dative bonding
C) covalent bonding
D) No chemical bonding

Q.138: Which type of bonding is present in BH_4^{-1}
A) Ionic
B) Co-ordinate Covalent
C) Covalent
D) Both b & c

Q.139: Which are the properties of covalent compounds?
A) React fast, Soluble in polar solvent, Non-directional
B) Moderate Rate, low yield, show isomerism
C) Volatile, usually low M.P, conductor
D) none of the above

Q.140: Identify the most polar molecule is .....
A) HCl
B) NH_3
C) H_2S
D) H_2Se

Q.141: CO_2 and SO_2 both are tri-atomic but former is non-polar but later is polar the best explanation for this behavior is.....
A) CO_2 is angular but SO_2 is linear
B) Carbon always forms covalent bond
C) ΔE.N is greater in first but lower in later
D) CO_2 has linear geometry but SO_2 shows angular

Q.142: When the two partially filled atomic orbitals overlap in such a way of that the probability of finding the electron is maximum around the jointing the two nuclei, the result is the formation of: (2014)
A) Sigma bond
B) Hydrogen bond
C) Pi – Bond
D) Metallic Bond

Q.143: The covalent compounds in non-polar solvents are _____ conductors of electricity.
A) Good
B) Poor
C) Bad
D) Excellent

Q.144: Number of bonding electrons in the valence shell of phosphorous in Phosphine [PH_3]
A) 8
B) 12
C) 16
D) 6

Q.145: Dissolution of HCl in water requires which type of bonding?
A) Covalent bonding
B) Dative Bonding
C) Hydrogen bonding
D) Ionic bonding

Q.146: Boiling point of HF is _____ H_2O.
A) Lower than
B) Higher than
C) Equal to
D) Almost same

Q.147: c – c bond length are 154, 133 and 120 Pm for ethane, ethene and ethyne respectively. This is due to:
A) increase in s orbital contribution from Sp^3 to Sp
B) π - bonding reduces inter-nuclear bond distance
C) Proton-proton repulsion decreases
D) All of these

Q.148: _____ has dipole moment.
A) CO
B) Benzene
C) CO_2
D) All of these

Q.149: Which of the following bonds have minimum bond energy?
A) C - F
B) C - I
C) C – Cl
D) C - Br

Q.150: Identify the compound which possesses ionic bond only
A) NH_2COONH_4
B) $K_4[Fe(CN)_6]$
C) KCl
D) NH_4Cl

Q.151: The correct order of angle of various hybrid orbitals is.
A) $sp=sp^2<sp^3$
B) $sp^2>sp<sp^3$
C) $sp^3<sp^2<sp$
D) $sp=sp^3=sp^2$

Q.152: Molecular additions is because of
A) Ionic bonding
B) Covalent bonding
C) Dative bonding
D) None of these

Q.153: The bond between boron triflouride and ammonia is
A) Ionic bond
B) Co-ordinate covalent bond
C) Covalent bond
D) Polar bond

Q.154: What is the state of hybridization of the carbon atoms in ethylene, C_2H_4?
A) same as in Benzene
B) Same as in ethane
C) same as in CO
D) same as in CO_2

Q.155: Heavy Water molecule with two lone pairs and two bond pairs has the shape.
A) Triangular planner
B) Trigonal pyramidal
C) Angular
D) Square palnner

Q.156: Which one of the following compounds does the underlined element not have eight electrons in the outer shell?
A) Li_2O
B) PCl_3
C) H_2O_2
D) PCl_5

Q.157: Why is the molecule of BCl_3 planar, whereas the molecule of PH_3 is pyramidal?
A) The boron atom has no d-orbitals available for bonding
B) The boron atom in BCl_3 has six electrons in its valency shell, whereas the phosphorus atom in PH_3 has eight.
C) The repulsion between chlorine atoms is greater than that between hydrogen atoms.
D) The covalent radius of phosphorus is greater than that of boron.

Q.158: The Least Ionic character in bond is.....
A) LiH
B) Na_2O_2
C) $CaCl_2$
D) SiH_4

Q.159: What is the % of s character in the hybridized orbital that forms sigma bonding in Benzene?
A) 25%
B) 50%
C) 33%
D) 20%

Q.160: The sp^3 orbitals are
A) Co-planer
B) Linear
C) Non-planar
D) None

Q.161: Which one of the following pairs has the same electronic configuration as possessed by neon (Ne – 10)?
A) Na^+, Cl^-
B) Na^+, Mg^+
C) K^+, Cl^-
D) Na^+, F^-

Q.162: Correct representation of total number of bonds in ethylene C_2H_4
A) 5 σ and 1 π
B) 1 σ and 1 π
C) 1 σ and 5 π
D) 2 σ and 2 π

Q.163: The hybridization of Nitrogen in NF_3 (shape is trigonal pyramidal, bond angle is 102°) would be .....
A) sp^2
B) sp
C) sp^3
D) sp^3d^2

Q.164: If bond energies of c to c bonds is in the order c ≡c > c = c>c–c their bond length are in the order.
A) c ≡c>c = c>c – c
B) c– c >c = c >c≡c
C) c= c>c≡ c>c-c
D) c= c > c -c>c≡c

Q.165: The strength of a bond depends upon:
A) Bond length
B) Electro negativity difference of bonded atoms
C) Atomic size
D) All of the above

Q.166: $SnCl_2$ has _____ shape.
A) Planner
B) Angular
C) Tetrahedral
D) None

Q.167: The angle between sp^2 hybrid orbitals in each carbon atom in ethylene is
A) 120°
B) 109.5°
C) 90°
D) 180°

Q.168: In which one of the following pairs do the molecules have similar shapes?
A) $AlCl_3$ and BCl_3
B) $BF_3$and NH_3
C) $AlCl_3$ and PCl_3
D) $BeCl_2$ and H_2O

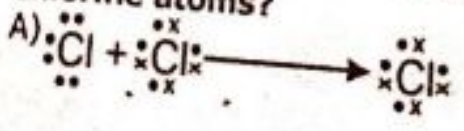
Q.169: Which of the following molecules will not form a hydrogen bond with another of its own molecules?
A) CH_3CHO
B) CH_3NH_2
C) CH_3OH
D) NH_3

Q.170: Which of the following pairs of atoms are most likely to form an ionic compound?
A) Ni, S
B) Cu, Cl
C) Na, F
D) H, I

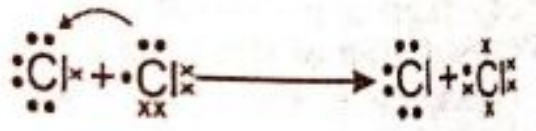
Q.171: Magnesium oxide is used to line industrial furnaces because it has a very high melting point. Which type of bond needs to be broken for magnesium oxide to melt?
A) co-ordinate
B) ionic
C) covalent
D) metallic

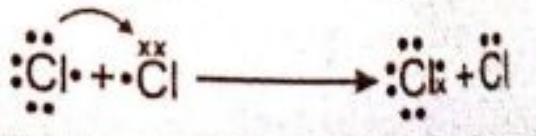
Q.172: Which statement is incorrect?
A) A sigma bond is always formedbefore $\pi - bond$
B) a $\pi - bond$ is weaker than sigma bond
C) In$\pi - bond$ the lesser electron density lies above and below the internuclear axis
D) All sigma bonds have axial symmetry

Q.173: Which one of the following is the correct dot and cross diagram of bonding between two chlorine atoms?

A) 

B) 

C) 

D) 

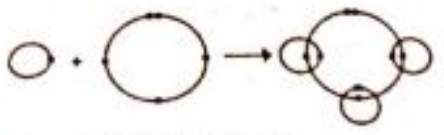
Q.174: In carbonate anion (Triangular planner), Carbon exhibited which of following hybridization?
A) sp
B) sp^2
C) sp^2
D) sp^3d

Q.175: AB_3 has a lone pair at central atom will have the shape?
A) Linear
B) Trigonal planar
C) Trigonal pyramidal
D) Tetrahedral

Q.176: Which one of the following statements describes a phenomenon, which can be explained by intermolecular hydrogen-bonding?
A) The points of the Group I hydroxides increase with increasing relative molecular mass (M_r)
B) The boiling points of the alkanes increase with increasing relative molecular mass.
C) CH_3OCH_3 ($M_r = 46$) has a higher boiling point than $CH_3CH_2CH_3$ ($M_r = 44$).
D) Hydrogen chloride forms an acidic solution when dissolved in water.

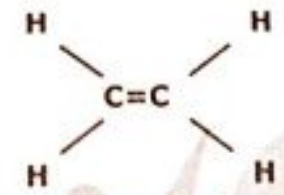
Q.177: The C_2H_2 molecule is linear. What can be deduced from this about the numbers of σ and π bonds present in the molecule?
A) $2\sigma 2\pi$
B) $3\sigma 1\pi$
C) $2\sigma 3\pi$
D) $3\sigma 2\pi$

Q.178: (2016)



Choose the right molecule,
A) CH_3
B) CO
C) H_2O
D) NH_3

Q.179: (2016)



Calculate the number of σ bonds and π bonds in the molecule.
A) 1 π and 5 σ bonds
B) 2 π and 4 σ bonds
C) 3 π and 3 σ bonds
D) 6 π and 6 σ bonds

Q.180: pi-bond is formed by sideways overlap of _____ (2017)
A) s-orbitals
B) p-orbitals
C) d-orbitals
D) None of these

Q.181: What is the exact value of angle in BF_3: (2017)
A) 90°
B) 119.5°
C) 104.5°
D) 120°

Q.182: Which option shows all the molecules with bond angle 109.5°. (2018)
A) CH_4, CCl_4, NH_3
B) CH_4, NH_4 PH_3
C) $SiCl_4$ H_2O $BeCl_2$
D) $SiCl_4$ NH_4CH_4

Q.183: Which of the following molecule has largest number of shared pair of electrons? (2018)
A) CO_2
B) N_2
C) NH_3
D) C_2H_4

Q.184: Electron affinity of the atom is the energy released when (2018)
A) Electron is removed from gaseous atome
B) Covalent bond of molecule is broken
C) Electron is added to gaseous atom
D) Covalent bond is formed between the atoms

Q.185: The Shape of $[Co(NH_3)_6]^{3+}$ complex is (2019)
A) linear
B) Octahedral
C) tetrahedral
D) square planer

Q.186: Which one of the following molecules has SP^3 hybridization?
A) CH_4
B) C_2H_4
C) CO_2
D) C_2H_2

Q.187: According to Waston and Crick's model of DNA, the DNA molecule consists of a double helix. What types of forces are responsible to keep two strands of DNA together? (2019)

A) van der Waal's forces
B) Ionic bonding
C) Hydrogen bonding
D) Dipole-induces dipole forces

Q.188: Which of the following substances exhibits hydrogen bonding? (2019)

A) H_2H
B) SiH_4
C) NH_3
D) HI

Q.189: Which of the following bond is responsible for joining the amino acids in proteins? (2019)

A) Peptide Bond
B) Ionic Bond
C) Metallic Bond
D) Di sulfide Bond

Q.190 Which of the following has the highest value of electronegativity? (2020)

A) I
B) Br
C) Cl
D) F

Q.191 Which of the following hybrid _____ a character? (2020)

A) sp^3-hybrid orbital
B) sp^2-hybrid orbital
C) sp-hybrid orbital
D) dsp^2-hybrid orbital

Q.192 The first Ionization energy is maximum for: (2020)

A) Na
B) Mg
C) Al
D) K

1.	A	2.	D	3.	A	4.	
11.	C	12.	D	13.	B	14.	
21.	D	22.	A	23.	A	24.	
31.	C	32.	D	33.	C	34	
41.	B	42.	B	43.	A	4	
51.	B	52.	D	53.	C		
61.	C	62.	C	63.	C		
71.	A	72.	C	73.	B		
81.	D	82.	C	83.	C		
91.	D	92.	D	93.	B		
101.	C	102.	A	103.			
111.	B	112.	D	113.			
121.	C	122.	D	123.			
131.	D	132.	B	133			
141.	D	142.	A	14			
151.	C	152.	C	15			
161.	D	162.	A	1			
171.	B	172.	C				
181.	D	182.	D				
191.	C	192.	C				

ANSWERS

1.	A	2.	D	3.	A	4.	D	5.	A	6.	C	7.	D	8.	B	9.	A	10.	B
11.	C	12.	D	13.	B	14.	B	15.	B	16.	D	17.	C	18.	D	19.	D	20.	B
21.	D	22.	A	23.	A	24.	A	25.	B	26.	C	27.	D	28.	C	29.	A	30.	B
31.	C	32.	D	33.	C	34.	D	35.	D	36.	B	37.	A	38.	A	39.	B	40.	
41.	B	42.	B	43.	A	44.	C	45.	C	46.	C	47.	D	48.	D	49.	C	50.	C
51.	B	52.	D	53.	C	54.	A	55.	C	56.	B	57.	A	58.	B	59.	D	60.	B
61.	C	62.	C	63.	C	64.	A	65.	D	66.	C	67.	D	68.	D	69.	D	70.	B
71.	A	72.	C	73.	B	74.	C	75.	D	76.	C	77.	B	78.	D	79.	C	80.	D
81.	D	82.	C	83.	C	84.	A	85.	C	86.	D	87.	A	88.	B	89.	B	90.	B
91.	D	92.	D	93.	B	94.	A	95.	B	96.	A	97.	C	98.	A	99.	C	100.	B
101.	C	102.	A	103.	B	104.	B	105.	C	106.	C	107.	B	108.	A	109.	C	110.	A
111.	B	112.	D	113.	A	114.	A	115.	C	116.	D	117.	B	118.	B	119.	B	120.	B
121.	C	122.	D	123.	B	124.	D	125.	D	126.	A	127.	D	128.	A	129.	C	130.	D
131.	D	132.	B	133.	D	134.	C	135.	B	136.	A	137.	A	138.	D	139.	B	140.	B
141.	D	142.	A	143.	C	144.	A	145.	C	146.	A	147.	D	148.	A	149.	B	150.	C
151.	C	152.	C	153.	B	154.	A	155.	C	156.	D	157.	B	158.	D	159.	C	160.	C
161.	D	162.	A	163.	C	164.	B	165.	D	166.	B	167.	A	168.	A	169.	A	170.	C
171.	B	172.	C	173.	B	174.	C	175.	C	176.	D	177.	D	178.	D	179.	A	180.	B
181.	D	182.	D	183.	D	184.	B	185.	B	186.	A	187.	C	188.	C	189.	A	190.	D
191.	C	192.	C	193.		194.		195.		196.		197.		198.		199.		200.	

S AND P BLOCK ELEMENTS

Q.1: Which statement about a new element, which has seven outer electrons in its atoms, is correct?
A) It is monatomic
B) It forms a covalent compound with hydrogen
C) It form positive ion
D) It forms covalent compounds with Group-1 elements

Q.2: The element with a proton number 12 has similar chemical properties to the element with the proton number:
A) 2
B) 11
C) 13
D) 20

Q.3: Which statement about all noble gases is correct?
A) The number of protons in the atoms equals the number of neutrons
B) Their atoms each have a stable arrangement of electrons
C) They exist as molecules containing two atoms
D) None of the above

Q.4: Which of the following best describes ionization energy?
A) Energy needed to remove the most losely bound electron from its ground state
B) It is represented by $X + e^- \rightarrow X^- + energy$.
C) It decreases from left to right across the period
D) It increases down the periodic table

Q.5: Which of the following best characterizes electrons affinity?
A) Neutral atoms with unfilled orbitals having repulsion for electrons.
B) Neutral atoms of noble gases having attraction for electrons.
C) Neutral atom with unfilled orbitals having attraction for electrons.
D) None of these

Q.6: Which of the following is not true for metalloids?
A) They are borderline elements that exhibit both metallic and non-metallic properties.
B) They are usually act as electron donors with non-metals
C) They are usually act as electron acceptors with metals
D) The are good conductor of heat and electricity

Q.7: Which of the following is an ionic oxide?
A) Mn_2O_7
B) ZnO
C) H_2O_2
D) CO

Q.8: Which ionization energy value is the greatest?
A) 1^{st} for Li
B) 1^{st} for Be
C) 2^{nd} for Be
D) 1^{st} for Mg

Q.9 Mendeleev's periodic table failed to find position for?
A) Isotopes
B) Lanthanides
C) Isotopes of hydrogen
D) all of these

Q.10 All the elements in a group in the periodic table have the same ?
A) No. of electrons
B) No. of valency electrons
C) atomic weight
D) Atomic number

Q.11 In the periodic table the element with atomic number 30 is expected to be present in?
A) IB
B) IA
C) IIA
D) IIB

Q.12 Elements of group I B and II B are ?
A) normal elements
B) Transition elements
C) alkaline earth metals
D) alkali metal

Q.13 Elements of group IV A are?
A) Strong electropositive
B) strongly electronegative
C) weakly electronegative
D) Neither strongly electropositive nor strongly electro negative

Q.14 In the long form of periodic table all the non-metals are placed under ?
A) s- black
B) p – black
C) F- black
D) d-block

Q.15 Element A of group VA combines with element B of group ViA. The resulting compound may have the formula ?
A) A_2B_2
B) A_3B_6
C) A_5B_6
D) A_6B_5

Q.16 According to periodic law, the chemical properties of elements are the periodic function of their?
A) Density
B) Atomic number
C)Mass number
D) Atomic mass

Q.17 **The elements present in IA group form a family because?**
A)the exhibit similar chemical properties
B) the come immediately after noble gases
C) they possess common pattern of electronic configuration
D) the are very unreactive

Q.18 **In a period in the periodic table, as the atomic number increases?**
A) The electronegative nature goes on increasing
B) the electropositive nature goes on increasing
C) the chemical reactivity goes on increasing
D) the chemical reactivity goes on decreasing

Q.19 **Zero group was introduced by?**
A) Lothar Meyer
B) Mendeleev
C) Ramsay
D) Lockyer

Q.20 **The periodic table of the elements does not?**
A) Include the inert gases
B) Tell us arrangement of atoms in a molecule
C) permit us to make accurate guesses of the properties of undiscovered elements
D) Reveal regularities in the occurrence of elements with similar properties

Q.21 **In a periodic table from I group to group VII electronegativity of elements?**
A) Decrease
B) Increase
C) Remain constant
D) all

Q.22 **Highest Ionization potential I na period is shown by ?**
A) alkali metals
B) Transition element
C) Halogen
D) alkaline earth metals

Q.23 **The electronic configuration of element which follows the lanthanides is?**
A) (xe) $4f^{14}\ 5d^{1}6S^{2}$
B) (xe) $4f^{0}\ 5d^{1}6S^{2}$
C) (xe) $4f^{1}5d^{1}6S^{2}$
D) (xe) $4f^{14}\ 5d^{2}6S^{2}$

Q.24 **Halogens have been placed in the VII group of the periodic table because?**
A) they are non- metals
B) they are very reactive
C) they are electronegative
D) They have seven electrons in outermost orbit

Q.25 **On descending group electropositive character of elements?**
A)Increase
B) Decrease
C) Remains same
D) None

Q.26 **Which of the following pairs belongs to the same group?**
A) elements with atomic number 17 and 38
B) elements with atomic number 20 and 40
C) elements with atomic number 17 and 53
D) elements with atomic number 11 and 33

Q.27 **Atomic radii of fluorine and neon in A units are respectively given by?**
A) 0.72, 1.60
B) 1.60 , 1.60
C)072, 0.72
D) none

Q.28 **Each period in the periodic table starts with a subshell of the new shell and ends with?**
A) small subshell
B) Different subshell of the same subshell
C) the next higher shell
D) p-subshell of the same shell

Q.29 **With increase in atomic number in a period?**
A) The number of oxidation states that an element shows in its compounds increase
B) Electropositive character increase
C) Electropositive character decrease
D) Metallic character Increase

Q.30 **Which is the most -non-metallic of the following?**
A) Be
B Cu, S
C)Ti, Zr
D) Zr, Hf

Q.31 **The statement that is not correct for the periodic classification of element?**
A) the properties of the elements are the parodic function of their atomic number
B)non-metallic elements are lesser in number than metallic elements
C) the first ionization energies of elements along a period do not vary in a regular manner with increase in atomic number
D) for transition elements the d-subshell are filled with electrons monotonically with increase in atomic number

Q.32 **Which pair of elements is chemically most similar?**
A) Na, Al
B) Cu, S
C) Ti, Zr
D) Zr, Hf

Q.33 **In the series C, N, O and F, the electronegativity?**
A) Decreases from C To F
B) Increases from C to F
C) Remains Constant
D) Decreases from C to O and then increase

Q.34 In the long form of periodic table, the elements having lowest ionization potential are present in ?
A) I group
B) VII group
C) IV group
D) zero group

Q.35 The first ionization energy is smallest for the atoms with electronic configuration?
A) ns^2np^3
B) ns^2np^4
C) ns^2np^5
D) ns^2np^6

Q.36 Which of the following statements is false?
A) elements of IB and IIB group are transition elements
B) elements of V A group are metallic
C) elements of I A and IIA group are normal elements
D) Elements of IV A group are neither strongly electronegative nor strongly electropositive

Q.37 The low of octaves applies to the following set of elements?
A) B , N, C
B)Ar, k, Ca
C) Ar, K, Ca
D) Se, TE, As

Q.38 In a period, the alkali metals have?
A) highest ionization energy
B) largest atomic radii
C) highest density
D) Highest electronegativity

Q.39 Lowest ionization potential in a period is show by?
A) Alkali metals
B) halogen
C) Transition elements
D) alkaline earth metals

Q.40 Elements of I A and IIA group are?
A) Alkali metals
B) Normal elements
C) alkaline earth metal
D) Transition elements

Q.41 An atom with high electronegativity generally has?
A) Tendency to form +ve ions
B) high ionisation potential
C) large atomic size
D) low electron affinity

Q.42 Which of the following elements has the highest atomic volume?.
A) Rn
B) Ra
C) Fr
D) Ha

Q.43 Elements of I A group give color in Bunsen burner due to ?
A) Low I.P
B) low M.P
C) Softness
D) one electron in outermost shell

Q.44 The telluric helix was given by?
A) New land
B) Lother Meyer
C) new lands
D) De Chan Courtois

Q.45 On the basis of electronic configuration the knowns elements are grouped in?
A) 3 blocks
B) 4 blocks
C) 4 blocks + lanthanides
D) 2 blocks + Lanthanides +actinides

Q.46 In the periodic table on moving from left to right across a period, the metallic character of on elements?
A) Increase
B) Decrease
C) Increase and then decreases
D) Remains constant

Q.47 Elements of the same vertical group of the parodies table have?
A) same atomic size
B) same electronic configuration
C) same number of electrons in outermost shell of their atom
D) same number of atoms

Q.48 Which of the following has the largest ionic faduis?
A) BE^{2+}
B) Mg^{4+}
C) Ca^{2+}
D) SR^{2+}

Q.49 number of electrons present in V period of the periodic table is ?
A) 8
B) 18
C) 10
D) 32

Q.50 The size of species I, I^+ and I^- decreases in the order?
A) $I^+ > I^- > I$
B) $I^- > I > I^+$
C) $I^- > I^+ > I$
D) $I > I^+ > I^-$

Q.51 Which pair of atomic numbers represent elements which are both s block elements
A) 7.15
B) 6, 12
C) 9, 17
D) 3, 2

Q.52 Which one of the following about compounds if lithium is false ?
A) they hydroxide ,carbonate, nitrate decomposed to give the oxide on heating
B) it is the most electronegative of group IA
C) the hydrogen carbonate cannot be isolated as stable solid
D) it forms a peroxide but not a superoxide

Q.53 Which of the following configuration of outermost orbit indicates an alkali metal?
A) $2Na + 2NH_3 \rightarrow 2NaNH_3 + H_2$
B) $NaNH_2 + N_2O \rightarrow NaN_3 + H_2O$
C) $2Na + 2H_2O \rightarrow 2NaOH + H_2$
D) $2Na + 2H_2O \rightarrow 2NaOH + H_2$

Q.54 Which of the following configuration of outermost orbit indicates an alkali metal?
A) ns^1
B) ns^2
C) ns^2np^1
D) ns^2np^2

Q.55 Alkali metal are ?
A) reducing agents
B) oxidizing agents
C) both reducing and oxidizing agent
D) hydrolyzing agents

Q.56 Lithum Iodide is ?
A) Ionic
B) covalent
C) Partially covalent
D) None

Q.57 Which of the following properties of aikali metals increasing in magnitude as the atomic number increases?
A)Ionic radius
B) Electronegativity
C) Melting point
D) first ionization energy

Q.58 Which of the following electronic configuration represents the configuration of the most electropositive elements?
A) [He] $2s^1$
B) [Xe] $6s^1$
C) [He]$2s^2$
D) [Xe] $6s^2$

Q.59 Which of the following compound has the highest melting point?
A) NaF
B) NaCI
C) NaBr
D) Nal

Q.60 Which of the following is not the characteristics of alkali metals?
A) low M.p
B) low electronegativity
C) High ionization energies
D) their ins are isoelectronic noble gases

Q.61 The outermost electron is most loosely held in ?
A) LI
B) Na
C) K
D) Cs

Q.62 The alkali metals are strong reducing agents due to?
A) low ionization energy
B)large ionic radii
C) high enthalpy of hydration
D) potential value

Q.63 On prolonged exposure to air, sodium finally changes to?
A) Na_2CO_3
B) Na_2O
C) NaOH
D) $NaHCO_3$

Q.64 Which alkali meatal has the lowest melting points and exist as a liquid?
A) Na
B) K
C) Rb
D) Cs

Q.65 The alkali metals?
A) form salt like hydrogen
B) form salt which are predominantly covalent
C) show decreased chemical reactivity with dry O_2 in going form Li to Cs
D) show increasing electronegativity

Q.66 Reason for alkali metals to be soft is ?
A) they are less metallic in nature
B)there is only one valency electron nucleus
C) they do not have close packed structures
D)they have high I.E

Q.67 The following is the correct order of chemical reactivity with water according to electromotive series?
A) k > mg >Cu >Zn
B) Cu> Zn > k > Mg
C) k > mg > Zn > CU
D) Mg > K > Cu > Zn

Q.68 Which of the following compounds decomposes on heating similar to $LINO_3$?
A)BE $(NO_3)_2$
B) SR $(NO_3)_2$
C) Mg $(NO_3)_2$
D) All

Q.69 Which of the following will have the largest ionic radius?
A) CS^+
B) Li^+
C) Na^+
D)Mg^{2+}

Q.70 Which of the following has the largest size in water?
A) RB^+
B) Na^+
C) K^+
D) Li^+

Q.71 Which of the following oxides in thermally most stable?
A) Na^2O
B) Ag^2O
C) HgO
D) Au^2O^3

Q.72 Which of the following does not form peroxide on heating in air?
A) Na
B) RB
C) Ca
D) Li

Q.73 Which of the following has closed shell electronic configuration?
A) Li
B) Li^+
C) Li^{2+}
D) LI^-

Q.74 The electronic configuration having he lowest Ionization energy for a neutral atom would correspond?
A) $1s^2\ 2s^2\ 2p^6$
B) $1s^2\ 2s^2$
C) $1s^2\ 2s^2\ 2p^6\ 3s^1$
D) $1s^2\ 2s^2\ 2p^1$

Q.75 Which of the following Ions forms a hydroxide highly soluble in water?
A) Ni^{2+}
B) K^+
C) Zn^{2+}
D) AI^{3+}

Q.76 Select the largest atom from the following?
A) $1s^2\ 2s^2\ P^1$
B) $1s^2\ 2s^1$
C) $1s^2\ 2s^2\ P^3$
D) $1s^2\ 2s^2$

Q.77 Which of the following does not give oxide on heating ?
A) $MgCO_3$
B) $LICO_3$
C) $ZNCO_3$
D) K_2CO_3

Q.78 Which of the alkaline earth metals is the strongest reducing agent?
A) CA
C) SR
C) BA
D) Mg

Q.79 The lowest solubility of $BaSO_4$ in water due to ?
A) Ionic bond
B) low lattice energy
C) high lattice energy
D) dissociation energy

Q.80 Among the following the biggest Ion is ?
A) AI^{3+}
B) Ba^{2+}
C) Na^+
D) Mg^{2+}

Q.81 The solubility in water of sulphates down the be group is Be > Mg > Ca> Sr > Ba, This is due to?
A) high heat of solvation for small ions
B) Increasing molecular weight
C) Decreasing lattice energy
D) Increasing in melting points

Q.82 The correct order of radii of Ca , Ca^{1+} , Ca^{2+} , is ?
A) $Ca > Ca^{2+} > Ca^{1+}$
B) $Ca > Ca^{1+} > Ca^{2+}$
C) $Ca^{2+} > Ca^{1+} > Ca$
D) $Ca^{2+} > Ca > Ca^{1+}$

Q.83 Which of the following is most alkaline?
A) $Mg(OH)_2$
B) $Ba(OH)_2$
C) $Ca(OH)_2$
D) $Be(OH)_2$

Q.84 The member of group IIA which has the simplest electronic configuration ?
A) Ca
B) Mg
C) Ba
D) Be

Q.85 Alkaline earth metals are not found in free state in nature because of?
A) their high B.P
B) their low B.P
C) their thermal instability
D) their great chemical activity

Q.86 Which is most basic?
A) Al_2O_3
B) MgO
C) SiO_2
D) P_2O_5

Q.87 The correct order of solubility of sulphates of alkaline earth metaling water is?
A) Be > Ca> Mg > Ba >Sr
B) BE? Mg > Ca> Sr> Ba
C) Mg > Be> BA> CA> >Sr
D) Mg > Ca> Ba> Be > Sr

Q.88 Which of the following is soluble in ether ?
A) $BeCl_2$
B) $CaCl_2$
C) $SrCl_2$
D) None

Q.89 The halide of Al which sublimes on heating is
A) AlF_3
B) $AlBr_3$
C) $AlCl_3$
D) AlI_3

Q.90 Aluminum metal is corroded in coastal places near to the sea because protective oxide film?
A) is removed by sea water
B) reacts with sea water
C) is attacked by slat present in sea water
D) React with sand particles

Q.91 The boron, carbon, nitrogen and oxygen have the following order of increasing Ionization energy ?
A) B.C O, N
B) N, O, B, C,
C) B, N ,C, O
D) O, B, C, N

Q.92 The halide of IIIA group elements are?
A) Lewis acids
B) Lewis bases
C) Bronsted Acids
D) Arrhenius Acids

Q.93 The main factor responsible for B-F bonds BF_3 Is?
A) large electronegativity of F
B) three centered tow electron bond in BF_3
C) P π - d π back bonding
D) P π - p π back bonding

Q.94 Melting point is highest for?
A) B
B) AI
C) Ga
D) In

Q.95 Which of the following order correct regarding Lewis acid strengths of born halides?
A) $BI_3<BBr_3<BCI_3>BF_3$
B) $BBr_2>BCI_3>BF_3< BI_3$
C) $BI_3>BBr_3>BCI_3<BF_3$
D) None

Q.96 Which of the following contains a banana bond?
A) B_2H_6
B) $AICI_3$
C) BCI_3
D) BF_3

Q.97 Which of the following is ionic ?
A) AIF_3
B) $AIBr_3$
C) $AICI_3$
D) AII_3

Q.98 In the dimer of $AICI_3$ the entities are bonded by ?
A) Covalent bond
B) Hydrogen bond
C)Ionic bonds
D)Co-ordination Bonds

Q.99 Aluminum metal r5educes many metallic oxides due to its great affinity for .
A) Oxygen
B) Metals
C) Electrons
D) Hydrogen

Q.100 The first I.p of AI is smaller than that of Mg because?
A) Atomic size of AL > Mg
B) AI has one electron in *P*-orbital
C) Atomic size of AI <Mg
D) Not known

Q.101 Which of the following is not correct?
A) AI acts as a reducing agents
B) AL does not react with steam even at higher temperature
C) I forms a number of alloys with other metals
D) AI is ionic I all its compound

Q.102 Which is more Acidic?
A) BF3
B) BCI_3
C) BBR_3
D) BI_3

Q.103 $AICI_3$ is?
A) Anhydrous and covalent
B) Anhydrous and ionic
C)covalent and basic
D)Co-ordinance

Q.104 Highest ionization energy in period no. 3 is observed in
A) Ar
B) Al
C) Na
D) Cl

Q.105 Which one of the following ions has the highest value of ionic radius?
A) Li^+
B) O^{2-}
C) F^-
D) B^{3+}

Q.106 Which of the following processes is endothermic in nature?
A) $N \rightarrow N^{3-}$
B) $H \rightarrow H^-$
C) $Li^+ \rightarrow Li$
D) $Ca^{2+} \rightarrow Ca^+$

Q.107 The radii of H, H^+ and H^- are in the order of
A) $H^+ > H > H^-$
B) $H > H^- > H^+$
C) $H^- > H > H^+$
D) $H^- > H^+ > H$

Q.108 In a period, the alkali metals have
A) Smallest atomic size
B) Lowest density
C) Lowest I.E
D) Highest E.A.

Q.109 The diagram shows the positions of four elements in the Periodic Table. Which element losses electrons to form positively charged ions?

I	II	III	IV	V	VI	VII	0
							A
						B	
D			C				

Which statement about periods in the Periodic Table is correct?
A) All periods contain both metals and non-metals
B) Atoms of elements in the same period have the same total number of electrons
C) In 2nd period total eighteen elements are present
D) s,p,d,f block elements are present in 6th period of periodic table

Q.110 Carbon exists as allotropes, which are different crystalline of molecular forms of the same substance. Graphite and Diamonds are allotropes of carbon. Diamond is a non-conductor whereas graphite is good conductor because: 2011)

A) Graphite has a layered structure
B) In graphite one of the valence electrons is free to move
C) In graphite all valence electrons are tetrahedrally bound
D) Graphite is soft and greasy

Q.111 Which has minimum hydration enthalpy?

A) K^+
B) Ca^{2+}
C) Li^+
D) Al^{3+}

Q.112 In which of the following arrangements, the sequence is not strictly according to the property written against it?

A) $CO_2 < SiO_2 < SnO_2 < PbO_2$: Increasing oxidizing power
B) HF < HCl < HBr < HI: Increasing acid strength
C) $NH_3 < PH_3 < AsH_3 < SbH_3$: Increasing basic strength
D) B < C < O < N: Increasing first ionization enthalpy

Q.113 A metal X forms oxides with the formula XO and X_2O_3. Where is X in the periodic table?

A) In group II
B) the second Period
C) in group III
D) in the transition elements

Q.114 Which property decides the order of the elements in periods in the Periodic Table?

A) The masses of their atoms.
B) The number of neutrons in the nucleus.
C) The number of electrons in the outer shell.
D) The number of protons in the nucleus.

Q.115 Which element has highest M.P?

A) Li
B) C
C) Be
D) Ne

Q.116 Which has smallest ionic radius?

A) K^+
B) Sc^{3+}
C) Ca^{2+}
D) Ti^{4+}

Q.117 Elements X,Y and Z are in the same period of the Periodic Table. X is a metal. Y is a non-metal and Z shows properties of both metals and non-metals. What is the order of increasing proton (Atomic.Number)?

	Lowest ----------→ highest		
A	X	Y	Z
B	X	Z	Y
C	Y	Z	X
D	Z	Y	X

Q.118 Which period contain only s-block elements?

A) 2nd period only
B) 1st period only
C) 3rd period only
D) Not possible

Q.119 The electronegativity of H, O and X are 2.1, 3.5 and 0.7, respectively. The correct nature of compound X – O – H is:

A) acidic
B) amphoteric
C) basic
D) neutral

Q.120 Which of the following order for ionization enthalpy is correct?

A) Be > B C > N > O
B) B < Be < C < N < O
C) B < Be < C < O < N
D) B < Be < N < C < O

Q.121 Which one of the following goes inversely with proton number as we go from left to right?

A) Atomic radii
B) Electron affinity
C) Ionization energy
D) Electronegativity

Q.122 The correct order of 2nd I.P of C, N, O and F is

A) O> F > N> C
B) C> N > O> F
C) O> N > F> C
D) F> O > N> C

Q.123 Atomic radius decreases from left to right in a period due to:

A) Entrance of electron in same shell
B) Shielding effect remains constant
C) Increase in positive charge in the nucleus
D) All of given

Q.124 **In a given period oxide progress from:**
A) Strongly basic → weekly basic → amphoteric → weekly acidic → strongly acidic
B) weekly basic → Strongly basic → weekly acidic → amphoteric → strongly acidic
C) Strongly basic → weekly acidic → strongly acidic → weekly basic → amphoteric
D) strongly acidic → amphoteric → weekly basic → weekly acidic → Strongly basic

Q.125 **In a given energy level, the order of penetration effect of different orbitals is:**
A) f > d < p < s
B) s > p > d > f
C) s = p = d = f
D) p > s > d > f

Q.126 **The electron affinity of nitrogen is lower than that of carbon because:**
A) atomic radius of nitrogen is lower than that of carbon
B) effective nuclear charge in carbon is greater
C) addition of an electron in N gives $2P^4$ configuration
D) nitrogen is a gaseous element

Q.127 **Which of the fowling pair will have maximum I.E and minimum E.A?**
A) N& O
B) S& Na
C) He & Li
D) Ne& K

Q.128 **Which of the following is the hardest element?**
A) Be
B) C
C) B
D) N

Q.129 **The element with a proton number 16 has similar chemical properties to the element with the proton number.**
A) 2.
B) 34
C) 11.
D) 20.

Q.130 **Many properties of an element and its compounds can be predicted from the position of the elements in the Periodic Table. What property could not be predicted in this way?**
A) the acidic or basic nature of its oxide
B) the number of isotopes its has
C) the formula of its oxide
D) its metallic or non-metallic properties

Q.131 **In the graph between ionization energies on the y axis and proton on x axis the bottom of the plotted graph is always representing _____ group of the periodic table:**
A) 1
B) 8
C) 7
D)

Q.132 **Three elements A, B and C have consecutive increasing atomic numbers. If C is a noble gas what will be the symbol for the ion of element A in its compounds:**
A) A^{2-}
B) A^{+1}
C) A^{-1}
D) A^{2+}

Q.133 **The ionization energy of Phosphorus is more than Sulphur because its p orbital is _____ filled.**
A) Completely
B) Partially
C) Half
D) empty

Q.134 **_____ occur naturally in a positive oxidation state**
A) F
B) Br
C) Cl
D) I

Q.135 **A sudden large difference between the values of second and third ionization energies of elements would be associated with which of the following electronic configuration:**
A) $1s^2, 2s^2, 2p^6$
B) $1s^2, 2s^2, 2p^6, 3s^2$
C) $1s^2, 2s^2, 2p^6, 3s^2 3p^3$
D) $1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^1$

Q.136 **Which of the following ions has the highest ionic radius:**
A) Li^+
B) F^{-1}
C) O^{-2}
D) B^{+3}

Q.137 **The halogens exist as diatomic molecules, X_2. The boiling points of the halogens increase in descending the group. It is because:**
A) The physical states of the halogens at r.t.p show the classic trend of gas → liquid → solid
B) On descending the group the number ot electrons increases leading to an increase in the van del' waal's forces between molecules
C) Both A and B
D) Neither A nor B

Q.138 Atomic radius increases down the group which of the following is incorrect statement about it:
A) Extra shells are added that are further from the nucleus
B) There are more shells between the outer electrons and the nucleus leading to greater shielding of the nuclear charge
C) The attraction between the nucleus and the outer electrons decreases
D) Shielding effect remains constant in a group

Q.139 Ionization energy depends upon
A) Nuclear charge
B) Shielding effect
C) Atomic size
D) All of the above

Q.140 The elements for which the value of ionization energy is low can: (2011)
A) gain electron readily
B) gains electron with difficulty
C) loss electrons less readily
D) lose electronsreadily

Q.141 Keeping in view the size of atoms which order is incorrect
A) Sr> Ca
B) Cl > I
C) Ba > Mg
D) K > Na

Q.142 In which group melting and boiling point decreases down the group
A) IA
B) VIIA
C) VIIIA
D)VA

Q.143 Which of the following is correct order of electrical conductance?
A) Na<Mg<Al
B) Ag<Cu<Au
C) Be<Mg<Ca
D) All

Q.144 Which of the following elements would be expected to form the largest ion with a noble gas electron configuration?
A) Al
B) P
C) Cl
D) K

Q.145 Which one remains same along a period? (2012)
A) Atomic radius
B) Number of shells (orbitals)
C) Melting point
D) Electrical conductivity

Q.146 In periods the elements are arranged strictly according to their
A) Increasing atomic wt
B) Decreasing valence electrons
C) Increasing nuclear charge
D) Increasing valency

Q.147 Ease of formation of the anion is favored by:
A) lower value of ionization potential
B) higher value of electron gain enthalpy
C) lower value of electron gain enthalpy
D) lower value of electronegativity

Q.148 Ionization potential does not depend upon:
A) atomic size
B) nuclear charge
C) penetration effect of the electrons
D) type of bonding in crystal lattice

Q.149 Which one of the following properties 1st increases upto middle of periodic and then decreases?
A) Electrical Conductance
B) Melting and boiling points
C) Oxidation state
D) Both b and c

Q.150 The hydration energy of Na^+, Mg^{+2}, Al^{+3} and Si^{+4} are in the order of:
A) $Na^+ > Mg^{+2} > Al^{+3} > Si^{+4}$
B) $Na^+ > Al^{+3} > Mg^{+2} > Si^{+4}$
C) $Na^+ < Mg^{+2} < Al^{+3} < Si^{+4}$
D) $Mg^{+2} < Na^+ < Al^{+3} < Si^{+4}$

Q.151 In Group-II from top to bottom, the hardness of alkali metals
A) Remains unchanged
B) Decreases
C) Increases
D) None of these

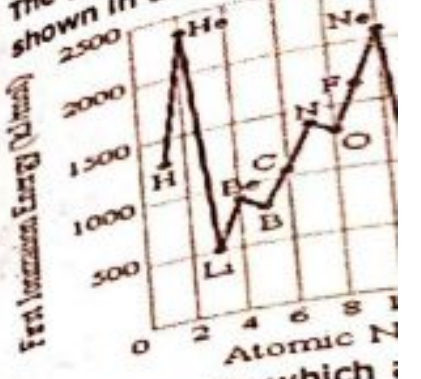
Q.152 Excluding He and H the smallest element in periodic table is
A) Li
B) Cs
C) F
D) I

Q.153 Polarization of ions is governed by:
A) hybridization
B) Fajan's rule
C) VSEPR theory
D) Pauling's rule

Q.154 If electronegativity of A is 2.0 and that of B is 3.0, what is the covalent character percentage of the bond A-B?
A) 19.5%
B) 46%
C) 80.5%
D) 54%

Q.155 The most electronegative
A) Cl
B) Br

Q.156 The periodic variation in shown in the figure belo



The elements which has highest first ioniz
A) He
B) Ar

Q.157 Which has highest 1st
A) Br
B) F

Q.158 The units of ionizati
A) J/mole
B) E.V.

Q.159 The correct melting
A) Al > Si
B) P > Si

Q.160 The size of which o
A) Na^+
B) O^{-1}

Q.161 The cause of perio
A) Density
B) Chemical propert

Q.162 The ions P^{3-}, S^{2-} a one of the followi
A) Increases in the
B) An increase in t
C) A constant total
D) A decrease in t

Q.163 Elements in the
A) Same atomic n
B) Similar chemic

Q.164 More the ioniza
A) More the elect
B) Less the meta

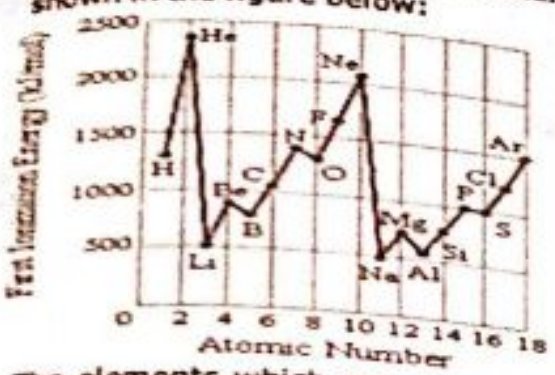
Q.165 'X' is the only element 'X' is
A) Sr
B) Mg

Q.166 Incorrect 1st io
A)N> O
B) Be > B

Q.167 The Nobel gas
A) Ionization po
B) Electrochem

Q.155 The most electronegative element in period no 3 is:
A) Cl
B) Br
C) F
D) I

Q.156 The periodic variation in a physical property of elements with proton number 1 to 18 is shown in the figure below:



The elements which are shown at the peak are noble gases (group VIIIA). Which one has highest first ionization energy and does not belong to p-block?
A) He
B) Ar
C) Ne
D) Kr

Q.157 Which has highest 1st I.E.?
A) Br
B) F
C) Cl
D) I

Q.158 The units of ionization potential are
A) J/mole
B) E.V.
C) Cal
D) None

Q.159 The correct melting point order is
A) Al > Si
B) P > Si
C) Na > Mg
D) S > Cl

Q.160 The size of which of the following species is largest after gaining one electron
A) Na^+
B) O^{-1}
C) F
D) N^{-1}

Q.161 The cause of periodicity of elements has same:
A) Density
B) Chemical properties
C) Valence shell electronic configuration
D) Diagonal relationship

Q.162 The ions P^{3-}, S^{2-} and Cl^- have radii 0.212 rim, 0.184 nm and 0.181 nm respectively. Which one of the following correctly explains the decrease in radius in going from P^{3-} to Cl^-?
A) Increases in the total number of electrons and in the nuclear charge
B) An increase in the total number of electrons with the nuclear charge remaining constant
C) A constant total number of electrons and an increase in the nuclear charge
D) A decrease in the total number of electrons with the nuclear charge remaining constant

Q.163 Elements in the same family have
A) Same atomic number
B) Similar chemical properties
C) Molecular wt same
D) Same electronic configuration

(2012)

Q.164 More the ionization energy of an element:
A) More the electropositivity
B) Less the metallic character
C) More the reducing power
D) Bigger the atomic radius

Q.165 'X' is the only member of group II A which reacts with alkalis to give hydrogen. The element 'X' is
A) Sr
B) Mg
C) Ca
D) Be

Q.166 Incorrect 1st ionization energy order is
A) N> O
B) Be > B
C) F > Ne
D) He > H

Q.167 The Nobel gases are always an exception towards a:
A) ionization potential
B) Electrochemical character
C) Atomic Size
D) All of these

Q.168 Along the periods periodic table the cationic and anionic radius:
A) First decrease then increase
B) First increase then decreases
C) Decreasesonly
D) remains same

Q.169 What is the trend of melting and boiling points of the elements of short periods as we move from left to right in a periodic table? (2013)
A) Melting and boiling points first decrease then increase
B) Melting and boiling points increase
C) Melting and boiling points first increase then decrease
D) Melting and boiling points decrease gradually

Q.170 Along a period, atomic radius decreases. This gradual decrease in radius is due to: (2013)
A) Increase in Number of electrons in valence
B) Increase in number of protons in the nucleus
C) Decrease in number of shells
D) Increase in number of shells

Q.171 In the periodic table, the ionization energy of element decrease from top to bottom because of
A) Increase in atomic size
B) Decrease in electronegativity
C) Decrease in shielding effect
D) Increase in density

Q.172 From top to bottom in a group which of the following is correct
A) Shielding effect increases
B) Number of shells increases
C) Nuclear charge increases
D) All of these

Q.173 What is the trend of melting and boiling points along the periods and similar trend is observed in which periodic property :
A) Increases along the period from left to right& conductance
B) Decreases along the period from left to right& oxidation state
C) Increases up to group IV A and then decreases to noble gasesconductance and oxi-state
D) Increases up to group IV A and then decreases to noble gases& Electronegativity

Q.174 Which of the following anomaly is correct by keeping ionizationpotential trend in mind except?
A) Be > B
B) Mg > Al
C) N > O
D) N > F

Q.175 Arrange the following according to the trends of ionization energies: (2014)
A) Ne<N<C<B
B) B<C<N<Ne
C) B<N<C<Ne
D) Ne<B<C<N

Q.176 Which of the following elements has highest I.P. value?
A) F
B) O
C) Li
D) Ne

Q.177 The highest ionization energy is shown by
A) Transition metals
B) Alkali metals
C) Noble gases
D) Halogens

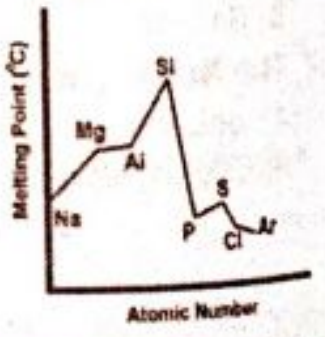
Q.178 The 1st ionization energy would be associated with which of the following configuration
A) IA
B) IIA
C) IIIA
D) IVA

Q.179 The most reactive electropositive element in period no 3 is?
A) Na
B) Rb
C) K
D) Cs

Q.180 In 3rd period which element from amphoteric oxide:
A) Si
B) Cl
C) S
D) AI

Q.181 $Be(OH)_2$ is _____ soluble than $Ca(OH)_2$.
A) More soluble
B) Equally soluble
C) Less soluble
D) None

Q.182 The trends in melting point of the elements of the 3rd period are depicted in figure below. The sharp decrease observed from Si to P is due to: (2014)
A) Decrease in atomic radius from Si to P
B) Change in bonding and structure of two elements
C) Different densities of two elements
D) Increase in electron density from Si to P



Q.183 Which of the following is amphoteric oxide
A) BaO
B) MgO
C) CaO
D) BeO

Q.184 In the period Li to F, the proton number
A) Increases
B) Does not change
C) Decreases
D) First increases then decreases

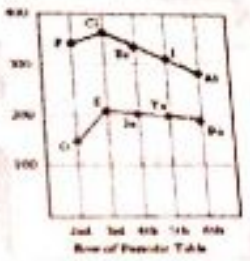
Q.185 Which one remains same along a period?
A) Atomic radius
B) Number of shells (orbits)
C) Melting point
D) Electrical conductivity

Q.186 The formula of ions of some elements are shown below N^{-3}, O^{-2}, F^{-1}, Li^{+1}, Mg^{+2}. Which statement about these ions is correct? They all have same.
A) Number of electrons in their outer shells
B) Number of neutrons in their nuclei
C) Electronic structure as noble gases
D) Number of protons and electrons

Q.187 The greater 1st ionization energy would be associated with which of the following configuration
A) $1s^2 2s^2 2p^6 3s^{-1}$
B) $1s^2 2s^2 2p^3$
C) $1s^2 2s^2 2p^5$
D) $1s^2 2s^2 2p^6$

Q.188 Elements in the periodic table are classified into four blocks. This classification is based upon
A) Valence orbital
B) Shell
C) Orbit
D) Shielding effect

Q.189 Following graph shows a physical property of group VIA & VIIA elements. Which physical property is shown in the graph?



A) Electron affinity
B) Non-metallic character
C) Atomic radius
D) Melting point

Q.190 Which one of the following will have the smallest radius? (2015)
A) Al^{+3}
B) Mg^{+2}
C) Si^{+4}
D) Na^{+1}

Q.191 The halogen which is restricted to only single oxidation state
A) Fluorine
B) Bromine
C) Chlorine
D) Iodine

Q.192 The ionization energy of nitrogen is more than that of oxygen because of
A) The grater attraction of the electrons by the nucleus
B) The extra stability of the half filled p-orbitals
C) The smaller size of nitrogen
D) High nuclear charge

Q.193 Melting and boiling points are maximum for which group of periodic table ?
A) IA
B) IIIA
C) IIA
D) VIIA

Q.194 Maximum m.p and boing points possessed by which IIA member
A) Be
B) Ca
C) Mg
D) Ba

Q.195 In a group of periodic table which of the following will be same
A) Number of electrons
B) Atomic number
C) Number of valence electron
D) Electronic configuration

Q.196 Which of the following will remain constant along the period
A) Atomic size
B) Atomic number
C) Shell number
D) Ionization energy

Q.197 The halide with least ionic character is
A) NaCl
B) $MgCl_2$
C) HCl
D) $AlCl_3$

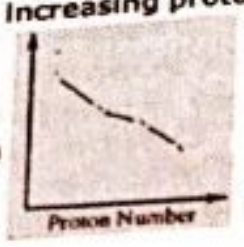
Q.198 Which one of the following properties is common to Li, Na and K?
A) All the elements form hydride
B) High ionic radius
C) High 2nd I.P
D) High electronegativity

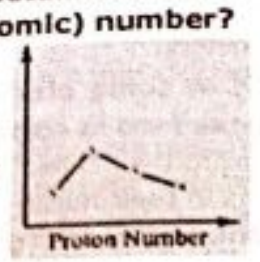
Q.199 The ionic mobility of alkali metal ions in an aqueous solution is maximum for:
A) K^+
B) Li^+
C) Rb^+
D) Na^+

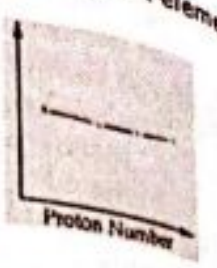
Q.200 The increasing order of the ionic radii of the given isoelectronic species is:
A) Cl^-, Ca^{2+}, K^+, S^{2-}
B) Ca^{2+}, K^+, Cl^-, S^{2-}
C) S^{2-}, Cl^-, Ca^{2+}, K^+
D) K^+, S^{2-}, Ca^{2+}, Cl^-

Q.201 Which diagram shows the variation of the metallic radius "r" of the group IIA elements, Mg, Ca, Sr and Ba with increasing proton (atomic) number?

A) 

B) 

C) 

D) 

Q.202 Which one of the following oxide will have maximum acidic character?
A) MnO
B) Mn_2O_3
C) MnO_2
D) Mn_2O_5

Q.203 Elements of which family form anions most readily?
A) halogens
B) chalcogen
C) alkali metals
D) pnicongens

Q.204 Ionization potential of phosphorus is greater than that of sulphur because:
A) of its smaller size
B) its nuclear force of attraction on electrons
C) of more penetrating power of p-orbitals
D) half-filled orbitals are more stable

Q.205 When we move from left to right across the period, which is the sequence of bonding character:
A) Ionic, partially ionic, partially covalent
B) Partially covalent, ionic, partially ionic
C) Partially ionic, partially covalent, ionic
D) None of these

Q.206 Which of the following configurations is associated with largest difference between 2nd and 3rd ionization energy
A) $1s^2 2s^2 2p^2$
B) $1s^2 2s^2 2p^6 3s^2$
C) $1s^2 2s^2 2p^2 3s^1$
D) $1s^2 2s^2 2p^1$

Q.207 Which of the following has the highest first ionization enthalpy?
A) Ba
B) Ca
C) Mg
D) Be

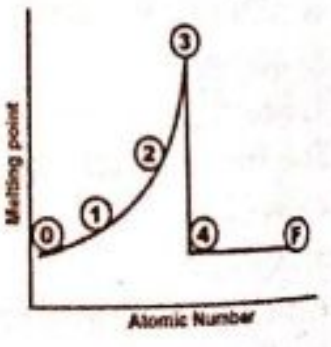
Q.208 Which of the following sets of elements belongs to third period?
A) Cl,Br,Ar
B) Mg,Cl,Ar
C) S,Al,Ne
D) Ca,Si,Cl

Q.209 Which of the following represent elements in order of decreasing atomic size?
A) F,Cl,Br
B) Ai,Be,B
C) S,P,Si
D) Be,Mg,Ca

Q.210 Third and fourth periods of periodic table consist of _____ and _____ respectively
A) Eight and eighteen elements
B) Eight and eight elements
C) Eighteen and eight elements
D) Eighteen and eighteen elements

Q.211 The diagram below is the plot of melting points of elements of second period against their atomic number. Lithium and fluorine are placed at the extreme ends of the plot. On the basis of melting points where would you place carbon among the empty slots on the plot?
(2011)

A) 61
B) 2
C) 4
D) 3



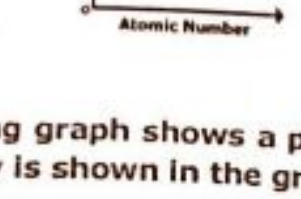
Q.212 Melting points of group II-A elements are higher than those of group I-A because: (2016)

A) Atoms of II-A elements have smaller size
B) II-A elements are more reactive
C) Atoms of II-A elements provide two binding electrons
D) I-A elements have smaller atomic radius

Q.213 The ionic radius of fluoride ion is: (2016)

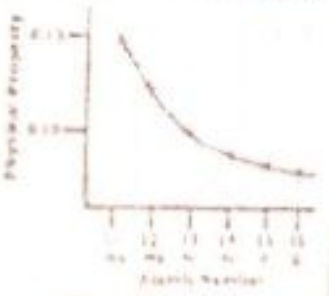
A) 72 pm
B) 95 pm
C) 136 pm
D) 157 pm

Q.214 The following sketch shows the melting point of eight elements with consecutive atomic numbers. Which element is silicon? (2017)



A) A
B) B
C) C
D) D

Q.215 Following graph shows a physical property along the period 3 elements. Which physical property is shown in the graph? (2017)



A) Electron affinity
B) Non-metallic character
C) Atomic radius
D) Melting point upto group IV

Q.216 Ionic radius decreases along the period due to: (2017)

A) Addition of a new shell
B) Increase in nuclear charge
C) High ionization energy
D) Decrease in nuclear charge

Q.217 Among the following, which one is least reactive metal: (2017)

A) Mg
B) Ca
C) Na
D) Be

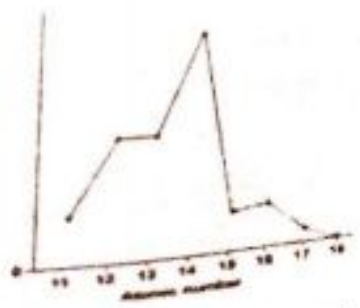
Q.218 In period 2 and period 3 maximum melting point shown by elements: (2018)

A) Nitrogen and Phosphorous
B) Carbon and silicon
C) Lithium and sodium
D) Neon and Argan

Q.219 When group-II member react with oxygen the oxide formed normally is a/an _____ oxide?

A) Acidic
B) Basic
C) Normal
D) Both b &c

Q.220 The following sketch shows the variation in a physical property of third period elements against their atomic numbers: (2018)



What physical property is plotted in this sketch? (2018)

A) Atomic radius
B) ionic radius
C) ionization energy
D) Melting Point

Q.221 In the second period of elements although oxygen lies next to nitrogen yet its ionization first energy is lower than of nitrogen because? (2019)
A) Oxygen is paramagnetic in character
B) Nuclear charge of oxygen is greater than nitrogen
C) Oxygen has higher electron affinity
D) In oxygen there exists repulsion between pair of electrons present in the same orbital of valence shell.

Q.222 On strong heating, $CaSO_4$ decomposes into CaO and SO_3. The compound $CaCO_3$ decomposes at a lower temperature than $CaSO_4$. Which factor best explains the greater thermal stability of $CaSO_4$?
A) $CaSO_4$ has higher lattice energy than $CaCO_3$
B) CO_2 is a smaller molecule than SO_3
C) CO_3^{2-} ions are more easily polarized than SO_4^{2-}
D) The charge density of CO_3^{2-} is greater than that of SO_4^{2-}

Q.223 Which of the following oxides is neutral?
A) SnO_2
B) Al_2O_3
C) CO
D) Na_2O

Q.224 Which of the alkaline earth metal halides given below is essentially covalent in nature?
A) $MgCl_2$
B) $SrCl_2$
C) $BeCl_2$
D) $CaCl_2$

Q.225 Features included in group VII elements are
A) non-metals
B) single covalent bond
C) diatomic molecules
D) all of them

Q.226 Which oxide is more soluble in water?
A) BeO
B) CaO
C) MgO
D) BaO

Q.227 Which of the following statements concerning the Group II elements, magnesium, calcium and barium, are correct?
A) Their reactivity increases with increasing relative atomic mass.
B) The only oxidation number exhibited in their stable compounds is +1.
C) On strong heating their nitrates give off oxygen only.
D) All of these

Q.228 Which of the following statement about the elements calcium, strontium and barium are correct?
A) Their oxides are amphoteric
B) Aqueous solutions of their hydroxides have a pH greater than 7.
C) The elements react with cold water liberating hydrogen.
D) None of these

Q.229 Which of the following statement/statements about Barium are true?
A) Its compounds tend to be covalent rather than ionic
B) It has oxidation number of +2 in most of its compounds.
C) Its red in color.
D) All of these

Q.230 Which of following set of oxides is amphoteric in nature?
A) N_2O_5, B_2O_3
B) K_2O, Al_2O_3
C) BeO, Al_2O_3
D) B_2O_3, SiO_2

Q.231 The acidic character of the following oxides of non-metals (S, Cℓ and Si) follows the order:
A) $SO_2 < ClO_2 < SiO_2$
B) $ClO_2 < SiO_2 < SO_2$
C) $SiO_2 < SO_2 < ClO_2$
D) $SO_2 < SiO_2 < ClO_2$

Q.232 Forces between diatomic halogens are
A) Van der Waal's forces
B) electrovalent forces
C) permanent dipole-dipole forces
D) temporary dipole forces

Q.233 Which is the slaked lime:
A) $Be(OH)_2$
B) $Ca(OH)_2$
C) $Mg(OH)_2$
D) $Ba(OH)_2$

Q.234 When elements of group II become coated with layer of
A) The oxide layer opposes the
B) The oxide layer protects the
C) The oxide layer increases th
D) The oxide layer gives the n

Q.235 Magnesium burns in air to
A) MgO
B) $MgCO_3$

Q.236 The basic strength of solu
A) Increasing down the grou
B) Not affected

Q.237 In which of the following
A) Silvering of mirror
B) pharmaceutical industry

Q.238 The element of group I
A) Beryllium
B) Calcium

Q.239 When group-II membe
A) Base
B) Salt

Q.240 Which of the follow Periodic Table?
A) They are reducing a
B) The ionic radius inc
C) The electronegativi
D) All of these

Q.241 Which one of the fo
A) $Mg(OH)_2$
B) $Ba(OH)_2$

Q.242 'X' is the only me element 'X' is
A) Sr
B) Mg

Q.243 Carbon has the This property of
A) Condensation
B) Cyclization

Q.244 In the water (DBPs) that ma
A) Allergens
B) Carcinogens

Q.245 Available chlo
A) H_2O
B) excess H_2S

Q.246 Volatility of
A) difficulty wi
B) density of

Q.247 Properties o

Options
A)
B)
C)
D)

n lies next to nitrogen yet its ionization (2019)

electrons present in the same orbital o

O and SO_3. The compound $CaCO_3$ Which factor best explains the greate

is essentially covalent in nature)

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Group II elements, magnesium

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lcium, strontium and barium are

n 7.

m are true?

ls (S, Cℓ and Si) follows the

O_2

O_2

le-dipole forces

e forces

Q.234 When elements of group IIA (Alkaline earth metal) are exposed to air, they quickly become coated with layer of oxide. What is the purpose of this oxide layer?
A) The oxide layer opposes the metal to atmospheric attack
B) The oxide layer protects the metal from further atmospheric attack
C) The oxide layer increases the reactivity of metal
D) The oxide layer gives the metal a shiny silvery appearance

Q.235 Magnesium burns in air to give:
A) MgO
B) $MgCO_3$
C) Mg_3N_2
D) both A) and C)

Q.236 The basic strength of solutions formed as a result of chemical reaction of II-A is
A) Increasing down the group
B) Not affected
C) Decreasing down the group
D) None

Q.237 In which of the following Chlorine is used?
A) Silvering of mirror
B) pharmaceutical industry
C) swimming pools
D) treatment of Goiter

Q.238 The element of group II-A that is quite resistant towards complete oxidation?
A) Beryllium
B) Calcium
C) Magnesium
D) Radium

Q.239 When group-II members react with water normally we get a/an?
A) Base
B) Salt
C) Acid
D) None of these

Q.240 Which of the following statements are true about the elements in Group II of the Periodic Table?
A) They are reducing agents
B) The ionic radius increases down the group.
C) The electronegativity decreases down the group.
D) All of these

Q.241 Which one of the following is the strongest base
A) $Mg(OH)_2$
B) $Ba(OH)_2$
C) $Ca(OH)_2$
D) $Be(OH)_2$

Q.242 'X' is the only member of group II A which reacts with alkalis to give hydrogen. The element 'X' is
A) Sr
B) Mg
C) Ca
D) Be

Q.243 Carbon has the unique ability to form long chains by bonding with other carbon atoms. This property of self linking in carbon is known as:
A) Condensation
B) Cyclization
C) Polymerization
D) Catenation

Q.244 In the water purification process, chlorination may create disinfection by-products (DBPs) that may be _____.?
A) Allergens
B) Carcinogens
C) Neurotoxins
D) All of the above

Q.245 Available chlorine is set free when Bleaching Powder react with
A) H_2O
B) excess H_2SO_4
C) NH_3
D) dil HCl

Q.246 Volatility of Halogens indicates the
A) difficulty with which they react
B) density of Halogens
C) ease with which they evaporate
D) All of Above

Q.247 Properties of elements IA and IIA groups are correctly matched EXCEPT:

Options	I A Group Elements	IIA Group Elements
A)	Their oxides and hydroxides are more basic in nature	Their oxides and hydroxides are less basic in nature
B)	They are less reactive	They are more reactive
C)	They have low melting points and boiling points	They have high melting points and boiling points
D)	They form normal oxide, peroxide and super oxides	They form amphoteric oxide, normal oxide, and peroxides

Q.248 Magnesium metal does not burn in the jar filled with
A) N_2
B) Ne
C) N_2 and O_2
D) O_2

Q.249 Which of the following is amphoteric oxide
A) BaO
B) MgO
C) CaO
D) BeO

Q.250 Alkaline earth metal hydroxides decompose on heating. Which of the following reactions is a correct.
A) $M(OH)_{2(s)} \rightarrow MO_{(s)} + H_2O_{(l)}$
B) $2M(OH)_{(s)} \rightarrow 2MO_{(s)} + H_{2(g)}$
C) $M(OH)_{(s)} \rightarrow M_2O_{(s)} + H_2O_{(l)}$
D) $4M(OH)_{(s)} \rightarrow 4MO_{(s)} + 2H_2O_{(l)} + O_{2(g)}$

Q.251 Which statements about calcium oxide are correct?
A) It reacts with cold water
B) It is a product when calcium nitrite is heated
C) It can be reduced by heating with magnesium
D) None of these

Q.252 The most insoluble hydroxide made by group-II members will be?
A) Ca
B) Mg
C) Sr
D) Ba

Q.253 Fluorescent tubes are filled with
A) He
B)Xe
C) Ne
D) Ar

Q.254 Halogens act as _____when treated with metals
A) Oxidizing agent
B) Reducing agent
C) Dehydrating agent
D) Drying agent

Q.255 Alkaline earth metal oxides react with water to give hydroxides. The solubility of alkaline earth metal oxides in water increases as we move from top to bottom in a group. Which of the following alkaline earth metal oxides is least soluble in water.
A) MgO
B) BaO
C) CaO
D) SrO

Q.256 Addition of small doses of chlorine gas into filtered water is known as
A) Coagulation
B) Filtration
C) Sedimentation
D) Chlorination

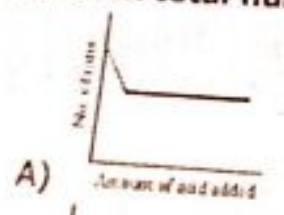
Q.257 Which one of the following pair of metals reacts with cold water under normal conditions except?
A) Be & Ca
B) Ca & Mg
C) Ba & Be
D) Be & Mg

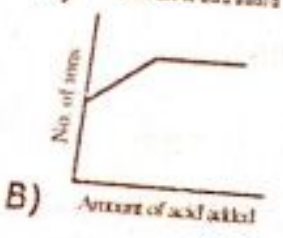
Q.258 Which of the following element has greatest tendency to form some covalent compounds?
A) Ba
B) Mg
C) Ca
D) Be

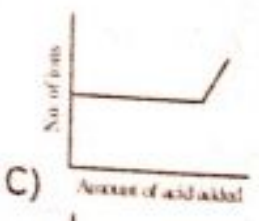
Q.259 In which group melting and boiling point decreases down the group
A) IA
B) VIIA
C) VIIIA
D)VA

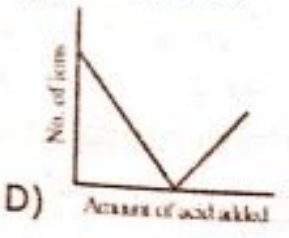
Q.260 Among Al_2O_3, SO_2, P_4O_{10} and SiO_2 the correct order of acidic strength is:
A) $Al_2O_3 < SiO_2 < SO_2 < P_4O_{10}$
B) $SO_2 < P_4O_{10}$, $SiO_2 < Al_2O_3$
C) $SiO_2 < SO_2 < Al_2O_3 < P_4O_{10}$
D) $Al_2O_3 < SiO_2 < P_4O_{10} < SO_2$

Q.261 $Ba(OH)_{2(aq)(excess)} + dil.\ H_2SO_4 \longrightarrow BaSO_4\downarrow + 2H_2O.$ Which graph shows the variation in total number of ions in solution?

A)


B)


C)


D)


Q.262 The strongest in acidic strength among halogen acids
A) HI
B) HF
C) HCl
D) HBr

Q.263 Which of the following noble gas is used in earth quake prediction?
A) He
B) Ar
C) Ne
D) Rn

Q.264 Which pair is insoluble in water:
A) BeO, MgO
B) SrO, BaO
C) MgO, CaO
D) none of these

Q.265 What is the solubility trend of hydroxides in water?
A) $Be(OH)_2 > Mg(OH)_2 > Ba(OH)_2$
c. $Ba(OH)_2 > Mg(OH)_2 > Be(OH)_2$
C) $Mg(OH)_2 > Be(OH)_2 > Ba(OH)_2$
D) No general trend

Q.266 Reactions of IIA group elements with oxygen are given:
I. $2Be + O_2 \xrightarrow{800^\circ C} 2BeO$
II. $2Ba + O_2 \xrightarrow{500-600^\circ C} 2BaO$
III. $2Ca + O_2 \xrightarrow{\Delta} 2CaO$
IV. $2Mg + O_2 \xrightarrow{\Delta} 2MgO$

In which of the following reactions normal oxide (O^{-2}) is not formed under the given condition?
A) I only
B) III and IV
C) II only
D) II and III

Q.267 The reactivity of group IIA elements with water _____ down the group:
A) Decreases
B) Unpredictable
C) Increases
D) Remains constant

Q.268 In an optimum temperature, Chlorine reacts with dilute alkalis by
A) oxidizing some atoms
B) neutralizing some ions
C) reducing some atoms
D) both A and B

Q.269 Which one of the following metals will react faster with water ?
A) Be
B) CA
C) Ba
D) Mg

Q.270 All alkaline earth metals except _____ are white in color.
A) Be
B) Ca
C) Mg
D) None

Q.271 Which of the following is not a property of vitreous silica?
A) very low thermal expansion
B) Hard and brittle
C) Excellent insulator
D) Soluble in aqua regia

Q.272 Oxygen is liberated in the following equation, due to:
$2F_{2(g)} + 2H_2O_{(\ell)} \rightarrow O_{2(g)} + 4F^- + 4H^+_{(aq)}$
A) Oxidation of water
B) Reduction of water
C) Oxidation of F_2
D) None of the above

Q.273 The hydroxide which forms the strongest base:
A) LiOH
B) KOH
C) NaOH
D) $Ca(OH)_2$

Q.274 The bleaching power of chlorine is its which property ?
A) Reducing
B) Dehydrating
C) Oxidizing
D) Both a and c

Q.275 Metals are more reactive with oxygen
A) across periodic table
B) down Group-II
C) across Period 2
D) up Group-II

Q.276 The more soluble oxide of alkaline earth metals is
A) CaO
B) SrO
C) BaO
D) BeO

Q.277 Which of the following form peroxide after reaction with oxygen under specific conditions
A) Be
B) Ba
C) Mg
D) Ca

$$6NaOH_{(aq)} + 3Cl_{2(g)} \xrightarrow{70°C} 5NaCl_{(aq)} + NaClO_{3(aq)} + 3H_2O$$

Q.278 In above disproportionation reaction the oxidation state of chlorine is converted from zero to _____ and _____:
A) -1, +1
B) -1, +5
C) -1, +3
D) +1, +5

Q.279 The correct order of melting point of group II A elements
A) Be > Mg > Ca
B) Ca > Be > Mg
C) Mg > Be > Ca
D) Be>Ca>Mg

Q.280 Which oxide is more basic
A) Li_2O
B) K_2O
C) Na_2O
D) CaO

Q.281 Reactions of IIA group elements with water are given:

i. $Mg + H_2O\ (steam) \xrightarrow{100°C} MgO + H_2$
ii. $Be + H_2O\ (steam) \xrightarrow{100°C} BeO + H_2$
iii. $Ca + 2H_2O\ (cold\ water) \longrightarrow Ca(OH)_2 + H_2$
iv. $Ba + 2H_2O\ (cold\ water) \longrightarrow Ba(OH)_2 + H_2$

Which of the following reaction is not possible?
A)1 only
B) I, II and III
C) II only
D) I, III and IV

Q.282 Which one of the following is more soluble in water
A) $Be(OH)_2$
B)$Na(OH)_2$
C) $Ca(OH)_2$
D) $Mg(OH)_2$

Q.283 $M + 2H_2O \xrightarrow{100°C} M(OH)_2 + H_2$ "M" in the above reaction may be
A) Be
B) Ca
C) Na
D) K

Q.284 Which of the following shows abnormal 1st electron affinity value
A) F
B) Cl
C)Br
D) I

Q.285 Which halogen molecule 'X2' has lowest dissociation energy? (2016)
A) Cl_2
B) Br_2
C) I_2
D) F_2

Q.286 Which one of the following is halothane: (2017)
A) Cl – CH_2 – CH_2 - CL
B) CF – CHCl – Br
C) Cl – CH_2 – CH_2 – CH_2 – Br
D) Br – CH – CH_2 – Br

Q.287 The non-stick lining of pans is: (2017)
A) Difluoroethane
B) Chloroflueororyhane
C) Chloroethane
D) Tetrafluoroethane

Q.288 In elimination reaction, alcoholic KOH is used – OH^- in this case will act as: (2017)
A) Electrophile
B) Base
C) Leaving group
D) Acid

Q.289 Which noble gas is alpha emitter? (2017)
A) Xenon
B) Radon
C) Krypton
D) Argon

Q.290 Melting point of Na & Mg decreases down the group due to _____: (2017)
A) Strong electronegativity
B) Strong attractive forces
C) Increment in size
D) High Ionization energy

Q.291 The catalyst used for the manufacture of H2SO4 by contact process is with bromine? (2018)
A) SO_3
B) Pt/Pd
C) V_2O_5
D) Fe_2O_3

Q.292 Which one of the following is the structure of Teflon? (2018)
A) $(-CH_2- CH_2-)_n$
B) $(-CF_2- CH_2-)_n$
C) $(-CF_2 -CF_2-)_n$
D) $(-CF_2 -CCl_2-)_n$

Q.293 Which of the following element is not present in halogens? (2019)
A) I
B) Cl
C) Fe
D) F

Q.294 Ionization energy decrease
A) Increase in atomic mass
B) Increase in proton number
C) Increase in shielding effec
D) Decrease in atomic size

Q.295 Which one of the follov
temperature?
A) Be
B) Ca

Q.296 Potassium, Rubidium, Ce
A) Peroxide
B) Superoxide

Q.297 Magnesium reacts with
A) Mg_2N_2
B) Mg_3N_2

Q.298 Densities of alkali met
A) Weak intermolecular f
B) Large atomic volume

Q.294 Ionization energy decreases down the group from top to bottom due to: (2019)

A) Increase in atomic mass
B) Increase in proton number
C) Increase in shielding effect of the intervening electrons
D) Decrease in atomic size

Q.295 Which one of the following elements does not react with water even at red hot temperature?

A) Be
B) Ca
C) Mg
D) Ba

Q.296 Potassium, Rubidium, Cesium react with oxygen to form which types of oxides? (2020)

A) Peroxide
B) Superoxide
C) Suboxide
D) Normal oxide

Q.297 Magnesium reacts with Nitrogen to form: (2020)

A) Mg_2N_2
B) Mg_3N_2
C) MgN_2
D) MgN

Q.298 Densities of alkali metals are low due to (2020)

A) Weak intermolecular forces
B) Large atomic volume
C) Smaller size
D) ns^1 Configuration

ANSWERS KEY

1.	B	2.	D	3.	B	4.	A	5.	C	6.	D	7.	B	8.	C	9.	D	10.	B
11.	D	12.	B	13.	D	14.	B	15.	B	16.	B	17.	A	18.	A	19.	C	20.	C
21.	B	22.	C	23.	C	24.	D	25.	A	26.	C	27.	A	28.	D	29.	C	30.	B
31.	D	32.	D	33.	B	34.	C	35.	B	36.	B	37.	B	38.	B	39.	B	40.	B
41.	B	42.	C	43.	B	44.	D	45.	B	46.	B	47.	C	48.	D	49.	B	50.	B
51.	A	52.	D	53.	A	54.	A	55.	A	56.	B	57.	A	58.	A	59.	B	60.	A
61.	C	62.	D	63.	B	64.	A	65.	A	66.	B	67.	C	68.	C	69.	B	70.	D
71.	A	72.	D	73.	B	74.	C	75.	B	76.	B	77.	D	78.	C	79.	C	80.	B
81.	A	82.	B	83.	C	84.	D	85.	D	86.	B	87.	B	88.	A	89.	C	90.	C
91.	A	92.	A	93.	C	94.	A	95.	C	96.	A	97.	A	98.	D	99.	A	100.	B
101.	D	102.	C	103.	A	104.	A	105.	B	106.	A	107.	C	108.	C	109.	D	110.	B
111.	D	112.	C	113.	D	114.	D	115.	B	116.	D	117.	B	118.	B	119.	C	120.	C
121.	A	122.	A	123.	D	124.	A	125.	B	126.	C	127.	C	128.	B	129.	B	130.	B
131.	A	132.	A	133.	C	134.	D	135.	B	136.	C	137.	C	138.	D	139.	D	140.	D
141.	B	142.	A	143.	D	144.	B	145.	B	146.	C	147.	B	148.	D	149.	D	150.	C
151.	B	152.	C	153.	B	154.	C	155.	A	156.	A	157.	B	158.	B	159.	D	160.	A
161.	C	162.	C	163.	B	164.	B	165.	D	166.	C	167.	D	168.	C	169.	C	170.	B
171.	A	172.	D	173.	C	174.	D	175.	B	176.	D	177.	C	178.	A	179.	A	180.	D
181.	C	182.	B	183.	D	184.	A	185.	B	186.	C	187.	D	188.	A	189.	A	190.	C
191.	A	192.	B	193.	B	194.	A	195.	C	196.	C	197.	C	198.	C	199.	C	200.	B
201.	A	202.	D	203.	A	204.	D	205.	A	206.	B	207.	D	208.	D	209.	D	210.	A
211.	C	212.	D	213.	C	214.	C	215.	C	216.	A	217.	C	218.	B	219.	D	220.	D
221.	D	222.	A	223.	B	224.	C	225.	D	226.	D	227.	A	228.	B	229.	B	230.	C
231.	C	232.	D	233.	B	234.	B	235.	D	236.	A	237.	C	238.	A	239.	A	240.	D
241.	B	242.	D	243.	D	244.	D	245.	B	246.	C	247.	B	248.	B	249.	D	250.	A
251.	A	252.	B	253.	D	254.	A	255.	A	256.	D	257.	D	258.	D	259.	A	260.	D
261.	D	262.	A	263.	D	264.	A	265.	C	266.	C	267.	C	268.	D	269.	C	270.	A
271.	D	272.	A	273.	B	274.	C	275.	B	276.	C	277.	B	278.	B	279.	D	280.	B
281.	C	282.	B	283.	B	284.	A	285.	D	286.	B	287.	D	288.	B	289.	C	290.	C
291.	B	292.	C	293.	C	294.	B	295.	A	296.	B	297.	B	298.	B	299.		300.	

Q.1: Which element in

Element	
A	
B	
C	
D	

Q.2: d-block elements
A) Non-typical tra
B) Outer transition

Q.3: GroupVI-B of tra
A) Zn, Cd, Hg
B) Fe, Ru, Os

Q.4: The colour of tr
A) d-d transitions
B) Paramagnetic

Q.5: Coordination n
A) 2
B) 4

Q.6: Non-typical el
A) I-A and II-A
B) II-A and II-

Q.7: An atom or m
A) magnetism
B) paramagne

Q.8: An atom or m
A) magnetism
B) paramagn

Q.9: Transition e
A) magnetis
B) paramagn

Q.10: Maximum
A) Fe^{+3}
B) Mn^{+2}

Q.11: The coordi
A) 3
B) 1

Q.12: The gene
A) $(n-1)d^1$
B) $(n-1)d^1$

Q.13: Transitio
A) small s
B) Metalli

Q.14: Transiti
A) they a
B) They

Q.15: A transi
atomic
A) 25
B) 26

Q.16: Which
A) $3d^6$
B) $3d^5$

Q.17: The m
A) +1
B) +2

Q.18: Which
A) Cr^3
B) V^{3+}

Q.19: The
A) Io
B) Si

TRANSITION ELEMENTS

Q.1: Which element in the table is likely to be a transition metal?

Element	Melting point	Color of chloride
A	High	Blue
B	Low	Green
C	High	White
D	Low	White

Q.2: d-block elements are also called:
A) Non-typical transition elements
B) Outer transition elements
C) Normal transition elements
D) Inner transition elements

Q.3: GroupVI-B of transition elements contains:
A) Zn, Cd, Hg
B) Fe, Ru, Os
C) Cr, Mo, W
D) Mn, Te, Re

Q.4: The colour of transition metal complexes is due to:
A) d-d transitions of electrons
B) Paramagnetic nature of transition elements
C) Ionization
D) Loss of s-electrons

Q.5: Coordination number of Pt in $[Pt\,Cl(NO_2)(NH_3)_4]^{2-}$ is:
A) 2
B) 4
C) 1
D) 6

Q.6: Non-typical elements belong to the series:
A) I-A and II-A
B) II-A and II-B
C) II-B and III-B
D) III-B and III-A

Q.7: An atom or molecule with all completely filled orbitals show:
A) magnetism
B) paramagnetism
C) diamagnetism
D) None of them

Q.8: An atom or molecule having partially filled orbitals show:
A) magnetism
B) paramagnetism
C) diamagnetism
D) None of them

Q.9: Transition elements show:
A) magnetism
B) paramagnetism
C) diamagnetism
D) None of them

Q.10: Maximum Para magnetism are present in:
A) Fe^{+3}
B) Mn^{+2}
C) Fe^{+3} and Cu^{+2}
D) Fe^{+3} and Se^{+3}

Q.11: The coordinate number for cobalt in $[Co(H_2NCH_2CH_2NH_2)_3]^{+3}$ is:
A) 3
B) 1
C) 6
D) 4

Q.12: The general electronic configuration of transition elements is
A) $(n-1)d^{1-5}$
B) $(n-1)d^{1-10}ns^1$
C) $(n-1)d^{1-10}n^{0-2}$
D) None

Q.13: Transition elements are colored due to ?
A) small size
B) Metallic nature
C) unpaired d- electrons
D) None

Q.14: Transition elements are good conductors because?
A) they are metal
B) They are all solid
C) they have free electrons in outer energy orbits
D) all of these

Q.15: A transitions elements X has a configuration [Ar] $3d^4$ in its +3 oxidation state, its atomic number is?
A) 25
B) 26
C) 22
D) 19

Q.16: Which of the following is stable electronic configuration of Fe^{3+} Ion?
A) $3d^6\ 4s^0$
B) $3d^5\ 4s^0$
C) $3d^6\ 4s^2$
D) $3d^4\ 4s^0$

Q.17: The most characteristic oxidation state lanthanides is ?
A) +1
B) +2
C) +3
D) +4

Q.18: Which of the following has highest magnetic moment?
A) Cr^{3+}
B) v^{3+}
C) Co^{3+}
D) Fe^{3+}

Q.19: The lanthanide contraction refers to?
A) Ionic radius of that series
B) size of the hydrated M^{+3}
C) Size of the anhydrate M^{+3} ions
D) Basicity of they hydroxides

C	9.	D	10.	B
A	19.	C	20.	C
D	29.	C	30.	B
B	39.	B	40.	B
	49.	B	50.	B
	59.	B	60.	A
	69.	B	70.	D
	79.	C	80.	B
	89.	C	90.	C
	99.	A	100.	B
	109.	D	110.	B
	119.	C	120.	C
	129.	B	130.	B
	139.	D	140.	D
	149.	D	150.	C
	159.	D	160.	A
	169.	C	170.	B
	179.	A	180.	D
	189.	A	190.	C
	199.	C	200.	B
	209.	D	210.	A
	219.	D	220.	D
	229.	B	230.	C
	239.	A	240.	D
	249.	D	250.	A
	259.	A	260.	D
	269.	C	270.	A
	279.	D	280.	B
	289.	C	290.	C
	299.		300.	

Q.20: Which of the following ion cannot exhibit magnetic properties?
A) Fe3+
B) Fe2+
C) Ce3+
D) V3+

Q.21: Purest form of iron is
A) White cast iron d
B) Grey cast iron Li
C) Wrought iron
D) Steel

Q.22: Which one of the following ions is colored?
A) La^{3+}
B) Eu^{3+}
C) Gd^{3+}
D) Lu^{3+}

Q.23: Which of the following is not the configuration of lanthanides?
A) $[Xe]^{54}\ 4f^1\ 6s^2$
B) $[Xe]\ 4f^{1}5d^{1}6s^2$
C) $[Xe]\ 4f_1\ 5d_1\ 6s^2$
D) $[Xe]4f^{14}5d^{1}6s^2$

Q.24: Formation of interstitial compound makes the transition metal ?
A) More. soft
B) More ductile
C) More metallic
D) More brittle

Q.25: Transition elements are ?
A) All metals
B) All non metals
C) Metals and non metals
D) Gases

Q.26: In which of the following, the metal atom has E.A.N. as 36
A) $[Fe(CN)6]^{4-}$
B) $[Fe(CN)6]^{3-}$
C) $[PdcI_4]^{2-}$
D) $[Pd(cN_6]^{2-}$

Q.27: In which of the following compounds iron has the lowest oxidation state?
A) $Fe(CO)_5$
B) Fe20
C) $KIFe(CN)_6$,
D) $FeSO_4(NE_4)_2SO_46H_20$

Q.28: What factors make the separation lanthanides a formidable task?
A) Similarity in ionic size
B) Constant charge of+3
C) Same Charge-td-raditis ratio ❑ 34
D) All the above

Q.29: Ionic radii of the- following pairs of elements become identical as a consequence of lanthanide contraction?
A) Zr^{4+} and Hf^{4+}
B) Cr^{4+} and Mo^{3+}
C) Cr^{3+} and MO^{5+}
D) Ag^{+}, and' Au^{+}

Q.30: Which of the following is ferromagnetic?
A) Cr.
B) Fe
C) Zn
D) Al

Q.31: Which of the- following metals is extracted by reduction process
A) Cu
B) Fe E.
C) Mg
D). Al

Q.32: The. Ion which exhibits. green colour?
A) Cu^{+}
B) Mn^{2-}
C) Co^{2+}
D) Ni^{2+}

Q.33: Lanthanides form complexes with
A) Monodentate ligands,
B) Bidentate ligands
C) Chelating agents
D) Simple anions

Q.34: The EAN of Cu in $[Cu(SCN)_6]^{3-}$ is ?
A) 35
B) 36
C) 34
D) 37

Q.35: The highest magnetic moment is exhibited by the transition metal. ion bearing the outer configuration?
A) $3d^2$
B) $3d^5$
C) $3d^8$
D) $3d^7$

Q.36: Platinum, Palladium and Iridium are called noble metals. because?
A) Alfred Noble discovered them El
B) They are inert towards many common reagents
C) They are shining, lustrous and pleasing to look at
D) They are found in -active state

Q.37: Which of the following, is chromic anhydride?
A) $Cr_20_{,,}$
B) Cr_20_5
C) Cr_2O_5
D) None

Q.38: Which is not true in case or transition?
A) Variable oxidation states
B) Complex formation'
C) Partially filled d—Orbitals
D) All. the ions are colorless

Q.39: The tendency towards complex formation is maximum in?
A) s-block elements
B) p'-block element
C) d-block elements
D) f—block elements

Q.40: Transition elements form complexes very readily because of?
A) Small cation size
B). Vacant d-orbitals
C) Large ionic charge
D) All are correct

Q.41: Which of-the following, is most, reactive?
A) Fe
B) Pt
C) Co
D) Ni

Q.42: Maximum, number Of oxidation states of the transition metal is derived from the following configuration?
A) ns electrons
B) (n-1) d electrons
C) (n+ 1) d electrons
D) ns + (n-I) d electrons

Q.43: Fe^{2+} ion is distinguished by $FeII^{3+}$ ion by ?
A) $BaCl_2$
B) $AgNO_3$
C) NH_4SCN
D) None

Q.44: When steam is passed Over heated iron, one of the products is?
A) FeO
B) Fe_2O_3
C) Fe_3O_4
D) $FeSO_4$

Q.45: Transition elements are frequently • 'used as catalysts, because of?
A) Large ionic charge
B) Large surface area for the reactants to be adsorbed
C) Unpaired d-electrons
D) Both B) and (C) are correct

Q.46: What is the coordination number of nickel In $[Ni(NO_2)_2(C_2O_4)_2]^{4-}$?
A) 4
B) 5
C) 6
D) 8

Q.47: The IUPAC name of the coordination compound $K_3[Fe(CN)_6]$ is:
A) potassiumhexacyanoferrate (II)
B) potassiumhexacyanoferrate (III)
C) potassium hexacyanoiron (II)
D) tripotassiumhexacyanoiron (II)

Q.48: The colour of $K_2Cr_2O_7$ is due to:
A) Cr^{3+} and $Cr_2O_7^{2-}$ are formed
B) $Cr_2O_7^{2-}$ and H_2O and formed
C) CrO_4^{2-} is reduced to +3 state of Cr
D) CrO_4^{2-} is oxidized to +7 state of Cr

Q.49: In the first transition series, the incoming electron enters:
A) 5 d-orbitals
B) 3 d-orbitals
C) 4 b-orbitals
D) 2 d-orbitals

Q.50: Which is the common oxidation state of the first transition series of elements?
A) +2
B) +8
C) +6
D) +4

Q.51: Transition metals fit in the periodic table between:
A) III and IV group
B) II and III group
C) I and III group
D) I and II group

Q.52: The electron pair donor which react T.M. Ions to form complex compounds are called
A) Electrophile
B) Ligands
C) Nucleophile
D) None

Q.53: Oxidation state of 'Mn' in $KMnO_4$, K_2MnO_4, MnO_2 and $MnSO_4$ is in the order: (2012)
A) +7, +6, +2, +4
B) +7, +6, +4, +2
C) +6, +7, +2, +4
D) +4, +6, +7, +4

Q.54: Coordination number of the transition element in $[Pt\ Cl\ NO_2\ (NH_3)_4]^{2+}$ is
A) 4
B) 5
C) 3
D) 6

Q.55: Which of the following is colorless?
A) Ni(CO)
B) $Fe(CO)_5$
C) $V(CO)_5$
D) All of these

Q.56: A transition element X has a configuration [Ar]3d4 in its +3 oxidation state. Its atomic number is:
A) 25
B) 22
C) 26
D) 19

Q.57: Which of the following compounds is not coloured:
A) $Na_2[CuCl_4]$
B) $Na_3[Co(NO_2)_6]$
C) $Na_2[CdCl_4]$
D) $K_3[Fe(CN)_6]$

Q.58: The general outermost electronic configuration of coinage metal is:
A) ns^2np^6
B) $(n-1)d^{10}ns^1$
C) $(n-l)d^9\ ns^2$
D) $(n-l)d^{10}ns^2$

Q.59: In the complex of $[Ni(CN)_4]^{-2}$ the hybridization, oxidation state and number of unpaired electrons in free nickel ion is:
A) dsp^2, +1, 1
B) sp^3, +2, Zero
C) sp^3, +2, 1
D) dsp^2, +2, 2

Q.60: Which one of the following is a neutral ligand?
A) Cyano
B) Hydrazine
C) Acetato
D) Oxalato

Q.61: Which is used to identify Cu^{++}ions?
A) Nitric acid
B) NaOH
C) Oxalic acid
D) HCl

Q.62: Titanium chloride is used as a catalyst in
A) Hydrogenation
B) Polymerization of P.E
C) Dehydrogenation
D) Oxidation of ammonia

Q.63: Which one pair has the same oxidation state of 'Fe'? (2013)
A) $FeSO_4$ and $FeCl_3$
B) $FeCl_2$ and $FeCl_3$
C) $FeSO_4$ and $FeCl_3$
D) $Fe_2(SO_4)$ and $FeSO_4$

Q.64: The oxidation state of Fe in haemoglobin is:
A) 0
B) +2
C) +1
D) +3

Q.65: The most abundant transition element on earth is:
A) Cr
B) W
C) Fe
D) Mn

Q.66: In all of the following reactions, transition metal and their compounds are acting as catalyst except:
A) Haber's process
B) Hydrogenation of alkenes
C) contact process
D) Lead chamber process

Q.67: Transition elements form complexes readily because of:
A) small cation size
B) large ionic charge
C) vacant d-orbitals
D) all are correct

Q.68: The oxidation number of Cr in $[Cr(OH)_3(H_2O)_3]$ is:
A) -3
B) -4
C) +3
D) +4

Q.69: The electronic configuration of the fourth transition element is:
A) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$
B) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^4$
C) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^8 4s^2$
D) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^5 4s^1$

Q.70: Transition metals in their complexes show:
A) Ionic bonds
B) Ionic and covalent bonds
C) covalent bonds
D) ionic and co-ordinate bonds

Q.71: Transition metals are generally _____ reactive.
A) More
B) Very much
C) Less
D) None

Q.72: Which pair of transition elements shows abnormal electronic configuration? (2012)
A) Sc and Zn
B) Zn and Cu
C) Cu and Sc
D) Cu and Cr

Q.73: Pt &Pd are used in the
A) Hydrogenation
B) Polymerization of P.E
C) Dehydrogenation
D) Oxidation of ammonia

Q.74: The number of neutral molecules or negative groups attached to the central metal atom in a complex ion is called
A) atomic number
B) coordination number
C) effective atomic number
D) primary valency

Q.75: dsp^2 hybridization leads to
A) Square planner
B) octahedral shape
C) trigonal bipyrimidal
D) tetrahedral shape

Q.76: Which of the following is isoelectronic with Argon?
A) Sc^{+3}
B) Ti^{+3}
C) V^{+3}
D) Cr^{+3}

Q.77: **AgCl dissolves in a solution of NH_3 but not in water because:**
A) NH_3 is a better solvent than H_2O
B) NH_3 is a stronger base than H_2O
C) Ag^+ from a complex ion with NH_3
D) Dipole moment of water is higher than NH_3

Q.78: **The most common geometry in transition metal complexes is:**
A) Square planar
B) Tetrahedral
C) Trigonal bipyramidal
D) Octahedral

Q.79: **Which of the following pairs are both the ions coloured in aqueous solution?**
A) Sc^{3+}, Co^{2+}
B) Ni^{2+}, Cu^{+}
C) Ni^{2+}, Ti^{3+}
D) Sc^{3+}, Ti^{3+}

Q.80: **The paramagnetic character of substances is due to the presence of:** (2011)
A) bond pairs of electrons
B) unpaired electrons in the atom or molecule
C) lone pair of electrons
D) paired electrons in the valence shell of atoms

Q.81: **Many T.M. and their compounds are**
A) Diamagnetic
B) Neither A nor B
C) Paramagnetic
D) None

Q.82: **The oxidation state of Pt in $K_2[Pt(CN)_4]$**
A) 4+
B) 6+
C) 2+
D) Zero

Q.83: **Which of the following non-typical transition element present in IIB group is**
A) Sc
B)) Cu
C)) Y
D) Zn

Q.84: **How many unpaired electrons are there in Cu(II)**
A) 0
B) 2
C) 1
D) 3

Q.85: **Which of the following usually form coluredcomplexes**
A) Metals
B) p-block elements
C) Non-metals
D) Transition elements

Q.86: **Chromium VI which is _____ in color after reduction to chromium III becomes _____ in Color.**
A) Yellow, Green
B) Blue, Green
C) Red, Yellow
D) Orange, Blue

Q.87: **The primary and secondary valency of Cu in blue vitriol complex is is**
A) 2 and 5
B) 4 and 2
C) 2 and 4
D) 3 and 6

Q.88: **The shape of $[Ni(OH)_6]^{4-}$ ion is**
A) hexagonal
B) octahedral
C) pyrimidal
D) octagonal

Q.89: **Metallic bond is stronger in transition metals than alkali and alkaline earth metals because of:**
A) More number of electrons including d-electrons
B) large size of the atoms
C) Para magnetism
D) Diamagnetism

Q.90: **Variable valencies of transition elements is due to:**
A) Different energies of (n-1) d electrons
B) Similar energies of (n-1) d electrons
C) Different energies of ns electrons
D) Similar energies of (n-1) d and ns electrons

Q.91: **A complex MA_2B_2 can show how much isomers?:**
A) 2
B) 4
C) 1
D) 3

Q.92: **In the complex of $[Ni(CN)_4]^{-2}$ the hybridization, oxidation state and number of unpaired electrons in free nickel ion is:**
A)dsp^2, +1,I
B) sp^3, +2, Zero
C)sp^3, +2,1
D) dsp^2,+2, 2

Q.93: $[Cu(NH_3)_4]^{2+}$ will form _____ structure.
A) Square planar
B) Octahedral
C) Tetrahedral
D) Trigonal bipyramidal

Q.94: Scandium has atomic number 21, which one will be its electronic configuration:
A) $1s^2,2s^2,2p^6,3s^2,3p^6,3d^1$
B) $1s^2,2s^2,2p^6,3s^2,3p^6,4s^2,4p^1$
C) $1s^2,2s^2,2p^6,3s^2,3p^6,4s^2,3d^1$
D) $1s^2,2s^2,2p^6,3s^2,3p^6,4s^1,4p^2$

Q.95: A transition element X has configuration $[Ar]3d^4$ in its +3 oxidation state, its number will be
A) 25
B) 22
C) 26
D) 29

Q.96: The number of d-electrons of Cr in $[Cr(NO_2)_6]^{3-}$ ions is
A) 2
B) 4
C) 3
D) 5

Q.97: The electronic configuration of Ni is
A) $[Ar]3d^34s^2$
B) $[Ar]3d^{10}4s^1$
C) $[Ar]3d^64s^2$
D) $[Ar]3d^84s^2$

Q.98: Co-ordination number and oxidation state of Cr in $K_3[Cr(CN)_6]$ are respectively.
A) +2&2
B) 6&+3
C) +6&3
D) 0& +2

Q.99: Strong ligand is usually _____ in nature:
A) anionic
B) Nuetral
C) Cationic
D) Polydentate

Q.100: Colour of transition metal compounds is attributed due to:
A) Small size metal ions
B) Completes subshell
C) Absorption of light in UV region
D) Incomplete (n-l)d subshell

Q.101: Among the following, the coloured compound is:
A) CuCl
B) $K_3[Cu(CN)_4]$
C) CuF_2
D) $[Cu(CH_3CN)_4BF_4$

Q.102: The hybridization in $[Cu(NH_3)_4]^{-2}$ complex compound is:
A) sp^3
B) sp^3d
C) sp^3d^2
D) dsp^2

Q.103: Ammonia can be dried by:
A) Conc. H_2SO_4
B) P_4O_{10}
C) CaO
D) NaOH

Q.104: Which is not a bidentate ligand?
A) $C_2O_4^{-2}$
B) SO_4^{-2}
C) CO_3^{-2}
D) None

Q.105: Pick the correct statement:
A) Chelates are usually more stable than ordinary complexes
B) monodenatelingands form the chelates
C) ordinay complexes are more stable than chelates
D) Chelates have no ring structure

(2011)

Q.106: Which are found abundantly in nature?
A) 3d- series
B) 5d- series
C) 4d- series
D) 4f- series

Q.107: Which is not true in case of transition metals?
A) They are malleable and ductile
B) they have high melting and boiling points
C) They crystallize with body centered cubic and hexagonal close packed structure only
D) They show variable oxidation states although not always

Q.108: Which of the following is not correct in case of transition elements?
A) They have high m.p. and b.p
B) They form ionic and covalent compounds
C) their compounds are generally coloured
D) they don't show variable valency

Q.109: The transition metals and their compounds are colored because the de excitation of electron from high energy d orbitals usually leads to a frequency in _____ region:
A) Ultraviolet
B) Cosmic
C) Infrared
D) Visible

Q.110: In complex compounds the oxidation number is written in
A) English
B) simple mathematics
C) Greek
D) Roman numeral

Q.111: Electronic configuration of Cu^{+2} is
A) $4S^2,3d^9$
B) $4S^0,3d^9$
C) $4s^1,3d^{10}$
D) None of these

Q.112: Electronic configuration of Gold [Au_{79}] is:
A) [Xe] $4f^{14}$, $5d^{10}$, $6s^1$
B) [Xe] $4f^{14}$, $5d^9$, $6s^2$
C) [Xe] $4f^{10}$, $5d^{10}$, $6s^2$
D) [Xe] $4f^{14}$, $5d^{10}$, $6s^2$ (2015)

Q.113: Select the most stable ion from the following:
A) Mn^{2+}
B) Cr^{2+}
C) Fe^{2+}
D) all are equally stable

Q.114: The coordination number of central metal atom in a complex is determined by:
A) the number of ligands around a metal ion bonded by sigma bonds
B) the number of only anionic ligands bonded to the metal ion
C) the number of ligands around a metal ion bonded by sigma and pi-bonds both
D) the number of ligands around a metal ion bonded by pi-bonds

Q.115: Which of the following ligands is tridentate type?
A) Butane-1,2-diamine (bn)
B) Propane-1,3-diamine (pn)
C) Diethyltriamine (dien)
D) Triethyltetraamine (trien)

Q.116: which one of the following type of geometries mostly show geometrical isomerism :
A) Linear
B) Square planner
C) Octahedral
D) Both a and b

Q.117: The maximum paramagnetic behavior is associated with which of the following species:
A) Fe^{2+}
B) Mn^{+3}
C) Cr^{4+}
D) Mn^{2+}

Q.118: In the first transition series which of the following elements has maximum paired electrons:
A) Fe
B) V
C) Cr
D) Cu

Q.119: The coordination number of chromium $[Cr(OH)_3(H_2O)_3]$
A) 2
B) 6
C) 4
D) 9

Q.120: Variable oxidation state is a characteristic property which is exhibited by
A) Alkali metals
B) Normal elements
C) Non-metallic elements
D) Transition elements

Q.121: Which of the following electronic configurations is that of a transition element
A) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2$
B) $1s^2\ 2s^2\ 2p^6\ 3s^2$
C) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^5\ 4s^2$
D) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6$

Q.122: Violet colour of $[Ti(H_2O)_4]$ +ion is due to:
A) Central metal ion
B) Water molecule
C) Complexion
D) Outer anion

Q.123: $[Co(NH_3)_6]^{3+}$ will form _____ structure.
A) Square planar
B) Octahedral
C) Tetrahedral
D) Trigonal bipyramidal

Q.124: $[Mn(Cl)_4]^{2-}$ will form _____ structure.
A) Square planar
B) Octahedral
C) Tetrahedral
D) Trigonal bipyramidal

Q.125: In the complex mention next : $Na_3[Pt(CN)_4(Cl)_2]$, the oxidation state of platinum is
A) +1
B) +4
C) +2
D) +3

Q.126: The type of isomerism shown by transition complexes will be?
A) Chain
B) Tautomerism
C) Geometrical
D) None

Q.127: In the formation of $[Fe(CN)_4]$ the hybridization involved is
A) sp^3
B) d^3sp^2
C) $d^2\ sp^3$
D) d^4sp

Q.128: The purple colour of KMnO4 will not be discharged by which of the following reagent
A) $MnSO_4 + Zn^{2+}$
B) H_2O_2/H^+
C) KNO_3
D) K_2S/H^+

Q.129: $K_2Cr_2O_7$ absorbs which of the following colour?
A) Blue
B) Green
C) Red
D) Orange

Q.130: Chromium achieve its highest oxidation state in its compound:
A) $CrCl_3$
B) $Cr_2(SO_4)_3$
C) CrO_3
D) $Cr_2O_3.FeO$

Q.131: Ionic and covalent compounds of T.E. are mostly
A) Colored
B) Ionic colored while covalent colorless
C) Colorless
D) Ionic colorless while covalent colored

Q.132: Oxidation state of 'Fe' in $K_3[Fe(CN)_6]$ is: (2013)
A) -3
B) -6
C) +3
D) +2

Q.133: Which of the following can form a chealate
A) Ammine
B) Oxalato
C) Carbonyl
D) Cyano

Q.134: In 3d-series, the ionization energy minimum is case of.
A) Zn
B) Sc
C) Ni
D) V

Q.135: Which of the following ions of transition metal is expected to be colored?
A) Ti^{4+}
B) V^{5+}
C) Cu^{2+}
D) Zn^{+2}

Q.136: The number of d-electrons of Cr in $[Cr(NO_2)_6]^{3-}$ is:
A) 2
B) 5
C) 4
D) 3

Q.137: The number of d-electrons retained in Fe^{2+} (atomic number of Fe = 26) ion is:
A) 3
B) 4
C) 5
D) 6

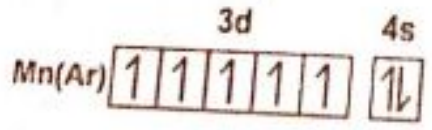
Q.138: Which of the following is diamagnetic ion:
A) Cu^{+2}
B) Mn^{+2}
C) Sc^{+3}
D) Co^{+2}

Q.139: Two stable ions of the first transition series which have largest number of unpaired electrons and have highest magnetic moments are:
A) Cr^{3+} and Fe^{2+}
B) Ti^{2+} and Co^{2+}
C) Fe^{3+} and Mn^{2+}
D) Ti^{4+} and Cr^{3+}

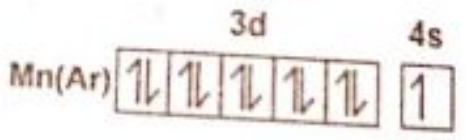
Q.140: The d-block elements usually give _____ absorption bands.
A) Narrow
B) Normal
C) Broad
D) None

Q.141: Electronic configuration of Manganese (Mn) is: (2014)

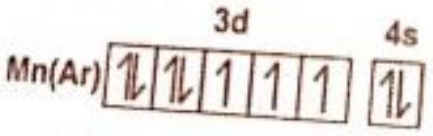
(A)



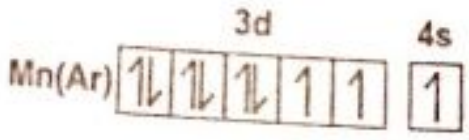
(B)



(C)



(D)



A) A
B) B
C) C
D) D

Q.142: Transition elements are frequently used as catalyst because of
A) Active surface area of metal
B) Large surface area of reactants
C) High ionic charge
D) Low ionization potential

Q.143: The number of unpaired electrons in d-orbital of Fe are
A) 6
B) 5
C) 4
D) 3

Q.144: The common oxidation stat
A) +1
B) +2

Q.145: $[Ti(H_2O)_6]^{+3}$ transmits
A) Yellow and red light
B) Red and white light

Q.146: Which one of the following
A) Cyano
B) Acetato

Q.147: In which complex ligand
A) $\left[Pt(C_2O_4)_2\right]^{2-}$
B) $\left[Fe(CO)_5\right]$

Q.148: Which species does not
A) NH_3
B) OH^-

Q.149: d-block elements show between:
A) ns and nd orbitals is v
B) ns and np orbitals is l

Q.150: The geometry of the valence shell of the ce
A) Protonation
B) Deprotonating

Q.151: A transition complex color would be the :
A) Red
B) Yellow

Q.152: A transition element atomic number is:
A) 25
B) 22

Q.153: Elements of which
A) IB
B) V B

Q.154: The IUPAC name o
A) Potassium hexacy
B) Tripotassiumhexa

Q.155: The possible oxida
A) +2,+3
B) +3,-4

Q.156: The anomalous series of element
A) Colour of ions o
B) Variable oxidati
C) Stability associ
D) Complex forma

Q.157: Which element $4s^2$?
A) Copper
B) Cobalt

Q.158: Scandium has
A) $1s^2, 2s^2, 2p^6,$
B) $1s^2, 2s^2, 2p^6,$

Q.144: The common oxidation state of 3d series elements is
A) +1
B) +2
C) +3
D) +4

Q.145: $[Ti(H_2O)_6]^{+3}$ transmits (2015)
A) Yellow and red light
B) Red and white light
C) Yellow and blue light
D) Red and blue light

Q.146: Which one of the following is a neutral ligand
A) Cyano
B) Acetato
C) Hydrazine
D) Oxalato

Q.147: In which complex ligand makes ring like structure
A) $\left[Pt(C_2O_4)_2\right]^{2-}$
B) $\left[Fe(CO)_5\right]$
C) $\left[Ag(NH_3)_2\right]Cl$
D) $\left[Co(NO_2)_3(NH_3)_3\right]Cl$

Q.148: Which species does not act as ligand in the formation of complexes
A) NH_3
B) OH^-
C) H_2O
D) NH_4^+

Q.149: d-block elements show variable oxidation state because the difference in energy between:
A) ns and nd orbitals is very slight
B) ns and np orbitals is large
C) ns and (n-1) d orbitals is very slight
D) np and (n-1) d orbitals is small

Q.150: The geometry of the complexes depends upon the type of _____ taking place in the valence shell of the central metal atom:
A) Protonation
B) Deprotonating
C) Hybridization
D) Dissociation

Q.151: A transition complex absorb color light with wavelength around 450 nm its expected color would be the :
A) Red
B) Yellow
C) Violet
D) Blue

Q.152: A transition element X has electronic configuration [Ar] $3d^4$ in its +3 oxidation state, its atomic number is:
A) 25
B) 22
C) 26
D) 19

Q.153: Elements of which group are called non-typical transition elements
A) IB
B) V B
C) III B
D) VII B

Q.154: The IUPAC name of the coordination compound K4 $[Fe(CN)_6]$is
A) Potassium hexacyano ferrate (III)
B) Tripotassiumhexacyano ferrate (II)
C) Potassium hexacyano ferrate (II)
D) Potassium hexacyano iron (II)

Q.155: The possible oxidation state of Ti are:
A) +2,+3
B) +3,-4
C) +3, +4
D) +2, +3, +4

Q.156: The anomalous electronic configuration shown by chromium and copper among 3-d series of elements is due to: (2016)
A) Colour of ions of these metals
B) Variable oxidation states of metals
C) Stability associated with this configuration
D) Complex formation tendency of metals

Q.157: Which element of 3d series of periodic talbe shows the electronic configuration of $3d^6$, $4s^2$? (2016)
A) Copper
B) Cobalt
C) Zinc
D) Nickel

Q.158: Scandium has atomic number 21, which one will be its electronic configuration: (2017)
A) $1s^2, 2s^2, 2p^6, 3s^6, 3p^6, 3d^3$
B) $1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^2, 3d^3$
C) $1s^2, 2d^2, 2p^6, 3s^2, 3p^6, 4s^2, 4p^1$
D) $1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^1, 4p^2$

Q.159: Violet colour of $[Ti(H_2O)]_4^+$ ion is due to: (2017)
A) Central metal ion
B) Complex ion
C) Water molecule
D) Outer anion

Q.160: How many ligands $K_4[Fe(CN)_6]$ contains: (2017)
A) 4
B) 7
C) 6
D) 5

Q.161: Down the group acid base behavior of metallic oxides of group 2 elements change (2018)
A) More basic
B) no change
C) less basic
D) more acidic

Q.162: Which is the correct electronic configuration of Chromium ($_{24}Cr$)? (2018)
A) $1s^2\ 2s^2\ 3s^2\ 2p^6\ 3p^6\ 4s^2\ 3d^6$
B) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^6$
C) $1s^2\ 2s^2\ 3s^2\ 2p^6\ 3p^6\ 4s^2\ 3d^4$
D) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s\ 3d^5$

Q.163: Ligands having two lone pair of electrons for donation to the central transition metal ion are known as (2018)
A) bidentate ligands
B) hexadentate ligands
C) polydentate ligands
D) monodentate ligands

Q.164: Which of the following sets constitutes of all the molecules and ion of non-planar geometry? (2019)
A) PH_4^+, NH_3, SO_3 Benzene
B) CH_4, NH_4^+, MnO_4^- NF_3
C) CH = CH, H_2O, $BeCl_2$, H_2S
D) SO_2, C_2H_4, BF_3, NO_4^-

Q.165: In 3rd series of transition elements, paramagnetic behavior is maximum for Mn^{+2} and: (2020)
A) Cr^{3+}
B) Ti^{3+}
C) V^{3+}
D) Zn^{+2}

Q.166: Electronic configuration of chromium (Proton number 24) is: (2020)
A) $[Ar]3d^44s^2$
B) $[Ar]3d^54s^2$
C) $[Ar]3d^54s^1$
D) $[Ar]3d^54s^2$

Q.167: The transition element which doesn't show variable valency is: (2020)
A) Cu
B) Sc
C) Zn
D) Cr

1.	A	2.	D	3.	C	4.			
11.	C	12.	C	13.	C	14.			
21.	C	22.	B	23.	A	24.			
31.	B	32.	D	33.	C	34.			
41.	A	42.	D	43.	C	44.			
51.	B	52.	B	53.	B	54.			
61.	B	62.	B	63.	C	6			
71.	C	72.	D	73.	D				
81.	C	82.	C	83.	D				
91.	A	92.	D	93.	A				
101.	B	102.	D	103.	C				
111.	B	112.	A	113.	A				
121.	C	122.	C	123.	B				
131.	A	132.	C	133.					
141.	A	142.	A	143.					
151.	B	152.	A	153.					
161.	A	162.	D	163.					

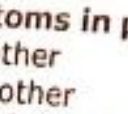
ANSWERS KEY

1.	A	2.	D	3.	C	4.	B	5.	B	6.	C	7.	C	8.	B	9.	B	10.	A
11.	C	12.	C	13.	C	14.	D	15.	A	16.	B	17.	C	18.	D	19.	A	20.	C
21.	C	22.	B	23.	A	24.	D	25.	A	26.	A	27.	A	28.	B	29.	A	30.	B
31.	B	32.	D	33.	C	34.	B	35.	B	36.	B	37.	D	38.	D	39.	C	40.	D
41.	A	42.	D	43.	C	44.	C	45.	D	46.	C	47.	B	48.	B	49.	B	50.	A
51.	B	52.	B	53.	B	54.	D	55.	A	56.	A	57.	C	58.	B	59.	D	60.	B
61.	B	62.	B	63.	C	64.	B	65.	C	66.	D	67.	C	68.	C	69.	D	70.	D
71.	C	72.	D	73.	D	74.	B	75.	A	76.	A	77.	B	78.	D	79.	C	80.	B
81.	C	82.	C	83.	D	84.	C	85.	D	86.	A	87.	C	88.	B	89.	A	90.	D
91.	A	92.	D	93.	A	94.	C	95.	A	96.	C	97.	D	98.	B	99.	A	100.	D
101.	B	102.	D	103.	C	104.	D	105.	A	106.	A	107.	C	108.	D	109.	D	110.	D
111.	B	112.	A	113.	A	114.	A	115.	C	116.	D	117.	D	118.	D	119.	B	120.	D
121.	C	122.	C	123.	B	124.	C	125.	D	126.	C	127.	A	128.	C	129.	B	130.	C
131.	A	132.	C	133.	B	134.	B	135.	C	136.	D	137.	D	138.	C	139.	C	140.	C
141.	A	142.	A	143.	C	144.	B	145.	D	146.	C	147.	A	148.	D	149.	C	150.	C
151.	B	152.	A	153.	C	154.	C	155.	D	156.	C	157.	D	158.	B	159.	A	160.	C
161.	A	162.	D	163.	A	164.	B	165.	A	166.	C	167.	C	168.		169.		170.	

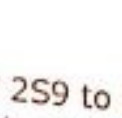
FUNDAMENTAL PRINCIPLES OF ORGANIC CHEMISTRY

Q.1: **In t-butyl alcohol, the tertiary carbon is bonded to:**
A) Two hydrogen atoms
B) Three hydrogen atoms
C) One hydrogen atom
D) No hydrogen atomCarbon

Q.2: **Formula of thiophene is:**

A) 

B)

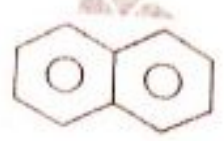
C) 

D)

Q.3: **Formula of furan is:**

A) 

B) 

C) 

D) 

Q.4: **CH_3-O-CH_3 and CH_3CH_2OH is example of isomerism:**
A) chain isomerism
B) position isomerism
C) functional group isomerism
D) metamerism

Q.5: **F. Wohler prepared compound from ammonium cyanate:**
A) protein
B) lipids
C) carbohydrates
D) urea

Q.6: **IUPAC name of $CH_2 = CH - CH(CH_3)_2$ is ?**
A) 1,1 – dimethyl -2- propene
B)3 – methyl -1- butene
C) 2 – vinyl propane
D) 1 – isopropyl -2-hexanol

Q.7: **It Heterolysis of carbon-chlorine bond produces?**
A) Two free radicals
B) Two carbanions
C) Two carbonian ions
D) One cation and one anion

Q.8: **The maximum number of isomers I or f' alkene with molecular formula C_4H_8 is**
A) 2
B) 4
C) 3
D) 5

Q.9: **The carbon atoms in propyne are arranged at**
A) 90 to each other
B) 120 to each other
C) IOW 2S9 to C3C11 other
D) 180 to each other

Q.10: **Which cat the following compounds will exhibit cis-trans (geometrical) isomerism? Ial 13.**
A) 2-Butene
B) 2-butyne
C) 2- butanol
D) Butanol

Q.11: **The number possible alcohol isomers for $C_4H_{10}O$ is ?**
A) 4
B) 3
C) 2
D) 5

Q.12: **An isomer of ethanol is?**
A) Methanol
B) Dimethyl ether Cl
C) Diethyl ether
D) Ethylene glycol

Q.13: **In which of the following species the central i6. carbon atom is negatively charged**
A) Carbonium ion
B) Carbocation
C) Carbanion
D) Free radicals

Q.14: **The number of different substitution products possible when ethane is allowed to react with bromine in sunlight are?**
A) 9
B) 6
C) 8
D) 5

Q.15: Which are isomers?
A) ethanol and ethoxy ethane
B) Methanol and Methoxy methane
C) Pro ionic acid and ethyl acetate
D) Propionaldehyde and acetone

Q.16: Which of the following possible isomers of, butanol has chiral center?
A) $(CH_3)_3OH$
B) $(CH_3)_2CH2 - CH_2 - OH$
C) $(CH_3)_2CH\ CH_2OH$
D) $CH_3CHOH - CH_2 - CH_3$

Q.17: Which of the following contains three pairs of electrons '!
A) Carbocation
B) Free radical
C) Carbanion
D) None

Q.18: The empirical formula of a compound is CH20. Its molecular weight is 10°. The molecular formula of the compound is ?
A) $C_1H_6O_1$
B) $C_6H_{12}O_3$
C) $C_5H_{10}O_5$
D) $C_2H_3O_2$

Q.19: Which of the following carbocation is least stable?
A) Tert —Alkyl
B) Sec—Alkyl
C) Pri—Alkyl
D) Methyl

Q.20: Which of the following can exhibit Cis-Trans isomerism
A)H—C=C-Cl
B) CH_3 CHCl COOH
C) ClCH = CHCl
D) $ClCH_2 - CH_2$ Cl

Q.21: Pick the strongest nucleophile.
A) CN^-
B) C_6H_5O
C) OH
D) C_2H_5O

Q.22: The C—C bond length in acetylene is
A) 1.20A°
B) 1.34A°
C) 1.54A°
D) 1.39A°

Q.23: Amines exhibit?
A) Chain isomerism
B) Position isomerism
E) All are correct
C) Functional isomerism
D) Metamerism

Q.24: Pick the strongest nucleophile.
A) CH_3O
B) NH_2
C) H-C=C
D) H

Q.25: How many structural isomers are possible for the $CH_2H_4Br_2$?
A) 4
B) 3
C) 2
D) 1

Q.26: Carbonium ions are involved in all reaction except
A) SN reaction
B) Dehydrohalogenation of
C) Dehydration of alcohols El
D) Aldol condensation

Q.27: Free radicals are involved in mechanism of
A) Kharash effect
B) Cracking of alkanes
C) Halogenation of alkanes
D) All of these.

Q.28: Isomerism exhibited by acetic acid and methyl format is?
A) Functional group
B) Chain
C) Geometrical
D) Tautomerism

Q.29: Which one of the following is expected' to have the highest melting point ?
A) Maleic acid
B) Fumaric acid
C) Pentanoic acid
D) Benzoic acid

Q.30: The compound having molecular formula' CH_4H_{10} can show ?
A) Metamerism
B) Functional isomerism
C) Positional isomerism
D) All

Q.31: Heterolytic fission of a covalent bond in organic molecules gives:
A) free radicals
B) cations and anions
C) only cations
D) only anions (2019)

Q.32: Which of following molecule shows cis-trans isomers?
A) C_2H_4
B) $C_2H_2Cl_4$
C) $C_2H_2Br_2$
D) C_2HCl_3

Q.33: Which of the following can be applied to explain relative order of stability of cabocations:
A) Resonance
B) Inductive effect
C) Hyperconjugation
D) All of these

Q.34: Which of the following is best electrophile?
A) CH_3^+
B) Cl^+
C) BCl_3
D) Br^+

Q.35: For the reaction of phenol with $CHCl_3$ in presence of KOH, the electrophile is:
A) $^{+}CHCl_2$
B) $CHCl_2$
C) $:CCl_2$
D) CCl_4

Q.36: Which behaves both as a nucleophile and electrophile?
A) CH_3NH_2
B) CH_3CN
C) CH_3Cl
D) CH_3OH

Q.37: Which of the following does not match correctly?
A) Alicyclic — Cyclopentane
B) Branched chain aliphatic — isobutene
C) Aromatic — Phenol
D) Heterocyclic — Anisole

Q.38: A free radical is:
A) Non-existing
B) Short lived
C) Diamagnetic
D) Fairly stable

Q.39: The IUPAC name of CH_3-CH(C_2H_5)-CH_2-C(CH_3)$_2$-CH_3 is
A) 2,2-Dimethyl-4-ethylpentane
B) 2,2,4-Trimethyl hexane
C) 2,3-Dimethyl-4-ethylpentane
D) 2.4-Dimethyl-2-ethyl-pentane

Q.40: Which of the following species contain eight electrons around the central carbon atom?
A) Carbanion
B) Carbocation
C) Carbene
D) Free radical

Q.41: The shape of a carbanion is:
A) linear
B) planar
C) payramidal
D) tetrahedral

Q.42: The increasing order of stability of the following free radicals is:
A) $(CH_3)_2CH^{\bullet} < (CH_3)_3C < (C_6H_5)_2CH^{\bullet} < (C_6H_5)_3C$
B) $(C_6H_5)_3C^{\bullet} < (C_6H_5)_2CH^{\bullet} < (CH_3)_3C^{\bullet} < (CH_3)_2CH^{\bullet}$
C) $(C_6H_5)_2CH^{\bullet} < (C_6H_5)_3C^{\bullet} < (CH_3)_3C^{\bullet} < (CH_3)_2CH^{\bullet}$
D) $(CH_3)_2CH^{\bullet} < (CH_3)_3C^{\bullet} < (C_6H_5)_3C^{\bullet} < (C_6H_5)_2CH^{\bullet}$

Q.43: In CH_3CH_2OH, the bond that undergoes heterolytic cleavage most readily is:
A) C – C
B) C – H
C) C – O
D) O – H

Q.44: Carbonium ion is formed in:
A) Homolytic fission
B) in both of the above
C) Heterolytic fission
D) in none of the above

Q.45: The central C – atom of free radical possesses:
A) 6 electrons
B) 7 electrons
C) 8 electrons
D) none of the above

Q.46: All of the following show functional group isomerism EXCEPT:
A) Alcohol and ether
B) Ester and acid anhydride
C) Aldehyde and Ketone
D) Carboxylic acid and ester

Q.47: Heterolytic cleavage may lead to _____ attacks.
A) Nucleophillic
B) Both a and b
C) Electrophyllic
D) Anthracite

Q.48: Due to the presence of an unpaired electron, free radicals are:
A) chemically reactive
B) Chemically inactive
C) anions
D) cations

Q.49: The reaction between electrophile and nucleophile involves:
A) an ionic bond
B) a covalent bond
C) a coordinate covalent bond
D) None of these

Q.50: Electrophilic reagents are:
A) Electron pair donors
B) Lewis acids
C) Odd electron molecules
D) Lewis bases

Q.51: Which compound is In-Organic in nature but shows properties like organic compound?
A) Urea
B) N_2H_4
C) CCl_4
D) Ammonium acetate

Q.52: Ethyl isopropyl ether and ethyl n-propyl ether is :
A) Chain isomers
B) metamers
C) Functional group isomers
D) Position isomers

Q.53: Which are isomers?
A) Methanol and methoxymethane
B) Propionic acid and ethyl acetate
C) Ethanol and ethoxyethane
D) propionaldyhyde and acetone

Q.54: The free radical mechanism is always associated with _____ mechanism.
A) Homolysis
B) Ionic
C) Hetrolysis
D) Elimination

Q.55: 1-chloropropane and 2-chloropropane are isomers of each other. Such type of isomerism is called:
A) Cis-trans isomerism
B) Chain isomerism
C) Position isomerism
D) functional group isomerism

Q.56: Nucleophiles are:
A) Lewis bases
B) Lewis acids
C) cations
D) radicals

Q.57: Which one of the following is a powerful electrophile used attach on the electrons of benzenering?
A) $FeCl_2$
B) $FeCl_4^-$
C) Cl^+
D) Cl_2

Q.58: Which one of the following pairs can be cis-trans isomer to each other?
A) $CHCl=CCl_2$ and $CH_2=CH_2$
B) $CHCl=CH_2$ and $CH_2=CHCl$
C) $CH_3-CH=CH-CH_3$ and $H_3C-CH=CH-CH_3$
D) CH_3-CH_3 and $CH_2=CH_2$

Q.59: The compound which is not isomeric with diethyl ether is:
A) n-Propyl methyl ether
B) 2-Methyl propanol
C) 1- Butanol
D) Butanone

Q.60: The phenomenon of metamerism is shown by:
A) Ethyl alcohol and dimethyl ether
B) Acetone and propionaldehyde
C) Methyl n-propyl ether and diethyl ether
D) Propionic acid and acetic acid

Q.61: Which one of the following conditions required for thermal cracking :
A) 700°C
B) Al_2O_3 and SiO_2
C) proper aeration
D) All of these

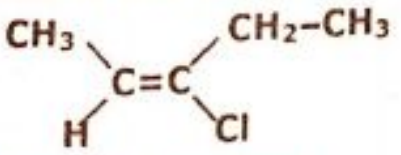
Q.62: In cis-trans isomerism, the trans isomer has all of the following properties EXCEPT:
A) It is non-polar molecule
B) It is Symmetrical
C) Its dipole moment is zero ($\mu = 0$)
D) It has low melting point

Q.63: Which of the following is not nucleophile:
A) H_2O
B) BF_3
C) NH_3
D) OH^-

Q.64: Which of the following compounds is not a phenol?
A) C_6H_5OH
B) $C_6H_5CH_2OH$
C) $C_6H_4(CH_3)OH$
D) $C_6H_4(OH)_2$

Q.65: With respect to functional group phenols resemble:
A) aldehydes
B) ethers
C) ketones
D) alcohol

Q.66: The name of the molecule shown is



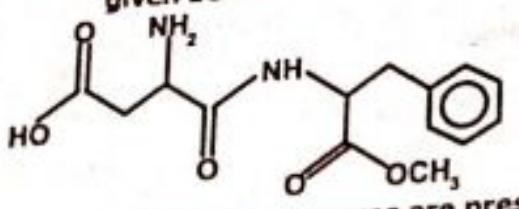
A) cis-3-chloro-2-pentene
B) monochloro-2-cis-pentene
C) trans-3-chloro-2-pentene
D) cis-3-chloro-3-pentene

Q.67: Isomerism exhibited by acetic acid and methyl formate is:
A) Functional group isomerism
B) Geometrical isomerism
C) Chain isomerism
D) Central isomerism

Q.68: Chain isomers differ in their nature of?
A) Carbon atoms
B) Functional groups
C) Hydrogen atoms
D) All of these

Q.69: CH_3CHCI_2 and $CH_2CI.CH_2CI$ show which type of isomerism?
A) Functional
B) Position
C) Chain
D) Metamerism

Q.70: The skeletal formula of dipeptide formed between aspartic acid and pheylalanine is given below.



How many functional groups are present in its formula?
A) 1
B) 4
C) 2
D) 3

Q.71: Which of the following is not type of cracking?
A) Thermal Cracking
B) Catalytic Cracking
C) Steam Cracking
D) Electrolytic Cracking

Q.72: The nature of alcohol (i.e. primary, secondary and tertiary) depends upon nature of _____ group.
A) R
B) Both a & b
C) OH
D) none of these.

Q.73: The compound which contains 1°, 2°, 3° and 4° carbon atoms is
A) 2, 2, 3-trimethylpentane
B) 3-chloro-2,3-dimethylpentane
C) 2,3-4-trimethylpentane
D) 3,3-dimethylpentane

Q.74: Based on the IUPAC system, neopentyl group is named as
A) isopentyl
B) neopentyl
C) 2,2-dimethylpropyl
D)1,3-dimethylbutyl

Q.75: Which choice represents the carbon skeleton of 1,6–octadiene?
A) C=C-C-C-C-C=C-C
B) C-C=C-C-C=C-C-C
C) C=C=C-C-C-C-C
D) C-C=C-C-C-C=C

Q.76: How many hydrogen atoms are contained in a molecule of 1,4-hexadiene?
A) 18
B) 6
C) 14
D) 10

Q.77: Which of the following ions is good elctrophile?
A) CH_3^+
B) $(CH_3)_3C^+$
C) $(CH_3)_2CH^+$
D) $C_6H_5CH_2^+$

Q.78: Which of the following is organic in nature except?
A) Manure
B) Urea
C) Ammoniumcyanate
D) All of these

Q.79: Nucleophilicity order is correctly represented by:
A) $CH_3^- < NH_2^- < OH^- < F^-$
B) $CH_3^- > NH_2^- > OH^- > F^-$
B) $CH_3^- \simeq NH_2^- > OH^- \simeq F$
D) $NH_2^- < F^- < OH^- < CH_3^-$

Q.80: The type of isomerism which arises due to the difference in the nature of carbon chain is called:
A) Chain isomerism
B) Functional group isomerism
C) Metamerism
D) Tautomerism

Q.81: Select a nucleophile from the following example:
A) NO_2
B) NO^+_2
C) NH_3
D) N^+H_4

Q.82: The functional group present in above compound is
A) Carboxyl
B) Ester
B) Ether linkage
D) Carbonyl

Q.83: The IUPAC name of $CH_3 - CH(C_2H_5) - CH_2 - C(C_2H_5)_2 - CH_3$
A) 2,2-dimethyl-4-ethyl pentane
B) 2-ethyl-2,4-dimethyleptane
C) 2,2-dimethyl heptane
D) 3-ethyl-3,5-dimetylheptane

Q.84: Geometrical isomer
A) Oscillation of hydr
B) Optical rotation du
C) Free rotation abo
D) Restricted free ro

Q.85: Which one of the
A) $(CH_3)_3COH$
B) C_3H_7OH

Q.86: Which of the follo
A) Isopentane and
B) Ethanol and dir

Q.87: The molecular f
existence of:
A) Functional isou
B) position isome

Q.88: Which of th
A) 1-Butene
B) 2,3-Dibromo

Q.89: The most activ
A) Hetroatom
B) Chemical Bo

Q.90: n-butane and
A) Chain isom
B) Meta meris

Q.91: 1-butene an
A) Chain isom
B) Meta meri

Q.92: Chain isom
A) Acetaldeh
B) Dimethyl

Q.93: Which one
C_2H_5Br —
A) Ethyl al
B) Ethene

Q.94: Which on
A) C_6H_6
B) C_6H_{12}

Q.95: IUPAC n
A) Metho
B) Methy

Q.96: Which c
A) Alicy
B) Bran

Q.97: All of t
A) Alco
B) Este

Q.98: Which
A) Eth
B) 3-p

Q.99: Whic
A) Py
B) Ar

Q.100: Whi
A) C
B) P

Q.84: Geometrical isomerism in alkenes in due to
A) Oscillation of hydrogen atom between two polyvalent carbon atoms
B) Optical rotation due to multiple bonds
C) Free rotation about C = C bond
D) Restricted free rotation about C = C bond

Q.85: Which one of the following is an isomer of diethyl ether?
A) $(CH_3)_3COH$
B) C_3H_7OH
C) $(CH_3)_3CHOH$
D) $(C_2H_5)_2CHOH$

Q.86: Which of the following is an example for position isomerism?
A) Isopentane and neopentane
B) Ethanol and dimethyl ether
C) Glucose and fructose
D) α- Naphthol and β-naphthol

Q.87: The molecular formula of aunsaturated compound is $C_2H_2Br_2$. This formula permits the existence of:
A) Functional isomers
B) position isomers
C) optical isomers
D) cis-trans isomers

Q.88: Which of the following will show geometrical isomerism?
A) 1-Butene
B) 2,3-Dibromo-1-butene
C) 2,3-Dibromo-2-butene
D) Isopropylene

Q.89: The most active part in a molecule is called
A) Hetroatom
B) Chemical Bond
C) Functional group
D) Ion

Q.90: n-butane and iso-butane are an example of
A) Chain isomerism
B) Meta merism
C) positional isomerism
D) Functional group isomerism

Q.91: 1-butene and 2-butene are an example of
A) Chain isomerism
B) Meta merism
C) Positional isomerism
D) Functional group isomerism

Q.92: Chain isomerism is shown by
A) Acetaldehyde and acetone
B) Dimethyl ether and ethanol
C) n-butane and isobutene
D) o-Nitrophenol and p-nitrophenol

Q.93: Which one the following will be present at the position of letter B

$$C_2H_5Br \xrightarrow[\text{Alcohol}]{KOH} A \xrightarrow{H_2/Pt} B$$

A) Ethyl alcohol
B) Ethene
C) Acetaldehyde
D) Ethane

Q.94: Which one is acyclic hydrocarbon?
A) C_6H_6
B) C_6H_{12}
C) C_2H_6
D) $CH_3\text{-}C_6H_5$

Q.95: IUPAC name of $HCOOCH_3$ is:
A) Methoxy methanol
B) Methyl methanoate
C) Ethanoic acid
D) Methoxy methane

Q.96: Which of the following does not match correctly?
A) Alicyclic — Cyclopentane
B) Branched chain aliphatic — isobutene
C) Aromatic — Phenol
D) Heterocyclic — Anisole

Q.97: All of the following show functional group isomerism EXCEPT:
A) Alcohol and ether
B) Ester and acid anhydride
C) Aldehyde and Ketone
D) Carboxylic acid and ester

Q.98: Which of the following cannot show metamerism?
A) Ethoxyethane
B) 3-pentanone
C) Butanone
D) Methyl propanoate

Q.99: Which of the following is not heterocyclic compound?
A) Pyrrole
B) Aniline
C) Furan
D) Thiophene

Q.100: Which of the following cannot show position isomerism?
A) Chloropropane
B) Propanol
C) Butune
D) Propanal

Q.101: Closed chain compounds can be classified into
A) Homocyclic
B) Aliphatic
C) Hetrocyclic
D) Both a & b

Q.102: In the following, which one is free radical?
A) Cl^-
B) Cl:
C) Cl^+
D) Cl°

Q.103: The reactivity order of alkyl halides for a particular alkyl group is
A) Fluoride > Chloride > Bromide > Iodide
B) Iodide > Bromide > Chloride > Fluoride
C) Chloride > Bromide > Fluoride > Iodide
D) Bromide > Iodide > Chloride > Fluoride

Q.104: IUPAC name of isoprene is
A) 2-Methyl-1,3-butadiene
B) 2-Methyl-1,3-butadiyne
C) 3-Methyl-1,3-butadiene
D) 2-Chloro-1,3-butadiene

Q.105: Isopropyl chloride undergoes hydrolysis by
A) S_N 1 mechanism
B) S_N 2 mechanism
C) Both by S_N 1 and S_N 2 mechanism
D) Neither S_N 1 Nor S_N 2 mechanism

Q.106: Which of the following is incorrect statement about the class of organic compounds?

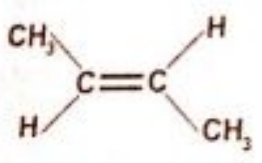
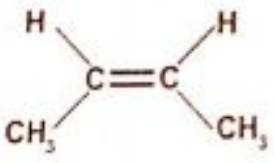
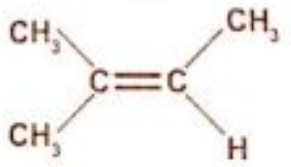
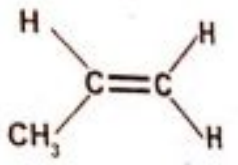
Option	Class of organic compounds	Definition
A)	Acyclic	It is the type of compounds which contains an open chain of carbon atoms
B)	Alicyclic	It is a type of homocyclic compounds which contains a ring of only four or more carbon atoms
C)	Aromatic	It is the type of carbocyclic compounds which contains at least one benzene ring
D)	Heterocyclic	It is the type of compounds in which the ring consists of atoms of more than one kind

Q.107: Which applies to a nucleophile:
A) It attacks a double bond
B) It is always a single atom
C) It always attack on center with –ve charge
D) It always attack on center with +ve charge

Q.108: Which of the following does not show geometric isomerism?
A) $H_3C - CH = CBr_2$
B) $CH_3 - CBr = CBr - CH_3$
C) $H_3C - CH = CH - CH_3$
D) $CH_3 - CH = CH - CH_2 - CH_3$

Q.109: The atom other then C-in a heterocyclic compound is called as
A) Heteroatom
B) Heteromolecule
C) Heteroion
D) Heteroelement

Q.110: The cis – isomerism is shown by:

a. 
b. 
c. 
d. 

A) a
B) c
C) b
D) d

Q.111: Phenol + $(HNO_3+H_2SO_4)$ ⟶
A) 2-Hydroxy benzenesulphonic acid
B) Nitrobenzene
C) O-nitrophenol
D) P-nitrobenzenesulphonic acid

Q.112: When propene reacts with HBr in the presence of H_2O_2 the product form will be
A) 2-Bromopropane
B) 2-Bromopropene
C) 1-Bromopropane
D) No reaction will takes place

Q.113: In homologous series
A) Molecular formula is same
B) Physical properties are same
C) Structural formula is same
D) General formula is same

Q.114: Which one of the following shows metamerism?
A) $CH_3 - CH_2CH = CH_2$ and $H_3C\ CH = CH - CH_3$
B) $(CH_3)_3\ CH$ and $CH_3 - CH_2 - CH_2 - CH_3$
C) $CH_3 - CH_2CHO$ and CH_3COCH_3
D) $H_3C - NH - C_3H_7$ and $C_2H_5 - NH - C_2H_5$

Q.115: Which of the following intermediate has the complete octet around the carbon atom?
A) Methyl free radical
B) Carbene
C) Carbanion
D) Carbonium ion

Q.116: Which one of the following statements is incorrect?
A) 2-butene is positional isomer of 1-butene
B) Carbonyl functional group is present in both aldehydes and ketones
C) All the aromatic compounds are closed chain compounds
D) o-nitro toluene and p-nitro toluene are functional group isomers

Q.117: The formula $C_4H_8O_2$ represents
A). Only an alcohol
B) Only a carboxylic acid
C) Only an ether
D) Both alcohol and ether

Q.118: How many moles of O_2 gas are required for complete combustion of one mole of propane
A) 3
B) 5
C) 10
D) 6

Q.119: Toluene + $KMnO_4$ ⟶
A) Ethyl benzene
B) Benzoic acid
C) Benzene
D) Phenol

Q.120: Diethyl ketone methyl n-propyl ketone is an example of
A) Chain isomerism
B) Meta merism
C) Tautomerism
D) Functional group isomerism

Q.121: If similar groups are attached in one side it is called
A) Cis-form
B) Tautomeric form
C) Trans-form
D) None of them

Q.122: If dissimilar group are attached on one side it is called
A) Cis-form
B) Tautomeric form
C) Trans-form
D) None of them

Q.123: Select the nucleophile from the following?
A) CO_2
B) NO_2^+
C) NH_4^+
D) NH_2^-

Q.124: The main purpose of catalytic cracking is ?
A) Increase yield of unsaturated hydrocarbons
B) Increase octane number of fuel
C) Increase number of carbons so that combustion rate increase
D) All of these

Q.125: Ethene + $KMnO_4/OH^- + \Delta$ ⟶
A) Ethylene glycol
B) Oxalic acid
C) Glyoxal
D) Formic acid

Q.126: Predict the decreasing order of nucleophilicity
A) $I^- < Br^- < Cl^-$
B) $Cl^- < I^- < Br^-$
C) $I^- > Br^- > Cl^-$
D) $F^- < Br^- < I^-$

Q.127: Which intermediate is produce in SN2 reaction
A) Carbonium ion
C) Carbanion ion
C) Activated complex ion
D) Carbo free radical

Q.128: Which compound is used as antiseptic
A) CCl_4
B) CCl_2F_2
C) CHI_3
D) $CHCl_3$

Q.129: When Alkyl halide allowed to react with excess of aqueous ammonia the product form will be
A) P^o-ammine
B) Q^o-ammonium complex
C) S^o-ammine
D) All of these

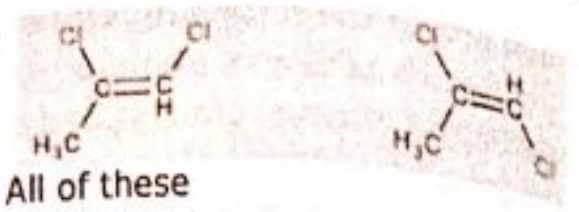
Q.130: Cracking of Hydrocarbon normally leads to the formation of _____ hydrocarbons.
A) Smaller and mixture of saturated and unsaturated
B) Larger and mixture of saturated and unsaturated
C) Smaller and mixture of saturated
D) Larger and mixture of unsaturated

Q.131: For geometric isomerism the two groups, attached to the same carbon atom must be
A) Similar
B) Maybe a or b
C) Dissimilar
D) None of them

Q.132: Which of the following pair is cis-trans pair ?

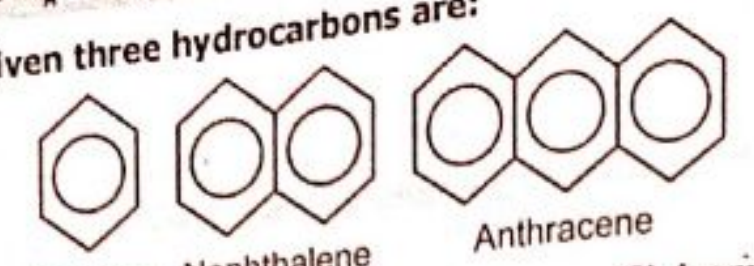
A) Maleic acid and fumaric acid

B) 

C) 

D) All of these

Q.133: The given three hydrocarbons are:



Benzene Nephthalene Anthracene

A) Alicyclic hydrocarbons
B) Acyclic Hydrocarbons
C) Aromatic hydrocarbons
D) heterocyclic hydrocarbons

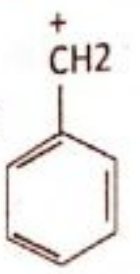
Q.134: The compounds with structural formula R – C ≡ N and R – N ≡ C are:

A) position isomers
B) functional isomers
C) metamers
D) chain isomers

Q.135: The order of stability of the following carbocations is:

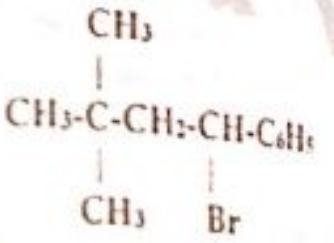
$H_2C = \overset{+}{C}H - CH_2$; $H_3C - CH_2 - \overset{+}{C}H_2$;

I II

III 

A) II > III > I
B) III > I > II
C) I > II > III
D) III > II > I

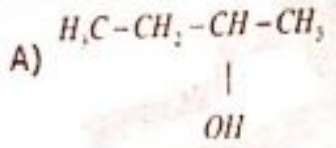
Q.136: Consider the following structure of alkyl halide

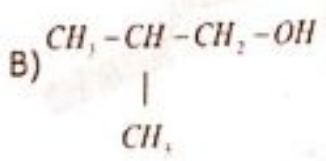


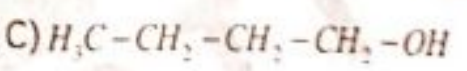
The correct name of the above structure according to IUPAC is:

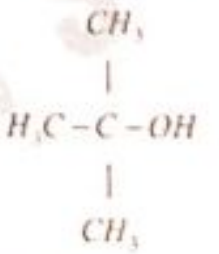
A) I-Bromo-I-phenyl-3,3-dimethylbutane
B) 3-Bromo-3-phenyl-2.2-dimethylbutane
C) I-Bromo-3-phenyl-3,3-dimethylbutane
D) 3-Bromo-I-phenyl-3.3-dimethylbutane

Q.137: Butan-2-ol has correct structure according to IUPAC:

A) 

B) 

C) 

D) 

Q.138: Dimethyl ether and ethyl alcohol are an example of

A) Chain isomerism
B) Meta merism
C) Positional isomerism
D) Functional group isomerism

Q.139: The halogenation of alkanes is carried out by free radical substitution, the cleavage of which bond will produce free radical quite readily:

A) C-C bond
B) H – Cl bond
C) C – H bond
D) C – Cl bond

Q.140: In the reaction of propene with HBr, the intermediate formed is:

A) $\dot{C}H_3 - CH - CH_2$

B) $CH_3 - \overset{+}{C}H - CH_3$ (+ Br)

C) $CH_3 - CH_2 - \overset{\oplus}{C}H_2$

D) $CH_3 - CH - {}^{\cdot}CH_3$ (Br)

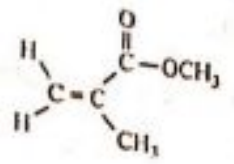
Q.141: The mechanism involved in the following reaction is:

$$H_3C - CH_2 - I + NaNH_2 \longrightarrow H_3C - CH_2 - NH_2 + NaI$$

A) Electrophilic addition
B) Nucleophilic substitution
C) Electrophilic substitution
D) Nucleophilic addition

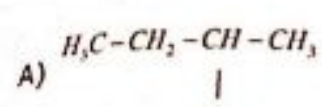
Q.142: Select a nucleophile from the following:
A) Nitronium ion
B) Carbanion
C) Carbonium ion
D) Ammonium ion

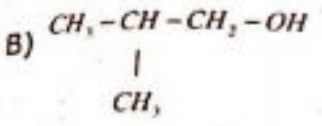
Q.143: One of the following chemicals make the hard outer covering of golf balls has the following structural formula?



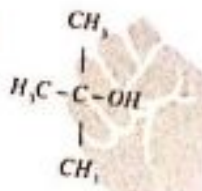
Which one of the following statements is correct for this structure?
A) It is a cis-isomer
B) It is a trans isomer
C) It has only one chiral centre
D) It has only structural isomers

Q.144: Butan-2-ol has correct structure according to IUPAC:

A) 

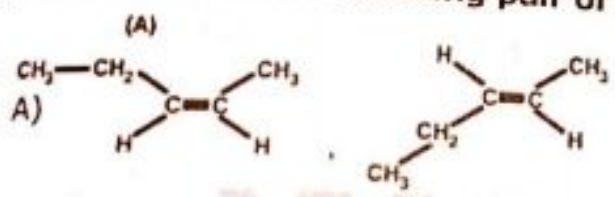
B) 

C)

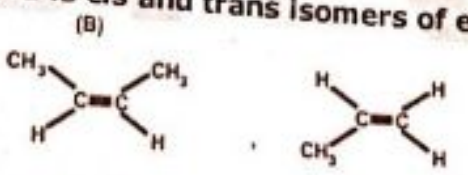
D) 

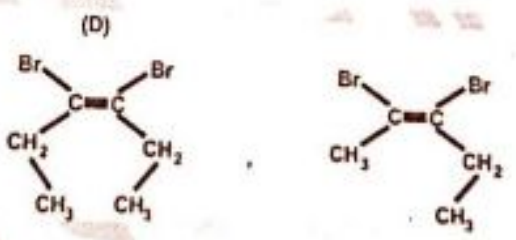
Q.145: The IUPAC name of $CH_3–CH=CH–C\equiv CH$ is
A) Pent-3-en-1-yne
B) Pent-2-en-3-yne
C) Pent-3-en-4-yne
D) Pent-2-en-4-yne

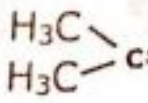
Q.146: Which one of the following pair of compound is cis and trans isomers of each other?

A) 

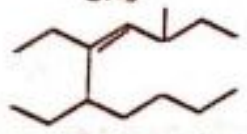
B) 

C) 

D) 

Q.147: The heterolysis of  c=o forms a:
A) carbanion
B) carbocation
C) free radical
D) cleavage not possible

Q.148: Which of the following ions is most stable?
A) $CH_3CH_2CH_2^+$
B) $CH_3\overset{+}{C}HCH_2CH_3$
C) $CH_3 - \overset{+}{C} - CH_3$ (with CH_3)
D) $CH_3 - \overset{CH_3}{\underset{CH_3}{C}} - \overset{+}{C}H_2$

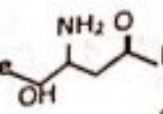
Q.149: The IUPAC name of the compound  **is:**
A) 5,6-Diethyl-8-methyldec-6-ene
B) 5,6-Diethyl-3-methyldec-4-ene
C) 6-Butyl-5-ethyl-3-methyloct-4-ene
D) 4,5-diethyl-8-methyldec-6-ene

Q.150: The IUPAC name of  **is:**

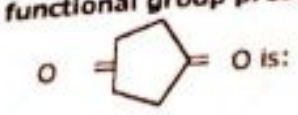
A) 3-methyl cyclohexene
B) 1-methyl cyclohex-2-ene
C) 6-methyl cyclohexene
D) 1-methyl cyclohex-5-ene

Q.151: The heterolysis of  **forms a:**

A) carbanion
B) carbocation
C) free radical
D) cleavage not possible

Q.152: Consider the following structure  **principal functional group in this compound is**

A) amino
B) carboxyl
C) carbonyl
D) hydroxyl

Q.153: The functional group present in the molecule  **is:**

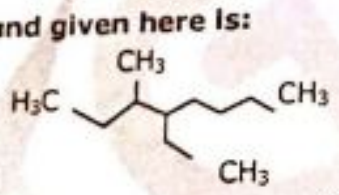
A) epoxy
B) amide
C) ester
D) acid

Q.154: The IUPAC name of 

A) 2-ethyl-3methylbutanoyl chloride
B) 2,3-dimethylpentanoyl chloride
C) 3,4-dimethylpentanoyl Chloride
D) 1-chloro-1-oxo-2,3-dimethylpentane

Q.155: The principle functional group when the following groups are present in the molecule:

A) $-NO_2$
B) $-CONH_2$
C) $-NH_2$
D) $-CHO$

Q.156: Name of the compound given here is: 

A) 3-methyl-4-ethyloctane
B) 4-ethyl-3-methyloctane
C) 2,3-diethylheptane
D) 5-ethyloctane

Q.157: Skeletal formula of an organic compound is given below: 

It is a hydrocarbon. IUPAC name of the compound is:

A) 3, 3-dimethyl-3-hexene
B) 3-Ethyl-4-methyl-3-hexene
C) 3-hexene
D) 2, 3-dimethyl-1-hexene

Q.158: Justice cleavage of a covalent bond will produce?

A) Cations
B) Free radicals
C) Anions
D) All

Q.159: If –COOH, –OH and –C– groups are present in a compound, the principal functional group is:

A) –OH
B) –C–
C) –COOH
D) –OH and –COOH

Q.160: Name the compound, which shows geometric isomerism: (2017)

A) 1-bromo-2-chloropropene
B) 2-pentene
C) 2,3-dimethylpropene
D) both A & B

Q.161: Cyclobutane structure is categorized under: (2017)

A) Aromatic compounds
B) Alicyclic compounds
C) Aliphatic compounds
D) Heterocyclic compounds

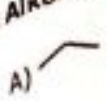
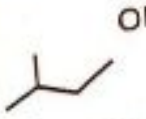
Q.163: What is the IUPAC name of the $CH_2=CH-CH_2-CH_2-CH-$ (CH2 / CH3)

A) 5-ethyl-1-hexene
B) 3-methyl-6-heptene

Q.163: The IUPAC name of followin

A) 1-methylcyclopentane-2-o
B) β-methylcyclopentyl alcoh

Q.164: Alkene is obtained when a

A) 
B) Ph 

Q.165: Skeletal formula of an o

It is a hydrocarbon. I
A) 3, 3-dimethyl-3-hexe
B) 3, 4-dimethyl-3-hex

Q.166: Which one of the foll
A) $CHCl=CCl_2$ and CH_2
B) $CHCl=CH_2$ and CH_2

Q.167: Which one of the fol

A) CMixture of SiO_2 a
B) Mixture of Pt and

Q.168: The type of structu chains or carbon sk
A) Chain isomerism
B) Position isomersi

Q.169: What should be th

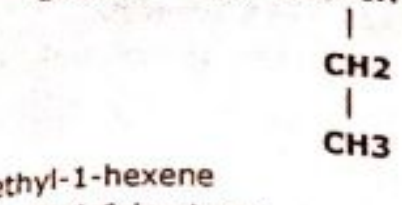
A) 500°C, 2 atm
B) 900°C, 2 atm

Q.170: The species whic pair donors are k
A) Cations
B) Anions

Q.171: Select the Orga
A) $CH_2 = CH_2$
B) $CH_3 - O - CH_3$

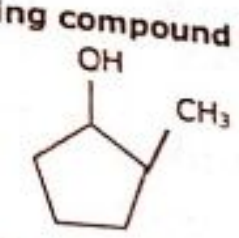
Q.172: The type of iso
A) Functional gro
B) Position

Q.162: What is the IUPAC name of the molecule shown?



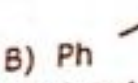
A) 5-ethyl-1-hexene
B) 3-methyl-6-heptene
C) 2-ethyl-5-hexene
D) 5-methyl-1-heptene

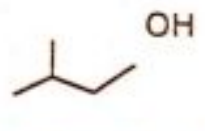
Q.163: The IUPAC name of following compound is

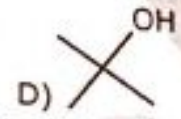


A) 1-methylcyclopentane-2-ol
B) β-methylcyclopentyl alcohol
C) methyleclopentan-2-ol
D) 2-methylcyclopentan-1-ol

Q.164: Alkene is obtained when an alcohol is passed over heated cu. The alcohol is:

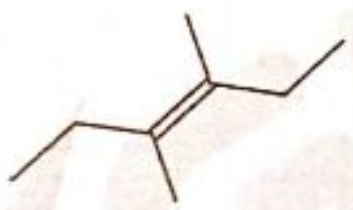
A) 

B) 

C) 

D)

Q.165: Skeletal formula of an organic compound is given below: (2016)



It is a hydrocarbon. IUPAC name of the compound:

A) 3, 3-dimethyl-3-hexene
B) 3, 4-dimethyl-3-hexene
C) 3-hexene
D) 2, 3-dimethyl-1-hexene

Q.166: Which one of the following pairs can be cis-trans isomer to each other? (2016)

A) $CHCl=CCl_2$ and $CH_2=CH_2$
B) $CHCl=CH_2$ and $CH_2=CHCl$
C) CH_3-CH=CH-CH_3 and H_3C-CH=CH-CH_3
D) CH_3-CH_3 and $CH_2=CH_2$

Q.167: Which one of the following is used as a typical catalyst for catalytic cracking: (2017)

A) CMixture of SiO_2 and Ni
B) Mixture of Pt and Cu
C) Mixture of Fe and MgO
D) Mixture of SiO_2 and Al_2O_3

Q.168: The type of structural isomerism which arises due to the difference in nature of carbon chains or carbon skeleton is: (2017)

A) Chain isomerism
B) Position isomersim
C) Cis – Trans isomerism
D) Optical isomersim

Q.169: What should be the temperature and pressure respectively for catalytic cracking: (2017)

A) 500°C, 2 atm
B) 900°C, 2 atm
C) 500°C, 4 atm
D) 900°C, 4 atm

Q.170: The species which are produced by heterolytic bond breaking and can act as electron pair donors are known as (2018)

A) Cations
B) Anions
C) Nucleophiles
D) free radicals

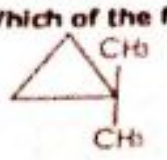
Q.171: Select the Organic compound which belongs to Arene family: (2020)

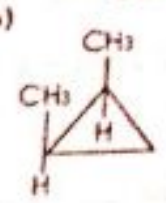
A) $CH_2 = CH_2$
B) $CH_3 - O - CH_3$
C) $CH_3 - NH_2$
D) C_6H_6

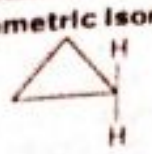
Q.172: The type of isomerism existing in a compound of molecular formula C_2H_6O is: (2020)

A) Functional group
B) Position
C) Chain
D) Metamerism

Q.173: Which of the following compounds show geometric isomerism? (2020)

A) 

B) 

C) 

D) 

Q.174: Generic formula of cycloalkane is? (2020)

A) C_nH_{2n+2}
B) C_nH_{2n}
C) C_nH_{2n-1}
D) C_nCH_{2n-2}

Q.175: Electrophile in sulphonation of benzene is: (2020)

A) Functional group
B) Position
C) Chain
D) Metamerism

ANSWERS

1.	D	2.	A	3.	D	4.	C	5.	D	6.	B	7.	D	8.	C	9.	D	10.	A
11.	A	12.	B	13.	C	14.	D	15.	D	16.	D	17.	A	18.	B	19.	D	20.	C
21.	A	22.	A	23.	E	24.	B	25.	C	26.	D	27.	D	28.	A	29.	A	30.	D
31.	B	32.	C	33.	B	34.	B	35.	A	36.	B	37.	D	38.	B	39.	B	40.	A
41.	C	42.	A	43.	D	44.	C	45.	B	46.	B	47.	B	48.	A	49.	C	50.	B
51.	B	52.	D	53.	D	54.	A	55.	C	56.	A	57.	C	58.	C	59.	D	60.	C
61.	A	62.	D	63.	B	64.	B	65.	D	66.	A	67.	A	68.	A	69.	B	70.	B
71.	D	72.	A	73.	A	74.	C	75.	A	76.	D	77.	A	78.	C	79.	B	80.	A
81.	C	82.	B	83.	D	84.	D	85.	A	86.	D	87.	D	88.	C	89.	C	90.	A
91.	C	92.	C	93.	D	94.	C	95.	B	96.	D	97.	B	98.	C	99.	B	100.	D
101.	D	102.	D	103.	B	104.	A	105.	C	106.	B	107.	D	108.	A	109.	A	110.	C
111.	C	112.	C	113.	D	114.	D	115.	C	116.	D	117.	B	118.	B	119.	B	120.	B
121.	A	122.	C	123.	D	124.	B	125.	D	126.	C	127.	C	128.	C	129.	A	130.	A
131.	C	132.	D	133.	C	134.	A	135.	B	136.	A	137.	A	138.	D	139.	C	140.	A
141.	B	142.	B	143.	D	144.	A	145.	A	146.	A	147.	A	148.	C	149.	B	150.	A
151.	B	152.	B	153.	A	154.	B	155.	B	156.	B	157.	B	158.	B	159.	C	160.	D
161.	B	162.	D	163.	D	164.	C	165.	B	166.	C	167.	D	168.	A	169.	A	170.	C
171.	D	172.	A	173.	B	174.	B	175.	C	176.		177.		178.		179.		180.	

CHEMIST

Which is symmetrical alke
A) $CH_3 \equiv CCH_2$
B) CH_3CH

Alkanes are inert at ordin
A) acids
B) alkalies

Formation of CO on burni
A) Complete combustion
B) Oxidation

Formation of alcohol, al
A) nitration
B) oxidation

Alkenes have less hydr
A) one
B) two

Simplest olefin is:
A) methane
B) ethane

Reaction of HNO_3 wit
A) benzene sulphonic ac
B) nitrobenzene

Acylation of benzene
A) benzene sulphonic a
B) nitrobenzone

The correct reactivit
A) benzene > alkane
B) alkene > alkane >

Term "arene" is als
A) benzene
B) alkenes

Benzene and their
A) aliphatic hydroca
B) organic compoun

Which of the follo
A) $AlCl_3$
B) HNO_3

During nitration
A) NO_3^{-1}
B) NO_2^+

Aromatic compo
A) They have high
B) They have a ri

Oxidation of be
A) V_2O_5
B) Ni

A carbon attac
A) primary carb
B) secondary ca

A carbon dire
A) primary
B) secondary

On mono chl
A) 4
B) 3

Methane rea
A) chloroform
B) carbon tet

Saturated h
A) Addition
B) substituti

CHEMISTRY OF HYDROCARBONS

Q.1: Which is symmetrical alkene?
A) $CH{\equiv}\check{C}CH_2$
B) $CH{\equiv}CH$
C) $CH_3\text{-}C{\equiv}C\text{-}CH_3$
D) b) and c)

Q.2: Alkanes are inert at ordinary conditions towards:
A) acids
B) alkalies
C) oxidizing agents
D) all

Q.3: Formation of CO on burning of alkanes is called:
A) Complete combustion
B) Oxidation
C) catalytic oxidation
D) In complete combustion

Q.4: Formation of alcohol, aldehyde, and carboxylic acid from alkanes is called:
A) nitration
B) oxidation
C) catalytic oxidation
D) In complete combustion

Q.5: Alkenes have less hydrogen than corresponding alkanes?
A) one
B) two
C) three
D) four

Q.6: Simplest olefin is:
A) methane
B) ethane
C) ethene
D) ethyne

Q.7: Reaction of HNO_3 with benzene gives:
A) benzene sulphonic acid
B) nitrobenzene
C) maleic anhydrids
D) benzophenone

Q.8: Acylation of benzene gives:
A) benzene sulphonic acid
B) nitrobenzone
C) maleic anhydride
D) benzophenone

Q.9: The correct reactivity series is:
A) benzene > alkane > alkene
B) alkene > alkane > benzene
C) alkene > benzene > alkane
D) alkane > benzene > alkene

Q.10: Term "arene" is also used for:
A) benzene
B) alkenes
C) alkanes
D) alkynes

Q.11: Benzene and their derivatives are called:
A) aliphatic hydrocarbons
B) organic compounds
C) aromatic hydrocarbons
D) hydrocarbons

Q.12: Which of the following acid can be used as a catalyst in Friedel Craft's reactions?
A) $AlCl_3$
B) HNO_3
C) $BeCl_2$
D) NaCl

Q.13: During nitration of benzene, the active nitrating agent is:
A) NO_3^{-1}
B) NO_2^{+}
C) NO_2^{-1}
D) HNO_3

Q.14: Aromatic compounds burn with sooty flame be cause:
A) They have high percentage of hydrogen
B) They have a ring structure
C) They have high percentage of carbon
D) They resist reaction with air

Q.15: Oxidation of benzene occurs in the presence of catalyst:
A) V_2O_5
B) Ni
C) Al_2O_3
D) $FeCl_3$

Q.16: A carbon attached with all three hydrogen or one carbon is called:
A) primary carbon
B) secondary carbon
C) tertiary carbon
D) All of these

Q.17: A carbon directly attached with at least two carbon atoms is called a carbon:
A) primary
B) secondary
C) tertiary
D) all of these

Q.18: On mono chlorination of n- pentane, the number Isomer formed is.
A) 4
B) 3
C) 2
D) 1

Q.19: Methane react with excess of chlorine is presence of diffused sunlight to gives?
A) chloroform
B) carbon tetrachloride
C)methyl chloride
D) methylene chloride

Q.20: Saturated hydrocarbons mainly undergo?
A) Addition reactions
B) substitution reactions
C) Elimination reactions
D) polymerization

Q.21: Which of the following statement is false?
A) Peroxide effect is applicable only HBr and not for the other halogen halides
B) Meta directing groups are deactivating group
C) Chlorination of methane follows an ionic mechanism
D) in benzene the atoms are sp^2 hybridist

Q.22: Ammoniacal silver nitrate is used to distinguish between?
A) Acetone and ethanal
B) Ethylene and ethane
C)Acetylene and ethylene
D) Acetic acid an phenol

Q.23: The negative part of the addendum adds on to the carbon atom joined to the least number.of hydrogen atoms. This statement is called.
A) Beyer's theory
B) markow nikoof's rule
C) Thiele's theory
D) peroxide effect

Q.24: A compound having a triple bond is more reactive because?
A) ther3e is a strain in the molecule
B) valency of hydrogen is different
C) Electron density is higher
D) None

Q.25: Ethylene reacts with H_2SO_4 at 100°C to yield
A) ethyl alcohol
B) Acetaldehyde
C) Ethyl hydrogen sulphate
D) None

Q.26: What is formed in the reaction $C_2H_5OH \rightarrow$?
A) Aldehyde
B) Ketone
C) Ethane
D) Propene

Q.27: Substitution reaction may be ?
A) free radical substitution
B) Nucleophile substitution
C) Electrophilic Substance
D) All are correct

Q.28: Bromoethane on treatment with alcoholic KOH give ?
A) ethyl alcohol
B) butane
C) methane
D) ethylene

Q.29: The reaction of hydrogen bromide is an ethylene is an example of?
A) Addition
B) polymerization
C) Displacement
D) substitution

Q.30: The nitration pf benzene is ?
A) Electrophilic substitution
B) Nucleophilic substation
C) Electrophilic addition
D) Nucleophilic addition

Q.31: In benzene there are ?
A) 2π electron
B) 6 π electron
C) 8 π electrons
D) 3π electrons

Q.32: According to Huckel, monocyclic compounds will show aromaticity when?
A)it shas 4π electrons
B)its has 4π electrons
C) it has 4π + 2 electrons
D) it has (4N+2) π electrons

Q.33: -CHO function is ?
A) Ring open
B) Ring acticating
C) Ring deactivating
D) Ring closing

Q.34: Benzene on treatment with dry HCN and HCI in presence of anhy. $AlCl_3$ followed by hydrolysis form ?
A) Chlorobenzene
B) Benzoic acid
C) Benzaldehyde
D) Cyan benzene

Q.35: Acylation of benzene to produce aliphatic aromatic-ketones is called
A) Benzoin condensation 0
B) Hydroformylation
C) Friedel Crafts reaction
D) None

Q.36: According to Huckel rule, the number of it electrons in anthracene is?
A) 12
B) 14
C) 10
D) 20

Q.37: Which of the following molecule consists of multi center π bonding
A) Ethane
B) Butane
C) Benzene
D) None of these

Q.38: The end product of the reaction $C_6H_6 + Cl_2 \rightarrow$ sunlight?
A) C_6H_5Cl
B) 0 - $C_6H_4 + Cl_2$
C) $C_6H_6Cl_6$
D) p - $C_6H_4 + CI_2$

Q.39: Formation of disubstituted derivative from mono substituted bcniene results in the following number of isomers
A) One
B) two
C) three
D) Four

Q.40: The correct _structure for benzene was first proposed by ?
A) Faraday
B) Kekule
C) Wohler
D) Davy

Q.41: Anhydrous AlC11 is used in
A) (a)- Electron rich
B) Insoluble Chloride and alu

Q.42: In which case the C – C bo
A) butene
B) Butane

Q.43: All the common directing reactions ?
A) Deactivate
B) Activate

Q.44: The reaction of benzene
A) Benzene hexachloride
B) chlorobenzene

Q.45: Benzene contains doub
A) Double bonds in behze
B) Resonance lwoers the
C) sbouble bons change t
D) None

Q.46: The centric formula fo
A) Dewar
B) Armstrong aid Bayer

Q.47: Which of the followin the corresponding ni
A) CO_2H_6
B) CH_5NO_2

Q.48: Toluene on oxidatio
A) Phenol
B) Benzoic

Q.49: O,p-directing group
A) Activating groups
B) Inductive effect

Q.50: Alkyl groups are O-
A) Resonance effect
B) Resonance effect

Q.51: Friedal crafts reac
A) Aniline
B) Benzene

Q.52: Benzene easily sh
A) ring fission react
B) addition reactio
C) electrophilic sub
D)Nucleophilic sub

Q.53: The ratio of σ an
A) 2
B) 4

Q.54: Which of the fo
A) Xylene
B) Cumene

Q.55: Aromaticity of
A) Ring
B) Delocalizatio

Q.56: Nitration of to
A) O- position
B) m-position

Q.57: Which of the
A) Brominatio
B) Have unsha

Q.58: Which compo
I) CH_3CH_3
A) only I
B) Only III

Q.59: The most st
A) CH_3^-
B) $(CH_3)_2CH$

Q.41: Anhydrous AIC11 is used in the Friedel Crafts reaction because it is ?
A) (a)- Electron rich
B) Insoluble Chloride and aluminum ion
C) Soluble in ether
D) Electron deficient

Q.42: In which case the C - C bond length is same?
A) butene
B) Butane
C) Benzene
D) I-Propyne

Q.43: All the common directing groups the benzene ring towards electrophilic substitution reactions ?
A) Deactivate
B) Activate
C) both
D)None

Q.44: The reaction of benzene with chlorine in prances of Fe gives ?
A) Benzene hexachloride
B) chlorobenzene
C) Benzyl chloride
D) Benzoyl chloride

Q.45: Benzene contains double bonds but does not give addition reactions because?
A) Double bonds in behzene are strong
B) Resonance lwoers the energy of benzene stabilistion
C) sbouble bons change their position rapidly
D) None

Q.46: The centric formula for benzene was proposed by
A) Dewar
B) Armstrong aid Bayer
C) Landenberg
D) Kekule

Q.47: Which of the following is expected to undergo nitration more easily and readily to furnist the corresponding nitro derivatives employing the usual nitrating mixture ?
A) CO_2H_6
B) CH_5NO_2
C) $C_6H_5CH_3$
D) $C_6H_5CCl_3$

Q.48: Toluene on oxidation with air in presence V_2O_5 yields?
A) Phenol
B) Benzoic
C) Benzaldehyde
D) Benzoic acid

Q.49: O,p-directing groups are generally.
A) Activating groups
B) Inductive effect
C) Neutral groups
D) None of these

Q.50: Alkyl groups are 0- and p- directing because of?
A) Resonance effect
B) Resonance effect through hyper conjugation
C) Inductive effect
D) all

Q.51: Friedal crafts reaction does not occur in case of?
A) Aniline
B) Benzene
C) naphthalene
D) Pyridine

Q.52: Benzene easily show?
A) ring fission reaction since it is unstable
B) addition reaction since it is saturated
C) electrophilic substantiation reaction due to stable ring and high π electron density
D)Nucleophilic substantiation reactions due to stable ring and minimum electron density

Q.53: The ratio of σ and π bond in benzene is?
A) 2
B) 4
C) 6
D) 8

Q.54: Which of the following is polycyclic compound?
A) Xylene
B) Cumene
C) styrene
D)Naphthalene

Q.55: Aromaticity of benzene Is due to ?
A) Ring
B) Delocalization
C) Delocalization of π electrons
D) None

Q.56: Nitration of toluene takes place at?
A) O- position
B) m-position
C) p-Position
D) both o- and p- position

Q.57: Which of the following reactions confirm the presence of saturation in benzene
A) Bromination in sunlight
B) Have unshared electrons pairs
C) Bromination with $FeBr_3$
D) Hydrogenation

Q.58: Which compounds can be obtained from ethene in a single step reaction
I) CH_3CH_3 **II) CH_3COOH** **III) CH_3OCH_3**
A) only I
B) Only III
C) Only II
D) Only II and III

Q.59: The most stable carbanion is
A) CH_3^-
B) $(CH_3)_2CH^-$
C) $(CH_3)_3C-$
D) $CH_3CH_2^-$

Q.60: The most reactive halogen in the halogenations of alkanes under sunlight is
A) Cl_2
B) I_2
C) Br_2
D) F_2

Q.61: Which of the followingreaction will yield 2-bromopropane?
A) $HC \equiv CH + 2HBr$
B) $CH_2CH = CH_2 + Br_2$
C) $CH_3HC = CH_2 + HBr$
D) $CH_2CH = CH_2 + CH_3\text{-}Br$

Q.62: Markownikoff's rule provides guidance of addition of HBr on
A) $CH_2 = CH_2$
B) $CH_3\,CH = CHCH_3$
C) $CH_3\,CH = CH_2$
D) $CH \equiv CH$

Q.63: When 1-butene reacts with cold dilute $KMnO_4$ in basic media, the product formed will b
A) 1,1- Butan-diol
B) But-1,2-diol
C) 1,3-Butan-diol
D) But-1,4-diol

Q.64: Addition of HCl to which of the followings follow the Markownikov's rule?
A) 2-methyl-2-butene
B) 2-butene
C) 2,3-dimethyl-2-butene
D) 2-pentene

Q.65: Nitration of benzene by HNO_3 and H_2SO_4 is
A) Electrophilic substitution
B) Nucleophilic substitution
C) Nucleophilic substitution
D) Free radical substitution

Q.66: Benzene in presence of $AlCl_3$ produces acetophenone when reacts with; (2011)
A) Acetyl chloride
B) acetic acid
C) Ethyl benzene
D) Ethanoic acid

Q.67: The complete combustion of Alkanes normally gives
A) $CO_2 + H_2O$
B) CO_2 only
C) $CO + H_2O$
D) CO only

Q.68: The substitution of a '-H' and ' $-NO_2$' group in benzene is called: (2011)
A) Nitration
B) Ammonolysis
C) Sulphonation
D) Reduction of benzene

Q.69: $X + HBr \longrightarrow CH_3\text{-}CH(Br)\text{-}CH_3$ X in the above reaction is
A) $CH_3 - HC{=}CH_2$
B) $CH_3 - HC_2 - CH_2\text{-}Br$
C) $CH3 - H_2C\text{-}CH_3$
D) $CH_3 - C = CH$

Q.70: The combustion of one mole of C_3H_8 will produce how many moles of CO_2
A) 4
B) 6
C) 3
D) 8

Q.71: Which structures show a primary alcohol that cannot be dehydrated to form an alkene
I CH_3OH II CH_3CH_2OH III $CH_3CH(OH)CH_3$
A) Only I
B) Only II and III
C) Only I and II
D) Only I and II

Q.72: 1,2-Dibromoethane on treatment with ethanolic potassium hydroxide produces
A) Ethane
B) 2-Propanol
C) Ethene
D) Ethyne

Q.73: The reaction conditions leading to the best yield of C_2H_5Cl are
A) C_3H_8 (excess) + $Cl_2 \xrightarrow[Light]{UV}$
B) C_4H_{10} (excess) + $Cl_2 \xrightarrow[Light]{UV}$
C) $C_2H_6 + Cl_2 \xrightarrow{dark}$
D) $C_2H_6 + Cl_2 \xrightarrow[Light]{UV}$

Q.74: The method by which alkenes are added on to hydroxyl group to form glycol is called
A) Hydration
B) Glycolation
C) Hydroxylation
D) Epoxidation

Q.75: A C = C bond is
A) Longer than C – C bond
B) Weaker than C = C bond
C) Weaker than C – C bond
D) Shorter than C = C bond

Q.76: Compound with highest hydrogen to carbon ratio is
A) Alkene
B) Cycloalkane
C) Benzene
D) Alkane

Q.77: The reaction $CH_4 + Cl_2 \xrightarrow{UV} CH_3Cl + HCl$ is an example
A) Elimination
B) Addition
C) Substitution
D) Rearrangement

Q.78: The temp used for the hydrogenation of alkenes using Ni is
A) 200 °C
B) 200-300 °C
C) 400 °C
D) 1000 °C

Q.79: Hydrogenation of unsaturated oils is done by using: (2011)
A) Finally divided nickel
B) finally divided iron
C) vanadium pentaoxide
D) copper

Q.80: To prepare alkenes from alkyl halide the process used is
A) Substitution
B) Elimination
C) Hydrogenolysis
D) None of them

Q.81: Chemical name of the insectic
A) DDT
B) Hexachlorocyclohexane

Q.82: Gammexane is obtained from
A) Br_2 in bright sunlight (in the
B) Cl_2 in bright sunlight (in the
C) CH_3Cl in the presence of an
D) $COCl_2$ in the presence of an

Q.83: Point out the wrong statem
A) It forms only one monosub
B) The C – C bond distance i
C) It is a resonance hybrid o
D) It has three delocalized n

Q.84: Anti Markownokov's prod
A) Propene
B) 1-Butene

Q.85: Which of the following s
A) $AlCl_3$, $CaCl_2$
B) H_2SO_4, H_3PO_4

Q.86: Anti Markownikoff's ad
A) Symmetrical
B) Unsymmetrical

Q.87: Alkenes usually show
A) Electrophilic addition
B) Nucleophilic addition

Q.88: Nitration of toluene i
A) p-nitrololuene
B) o-nitrotoluene

Q.89: When2-Bomobutane
A) CH- CH=CH- CH_3
B) CH_3- CH_2- CH= C

Q.90: Hydrogenation of b
A) Cyclohexane
B) Cyclohexene

Q.91: The order of dehy
A) 1°>2°>3°
B) 2°>3°>1°

Q.92: The introduction
A) Acylation.
B) Alkylation

Q.93: The order of rea
A) HI>HCl>HBr
B) HCl>HI>HBr

Q.94: Treatment of
yields:
A) Ethane
B) Ethanal

Q.95: Which deriva
reactions?
A) Benzoic Aci
B) Methyl ben

Q.96: Which of th
H_2SO_4 react
A) Sulphonat
B) Hydrogen

Q.97: The correct
A) $I_2>Br_2>C$
B) $F_2>Cl_2>$

Q.98: Which car
A) P_4O_{10}
B) H_3PO_4

Q.99: When pu
reacted

What is
A) elimin
B) Dehy

Q.81: **Chemical name of the insecticide gammexene is:**
A) DDT
B) Hexachlorocyclohexane
C) Benzene hexachloride
D) Hexachloroethane

Q.82: **Gammexane is obtained from benzene when it reacts with:**
A) Br_2 in bright sunlight (in the absence of a catalyst)
B) Cl_2 in bright sunlight (in the absence of a catalyst)
C) CH_3Cl in the presence of anhydrous $AlCl_3$
D) $COCl_2$ in the presence of anhydrous $AlCl_3$

Q.83: **Point out the wrong statement in relation to the structure of benzene:**
A) It forms only one monosubstitution product
B) The C – C bond distance in benzene is uniformly 1.397Å
C) It is a resonance hybrid of a number of canonical forms
D) It has three delocalized n-molecular orbitals

Q.84: **Anti Markownokov's product is given by .**
A) Propene
B) 1-Butene
C) 2-butene
D) Both a and c

Q.85: **Which of the following sets cannot be used for dehydration of alcohols?**
A) $AlCl_3$, $CaCl_2$
B) H_2SO_4, H_3PO_4
C) H_2SO_4, P_2O_5
D) P_2O_5, Al_2O_3

Q.86: **Anti Markownikoff's addition is carried by _____ alkenes:**
A) Symmetrical
B) Unsymmetrical
C) Akyl halides
D) None of the

Q.87: **Alkenes usually show mechanism of**
A) Electrophilic addition reaction
B) Nucleophilic addition reaction
C) Electrophilic substitution reaction
D) Nucleophilic substitution reaction

Q.88: **Nitration of toluene in the presence of H_2SO_4 at 100°C gives**
A) p-nitrololuene
B) o-nitrotoluene
C) 2,4-dinitrotoluene
D) 2,4,6-trinitrotoluene

Q.89: **When2-Bomobutane reacts with alcoholic KOH the major product is**
A) $CH-CH=CH-CH_3$
B) $CH_3-CH_2-CH=CH_2$
C) $CH_3-CH_2=CH(OH)-CH_3$
D) $CH_3-CH_2-CO-CH_3$

Q.90: **Hydrogenation of benzene in the presence of Ni at 200°C produces**
A) Cyclohexane
B) Cyclohexene
C) Cyclohexadiene
D) Cyclohexatriene

Q.91: **The order of dehydration of Alcohol is**
A) 1°>2°>3°
B) 2°>3°>1°
C) 1°>3°>2°
D) 3°>2°>1°

Q.92: **The introduction of $R-\overset{O}{\overset{\|}{C}}$ group in benzene is called:** (2012)
A) Acylation.
B) Alkylation
C) Carbonyl reduction
D) Formylation

Q.93: **The order of reactivity of halogen acids with Alkenes is**
A) HI>HCl>HBr
B) HCl>HI>HBr
C) HI>HBr>HCl
D) HCl>HBr>HI

Q.94: **Treatment of ethane with cold sulphuric acid followed by reaction with boiling water yields:** (2019)
A) Ethane
B) Ethanal
C) Ethanol
D) Ethyne

Q.95: **Which derivative of benzene shows maximum reactivity in electrophilic substitution reactions?** (2019)
A) Benzoic Acid
B) Methyl benzene
C) Benzaldehyde
D) Nitrobenzene

Q.96: **Which of the following reactions takes place when a mixture of concentrated HNO_3 and H_2SO_4 reacts on benzene at 75°C?**
A) Sulphonation
B) Hydrogenation
C) Nitration
D) Dehydration

Q.97: **The correct order of reactivity of halogens with alkanes is**
A) $I_2>Br_2>Cl_2>F_2$
B) $F_2>Cl_2>I_2>Br_2$
C) $I_2>Cl_2>F_2>Br_2$
D) $F_2>Cl_2>Br_2>I_2$

Q.98: **Which can be used for dehydration of Alcohol?**
A) P_4O_{10}
B) H_3PO_4
C) H_2SO_4
D) All of them

Q.99: **When purely alcoholic solution of a sodium/potassium hydroxide and halogenakanes are reacted an alkene is formed:** $CH_3-CH_2-Br \xrightarrow{\text{Alcholic KOH/NaO}} CH_2=CH_2$ (2011)
What is the mechanism of this reaction?
A) elimination
B) Dehydration
C) Debromination
D) Nucleophilic substitution

Q.100: The attacking electrophilic species in sulphonation of benzene is:
A) SO_2
B) SO_4^{2-}
C) SO_3
D) HSO_3^-

Q.101: Benzene vapour mixed with air when passed over V_2O_5 catalyst at 450°C gives:
A) Glyoxal
B) Maleic anhydride
C) Oxalic acid
D) Fumaric acid

Q.102: Most common reactions of benzene (aromatic hydrocarbon) and its derivatives are:
A) Electrophilic addition reactions
B) Nucleophilic addition reactions
C) Electrophilic substitution reactions
D) Nucleophilic substitution reactions

Q.103: Ethylene can be prepared by the following process except
A) Dehydration of ethanol
B) Ethyl bromide $+KOH_{(alc)}$
C) Partial reduction of ethyne
D) None

Q.104: The reaction $C_nH_{2n} + H_2 \xrightarrow{Ni} C_nH_{2n+2}$ is known as
A) Clemmensen reaction
B) Sabatier and Senderen's reaction
C) Koble's reaction
D) Wurtz reaction

Q.105: Halogenation of alkanes is an example of
A) Free radical substitution
B) Electrophilic substitution
C) Nucleophilic substation
D) oxidation

Q.106: Which of the following decolorizes the alkaline/acidic $KMnO_4$ solution
A) C_3H_8
B) C_2H_4
C) C_2H_6
D) C_6H_6

Q.107: 1,2-Dibromo-3-chloropropane (DBCP) has been used in the control of earthworm in agricultural land is prepared by
A) $CH_3CH_2CH_2Cl + 2Br_2 \rightarrow DBCP + 2HBr$
B) $CH_2 = CHCH_2Cl + Br_2 \rightarrow DBCP$
C) $CH_3CHBrCH_2Br + Cl_2 \rightarrow DBCP + HCl$
D) $ClCH_2CH = CH_2 + PBr_5 \rightarrow DBCP + PBr_3$

Q.108: The number of carbon atoms in toluene is
A) 6
B) 12
C) 7
D) 14

Q.109: The structure of benzene is
A) Trigonal Planer
B) Linear
C) Tetrahedral
D) Co-planer

Q.110: Molecular orbital treatment gave the concept of
A) Hybridization
B) delocalization
C) localization
D) None of these

Q.111: Meta directing groups are also called as:
A) Deactivating groups
B) Electron donating groups
C) Activating groups
D) All of these

Q.112: The function of anhydrous $AlCl_3$ in Friedel-Crafts reaction is to
A) Absorb water
B) Produce eletrophile
B) Absorb HCl
D) Produce nucleophile

Q.113: Carbon atoms in benzene molecule is inclined at an angle of:
A) 120°
B) 109.28°
C) 180°
D) 60°

Q.114: When benzene is treated with excess of Cl_2 in the presence of I_2, the end product is:
A) Monochlorobenzene
B) Hexachlorocyclohexane
C) Trichlorobenzene
D) Benzene hexa iodide

Q.115: With Baeyer's reagent ethene and ethyne form
A) Acetic acid and formic acid
B) Oxalic acid and ethane glycol
C) Ethylene glycol and oxalic acid
D) Formic acid and acetic acid

Q.116: Which catalyst of hydrogenation of hydrocarbon needs a high activation temperature:
A) Ni
B) Pd
C) Pt
D) Raney Nickle

Q.117: Unsaturated nature of alkene and alkyne can be detected by
A) Ozonolysis
B) Decolourization of pink colour of Baeyer's reagent
C) Decolourisation of red colour of Br_2 in CCl_4
D) All

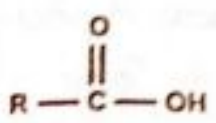
Q.118: Light initiates the following reaction
alkane + chlorine → chloroalkane + hydrogen cloride
What happens to chlorine in this photochemical reaction?
A) Heterolytic fission to give an electrophile
B) Heterolytic fission to give a free radical
C) Homolytic fission to give an electrophile
D) Homolytic fission to give a free radical

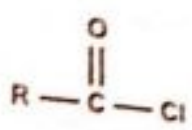
Q.119: Benzene reacts with acetyl chloride in presence of AlCl3 to give
A) Benzaldehyde
B) Benzyl chloride
C) Acetophenone
D) Benzophenone

Q.120: The total number of sigma bonds between C-H in benzene are
A) 6
B) 12
C) 3
D) 8

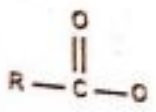
Q.121: For halogenation the poorest yield is given by
A) Chlorination
B) Iodination
C) Bromination
D) Fluorination

Q.122: The introduction of an alkyl group in benzene takes place in the presence of $AlCl_3$ and: (2013)

a. 

b. 

c. 

d. 

A) a
B) b
C) c
D) d

Q.123: Nitration of benzene happen by mixing HNO_3 and H_2SO_4 in _____ ratio
A) 1:2
B) 1:3
C) 1:4
D) 1:1

Q.124: The Markownikof's rule is applicable only on
A) 2-Butene
B) 2,3 Dimethyl-2-butene
C) 2-Bromo-3-chloro-2-butene
D) 2-Methyl-2-butene

Q.125: Baeyer's reagent is
A) Alkaline $KMnO_4$ solution
B) Neutral $KMnO_4$ solution
C) Acidic K_2MnO_4
D) Aqueous bromine solution

Q.126: The function of $AlCl_3$ in Friedel Crafts reaction is:
A) to absorb water
B) to produce electrophile
C) to absorb HCl
D) to produce nucleophile

Q.127: Anhydrous $AlCl_3$ is used in the Friedel Crafts reaction because it is:
A) Electron rich
B) insoluble to chloride and aluminium ion
C) Soluble in ether
D) electron deficient

Q.128: In nitration , H_2SO_4 is used as:
A) Solvent
B) Sulphonating agent
C) Dehydrating agent
D) Nitronium ion producer

Q.129: In Friedel Crafts alkylation, besides $AlCl_3$ the other reactants are:
A) $C_6H_6 + CH_3Cl$
B) $C_6H_6 + NH_3$
C) $C_6H_6 + CH_4$
D) $C_6H_6 + CH_3COCl$

Q.130: Which of the following is a hydrocarbon?
A) Urea
B) Ammonium cyanate
C) Benzene
D) Phenol

Q.131: Aromatic compounds burn with sooty flame because:
A) They have a ring structure of carbon atoms
B) They have a relatively high percentage of hydrogen
C) They have a relatively high percentage of carbon
D) They resist reaction with oxygen of air

Q.132: A test use to distinguish between benzene and alkyl substituted benzene is;
A) Elimination
B) Hydrogenation
C) substitution
D) side chain oxidation

Q.133: The substituent which is attached first to the ring before other substituents, is called_____
A) Reference atom
B) Reactive atom
C) Main atom
D) Functional atom

Q.134: The electron density is present _____ of the benzene ring.
A) Side wise
B) Below
C) Above
D) both b & c

Q.135: Which of following having delocalized electron:
A) Benzene
B) CH_4
C) Cyclohexane
D) C_2H_6

Q.136: Benzene molecule is
A) Tetrahedral
B) Pyramidal
C) Planar
D) Trigonal

Q.137: Pyridine is less basic than triethylamine because:
A) Pyridine has aromatic character
B) Nitrogen in pyridine is sp^2 hybridized
C) Pyridine is a cyclic system
D) In pyridine, lone pair of nitrogen is delocalized

Q.138: In free radical mechanism of substitution of alkanes the last step is
A) Initiation
B) Termination
C) Propagation
D) Arinium ion formation

Q.139: Among paraffins it is found that with an increase in molecular weight which property does not increase
A) Reactivity
B) vapor pressure
C) solubility in water
D) All of these

Q.140: X-ray studies of benzene shows that it is cyclic hexagonal planar structure. Mark the incorrect statement about benzene:
A) It has 120° bond angle
B) It has C - C bond length 1.397A0
C) It has C - H bond length 1.09A°
D) C - C bond length are unequal

Q.141: The correct order of halogenation of benzene is
A) F > Br > Cl > I
B) F > Cl > Br >I
C) Br > Cl > I > F
D) I > F > Cl > Br

Q.142: Which one of the following is a powerful electrophile use to attack on the electrons of benzene ring? (2015)
A) $FeCl_2$
B) Cl^+
C) $FeCl_4^-$
D) Cl_2

Q.143: For halogenation of benzene normally we use
A) light
B) Sunlight
C) radiation
D) None of these

Q.144: Which of the following is not o and p directing group?
A) –NH2
B) –X (halogens)
C) –OH
D) –CHO

Q.145: Which of the following is difficult to be nitrated:
A) Benzene
B) Toluene
C) Nitrobenzene
D) phenol

Q.146: Carbon in benzene undergoes sp^2 hybridization and the bond angle is 120°. these parameters will change for all C-atoms when:
A) sigma complex is formed
B) After alkylation
C) reduction to cyclohexane
D) All of these

Q.147: What is the correct set of conditions for the conversion of benzene into nitrobenzene?

	Acid	Temperature
A	Dilute HNO_3	100° C
B	Concentrated HNO_3	0° C
C	Concentrated HNO_3 and Concentrated H_2SO_4	10° C
D	Concentrated HNO_3 and Concentrated H_2SO_4	50°-55 °C

Q.148: Benzene contains double bonds but usually does not give addition reaction because:
A) Double bonds in benzene are strong
B) Doubled bonds change their position rapidly
C) Resonance lowers the energy of benzene molecule and leads to greater stabilization
D) None

Q.149: The test shown the unsaturation of alkene ?
A) Bayer's
B) Ozone's
C) Bromine's
D) All

Q.150: Catalytic oxidation of alkane is used industrially to prepare:
A) Higher fatty acids
B) Ketones
C) Alkyl ammine
D) Esters

Q.151: Among the following statements on the nitration of aromatic compounds, the false one is:
A) The rate of nitration of benzene is almost the same as that of hexadeuterobenzene
B) The rate of nitration of toluene is greater than that of benzene
C) The rate of nitration of benzene is greater than that of hexadeuterobenzene
D) Nitration is an electrophilic substitution reaction

Q.152: Methyl group attached to benzene can be oxidized to carboxyl group by reacting with:
A) Fe_2O_3
B) $KMnO_4$
C) $AgNO_3$
D) Cr_2O_3

Q.153: Adding of C_{l2} to benzene in the presence of $AlCl_3$ is an example of:
A) Addition
B) Substitution
C) Halogenation
D) Elimination

Q.154: The catalyst used for fr
A) FeX_3
B) $FeCl_3$

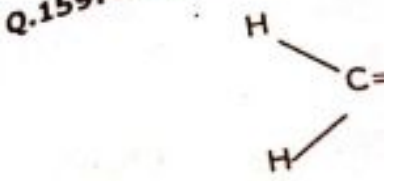
Q.155: For halogenation of be
A) H_2SO_4
B) $AlCl_3$

Q.156: Which hydrocarbon, give ethanoic acid on
A) $CH_3CH{=}CH_2$
B) $CH_3CH{=}CHCH_3$

Q.157: Among the follow
A) $-NH_2$
B) $-N(CH_3)_2$

Q.158: Catalytic Oxidati
A) Carrboxylic acid
B) Aldehyde

Q.159: Bromination of



A) Identificatio
B) Detection o
C) Detection
D) Detection

Q.160: Which comp
A) Propene
B) Ethene

Q.161: Which of t with brom
A) Fe^{-3}
B) Br^-

Q.162: Butane m
A) 4
B) 5

Q.163: Reaction
A) Propa
B) Addit

Q.164: Haloth
A) Etha
B) Meth

Q.165: Which
A) Eth
B) Phe

Q.166: Intro
A) Al
B) Ca

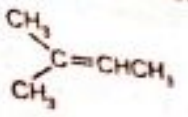
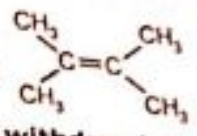
Q.167: Wha
A) P
B) D

Q.168: Thr
A)
B)

Q.169: Af
A)
B)

Q.154: The catalyst used for friedel craft reaction is
A) FeX_3
B) $FeCl_3$
C) $AlCl_3$
D) anhydrous $AlCl_3$

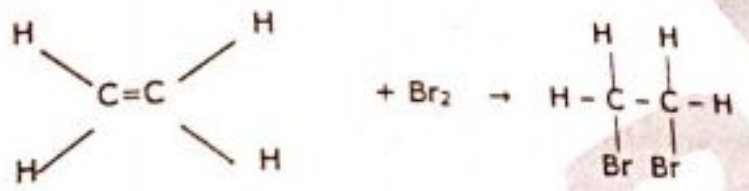
Q.155: For halogenation of benzene, which reagent is used: (2017)
A) H_2SO_4
B) $AlCl_3$
C) HNO_3
D) HCl

Q.156: Which hydrocarbon, on treatment with hot acidified potassium manganate(VII), would give ethanoic acid only? (2013)
A) $CH_3CH=CH_2$
B) $CH_3CH=CHCH_3$
C) 
D) 

Q.157: Among the following which one has electron withdrawing effect: (2017)
A) $-NH_2$
B) $-N(CH_3)_2$
C) -CHO
D) -I

Q.158: Catalytic Oxidation of alkanes results in the formation of _____: (2017)
A) Carrboxylic acid
B) Aldehyde
C) Ketone
D) Alcohol

Q.159: Bromination of alkene is shown in the following reaction. This reaction is used for (2018)



A) Identification of Primary and secondary alcohols
B) Detection of ketones
C) Detection of aldehydes
D) Detection of double bond

Q.160: Which compound is obtained by the elimination of bromopropane? (2018)
A) Propene
B) Ethene
C) Propane
D) Butene

Q.161: Which of the following acts as electrophile in the electrophilic substitution of benzene with bromine? (2018)
A) Fe^{-3}
B) Br^-
C) $FeCl_4^-$
D) Fe^{+2}

Q.162: Butane molecule can have max. ne of isomers (2018)
A) 4
B) 5
C) 3
D) 2

Q.163: Reaction mechanism of alkanes with halogens is known as (2018)
A) Propagation
B) Addition
C) Elimination
D) Free radical substitution

Q.164: Halothane is a halo derivative of (2018)
A) Ethanol
B) Methane
C) Methanol
D) Ethane

Q.165: Which of following compound is solid and room temperature?
A) Ethanal
B) Phenol
C) Butane
D) Methanol

Q.166: Introduction of RCO group to a compound is called
A) Aldehydration
B) Carboxylation
C) Acylation
D) Hydrogenation

Q.167: What happens when naphthalene balls are put inside kerosene:
A) Precipitates
B) Dissolves easily
C) Dissolves upon heating
D) Does not dissolve

Q.168: Three fused benzene rings are found in:
A) Naphthalene
B) Phenolphthalein
C) Anthracene
D) Triphenyl methane

Q.169: After ozonolysis of benzene, the product is:
A) Benzene triozonide
B) Ethanediol
C) Glyoxal
D) All of them

Q.170: Catalytic dehydrogenation of n-haptane in presence of Cr_2O_3/Al_2O_3 at 750 K gives:
A) iso-heptane
B) toluene
C) 1-heptene
D) 2, 3-dimethylpentene-1

Q.171: Bromine in an inert solvent is added separately to hexane, hexene, benzene and methylbenzene. In which of the following pairs will the observations be the same?
A) Hexane and benzene
B) Hexene and methylbenzene
C)) Hexane and hexane
D) Hexene and benzene

Q.172: Both methane and ethane can be prepared in one step by the reaction of:
A) C_2H_4
B) CH_3Br
C) CH_3CH_2OH
D) CH_3OH

Q.173: Addition of halogen to alkene is a electrophilic addition reaction. Number of steps involved in the mechanism of reaction is/are:
A) 2
B)1
C) 3
D)4

Q.174: In which of the following, the bond length between carbon and carbon atom is equal:
A) 2-butene
B) 1-Butene
C) Benzene
D) 1-propyne

Q.175: In chlorination of benzene, the reactive species is:
A) Cl^+
B) Cl^2
C) Cl^-
D) Cl_2^-

Q.176: $C_6H_6 \xrightarrow[H_2SO_4]{NHO_3} X \xrightarrow[FeCl_3]{Cl_2} Y$ **. In the above sequence Y is:**
A) 1-nitrochloro benzene
B) 4-nitrochlorobenzene
C) 3-nitrochlorobenzene
D) 1, -nitrochlorobenzene

Q.177: Which of the following has lowest knocking property?
A) Olefins
B) Aromatic hydrocarbons
C) Straight chain paraffins
D) Branched chain paraffins

Q.178: Order of reactivity of alkenes with hydrogen halide is: (2015)
A) HBr > HI > HCl
B) HF > HI >HCl
C) HI>HBr>HF
D) HI > HBr > HCl

Q.179: The simplest and the parent members of aromatic hydrocarbons is
A) Benzene
B) Biphenyls
C) Toluene
D) Naphthalene

Q.180: What is the product formed when propene reacts with HBr? (2013)

a. $CH_3—CH_2—CH_2Br$

b. $CH_2(Br)—CH(Br)—CH_3$

c. $CH_3—CH(Br)—CH_3$

d. $BrCH_2—C\equiv CHBr$

A) a
B) b
C) c
D) d

Q.181: Alkylation of benzene by nitric acid and sulphuric acid is:
A) Electrophilic substitution
B) Nucleophilic substitution
C) Electrophilic addition
D) Free radical substitution

Q.182: $C_6H_6 + CH_3Cl \xrightarrow[AlCl_3]{anhydrous} C_6H_5CH_3 + HCl$ **is an example of:**
A) Friedel-Craft's reaction
B) Wurtz reaction
C) Kolbe's syntheses
D) Grignard reaction

Q.183: The reaction of benzene with chlorine in the presence of iron gives:
A) Benzene hexachloride
B) Benzyl chloride
C) Chlorobenzene
D) Benzoyl chloride

Q.184: Nitration of benzenels carried at _____ ° C:
A) 450
B) 100
C) 40
D) 50

Q.185: In Friedel Crafts reaction, besides $AICI_3$, the other reactants are:
A) $C_6H_6 + CH_3CI$
B) $C_6H_6 + NH_2$
C) $C_6H_6 + CH_4$
D) none of these

Q.186: The reaction given below is a type of

A) Aromatization
B) cyclization
C) hydrogenation
D) All of these

Q.187: Select the true statement about benzene from amongst the following:
A) Because of unsaturation benzene easily undergoes addition reactions
B) There are two types of C - C bonds in benzene molecule
C) There is a cyclic delocalization of n-electrons in benzene
D) Monosubstitution of benzene group gives three isomeric substances

Q.188: Anhydrous $AlCl_3$ is used in the Friedel-Craft's reaction because it is:
A) Electron rich
B) Insoluble to chloride and aluminium Ions
C) Soluble in ether
D) Electron deficient

Q.189: o, p-directing groups are mostly:
A) Activating groups
B) Neutral groups
C) Deactivating groups
D) None of these

Q.190: Which one of the following compound show maximum reactivity towards Friedel crafts alkylation
A) Toluene
B) Aniline
C) Phenol
D) Benzene

Q.191: Which one of the following is a propagation step in the reaction between methane and chlorine?
A) $Cl_2 \rightarrow 2Cl^{\bullet}$
B) $^{\bullet}CH_3 + Cl_2 \rightarrow CH_3Cl + Cl^{\bullet}$
C) $CH_3^{\bullet} + HCl \rightarrow CH_3Cl + H^{\bullet}$
D) $^{\bullet}CH_2Cl + HCl \rightarrow CH_3Cl + Cl^{\bullet}$

Q.192: A hydrocarbon, which is liquid at room temperature, decolorizes aqueous bromine. What could be the molecular formula of the compound?
A) C_2H_2
B) C_7H_{16}
C) C_2H_4
D) $C_{10}H_{20}$

Q.193: Which equation represents an example of Friedel-Craft's reaction?
A) $C_6H_6 + C_2H_5Cl \xrightarrow{AlCl_3} C_6H_5C_2H_5 + HCl$
B) $C_2H_5OH + HCl \xrightarrow{ZnCl_2} ZnCl_2C_2H_5Cl + H_2O$
C) $C_6H_5Cl + CH_3COCl \xrightarrow{AlCl_3} C_6H_5COCH_3 + Cl_2$
D) $C_2H_5Cl + Mg \xrightarrow{Ether} C_2H_5Mgr$

Q.194: Which of the following would be least reactive towards bromine?
A) Nitrobenzene
B) Anisole
C) Phenol
D) Chlorobenzene

Q.195: Which substance in a vehicle exhaust results from incomplete combustion of a hydrocarbon fuel?
A) CO
B) N_2
C) H_2O
D) NO

Q.196: Which reaction is not an electrophilic addition?
A) $CH_2 = CH_2 + HI \longrightarrow CH_3CH_2I$
B) $CH_3CH = CH_2 + Br_2 \longrightarrow CH_3CHBrCH_2Br$
C) $CH_3CH = CH_2 + H_2O \xrightarrow{conc.H_2SO_4} CH_3CH(OH)CH_3$
D) $CH_3COCH_3 + HCN \rightarrow CH_3C(OH)CN$ (CH₃ below)

Q.197: (I) Chlorobenzene and (ii) benzene hexachloride are obtained from benzene by the reaction of chlorine, in the presence of:
A) (i) Direct sunlight and (ii) anhydrous $AlCl_3$
B) (i) sodium hydroxide and (ii) sulphuric acid
C) (i) Ultraviolet light and (ii) anhydrous $FeCl_3$
D) (i) Anhydrous $AlCl_3$ (ii) direct sunlight

Q.198: Among the following compound which one is planar in shape?
A) Methane
B) Benzene
C) Phenol
D) Isobutane

Q.199: The bond order of individual carbon-carbon bonds in benzene is:
A) One
B) Between one and two
C) Two
D) One and two, alternately

Q.200: Six carbon atoms of benzene are of:
A) One type
B) Three types
C) Two types
D) Six types

Q.201: What is the end product which is obtained on the nitration of toluene:
A) o-nitrotoluene
B) 2, 4-dinitrotoluene
C) p-nitrotoluene
D) 2, 4, 6-trinitrotoluene

Q.202: For the reaction given ethane as reactant $\xrightarrow[\text{(ii) } H_2O,\ heat]{\text{(i) } H_2SO_4,\ room\ temperature}$ Z; What will be the product at letter Z

A) Ethyne
B) $CH_3CH_2OSO_3H$
C) $CH_3CH_2OCH_2CH_3$
D) CH_3CH_2OH

Q.203: Which is most readily nitrated?

A) Benzene
B) Aniline
C) Phenol
D) Nitrobenzene

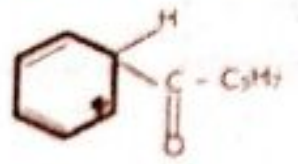
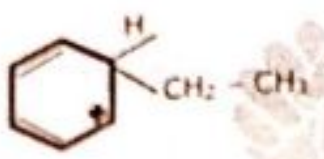
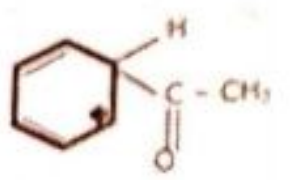
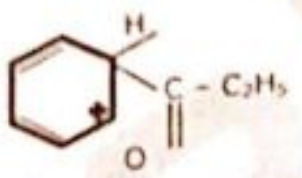
Q.204: Which one of the following reactions shows combustion of a saturated hydrocarbon? (2016)

A) $C_2H_4 + 3O_2 \rightarrow 2CO_2 + 2H_2O$
B) $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$
C) $CH_4 + \frac{1}{2}O_2 \xrightarrow[400°C,\ 200\ atm]{CuL} CH_3OH$
D) $C_2H_2 \frac{5}{2} O_2 \rightarrow 2CO_2 + H_2O$

Q.205: The average bond energy of C-Br is: (2016)

A) 228 $kJmol^{-1}$
B) 200 $kJmol^{-1}$
C) 250 $kJmol^{-1}$
D) 290 $kJmol^{-1}$

Q.206: Immediate product formed when propanoyl chloride reacts with benzene is: (2017)

A) 228 $kJmol^{-1}$
B) 200 $kJmol^{-1}$
C) 250 $kJmol^{-1}$
D) 290 $kJmol^{-1}$

Q.207: Which of the following are 3,5 (meta) directing groups when second group is induced in them: (2017)

I = -NH3 II = -CHO III = -COOH IV = -CH3:

A) II, III and IV
B) II and III
C) I and IV
D) I, II and IV

Q.208: When benzene reacts with acetyl chloride (CH COCL) in the presence of AlClacetophenone is formed. The electrophile in this reaction will be: (2017)

A) CH_3C^+O
B) $AlCl_3$
C) C^+H_3
D) CH_3COCl

Q.209: The reaction of bromine with benzene in the presence of FeBr3 follows the mechanism of: (2017)

A) Electrophilic addition
B) Nucleophilic substitution
C) Electrophilic substitution
D) Nucleophilic addition

Q.210: $C_2H_5 - SO_3H \rightarrow C_2H_5 - OH + H_2SO_4$ choose the correct type for this reaction from the following: (2017)

A) Reduction
B) Oxidation
C) Hydroxylation
D) Hydration

Q.211: For halogenation of benzene, which reagent is used: (2017)

A) H_2SO_4
B) $AlCl_3$
C) HNO_3
D) HCl

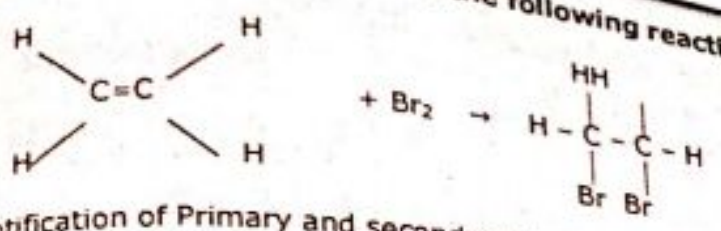
Q.212: Among the following which one has electron withdrawing effect: (2017)

A) $-NH_2$
B) $-N(CH_3)_2$
C) -CHO
D) -I

Q.213: Catalytic Oxidation of alkanes results in the formation of _____: (2017)

A) Carrboxylic acid
B) Aldehyde
C) Ketone
D) Alcohol

Q.214: Bromination of alkene is shown in the following reaction. This reaction is used for (2018)



A) Identification of Primary and secondary alcohols
B) Detection of ketones
C) Detection of aldehydes
D) Detection of double bond

Q.215: Which compound is obtained by the elimination of bromopropane?
A) Propene
B) Ethene
C) Propane
D) Butene

Q.216: Which of the following acts as aelectrocphile in the electrophilic substitution of benzene with bromine? (2018)
A) Fe^{-3}
B) Br^-
C) $FeCl_4^-$
D) Fe^{+2}

Q.217: Butane molecule can have max. ne of isomers (2018)
A) 4
B) 5
C) 3
D) 2

Q.218: Reaction mechanism of alkanes with halogens is known as (2018)
A) Propagation
B) Addition
C) Elimination
D) Free radical substitution

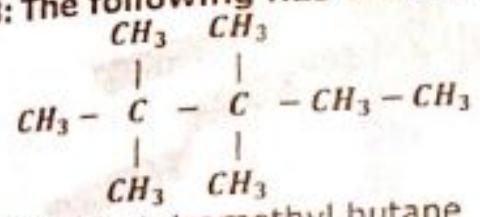
Q.219: Halothane is a halo derivative of (2018)
A) Ethanol
B) Methane
C) Methanol
D) Ethane

Q.220: Which of following compound is solid and room temperature? (2018)
A) Ethanal
B) Phenol
C) Butane
D) Methanol

Q.221: Alkenes undergo: (2019)
A) Electrophilic Addition
B) Electrophilic substitution
C) Nucleophilic substitution
D) Nucleophilic addition

Q.222: Alkenes undergo: (2019)
A) Electrophilic Addition
B) Electrophilic substitution
C) Nucleophilic substitution
D) Nucleophilic addition

Q.223: The following has IUPAC name of: (2020)



A) 2,3 –tetramethyl butane
B) 2,2,3,3-tetramethyl pentane
C) 3,3,4,4-tetramethyl butane
D) 3,4-bis (dimethyl butane)

Q.224: Acetophenone can be formed by which of the following reaction of benzene? (2020)
A) Alkylation
B) Acylation
C) Halogenation
D) Nitration

Q.225: In alkanes, each Carbon has hybridization: (2020)
A) sp^3
B) sp
C) sp^2
D) dsp

Q.226: When CH_3 is attached with the benzene ring, it makes the ring:
A) Good electrophile
B) Good nucleophile
C) Resonance hybrid
D) Extraordinary stable

ANSWERS

1.	D	2.	D	3.	D	4.	C	5.	B	6.	C	7.	B	8.	D	9.	B	10.	A
11.	C	12.	A	13.	B	14.	C	15.	A	16.	A	17.	B	18.	B	19.	B	20.	B
21.	C	22.	B	23.	B	24.	A	25.	C	26.	C	27.	D	28.	D	29.	A	30.	A
31.	B	32.	D	33.	C	34.	C	35.	C	36.	B	37.	C	38.	C	39.	C	40.	B
41.	C	42.	B	43.	B	44.	B	45.	B	46.	B	47.	C	48.	B	49.	A	50.	D
51.	D	52.	C	53.	B	54.	D	55.	C	56.	D	57.	C	58.	A	59.	A	60.	D
61.	C	62.	C	63.	B	64.	A	65.	A	66.	A	67.	A	68.	A	69.	A	70.	C
71.	A	72.	D	73.	D	74.	C	75.	B	76.	D	77.	C	78.	B	79.	A	80.	B
81.	B	82.	B	83.	D	84.	D	85.	A	86.	B	87.	A	88.	D	89.	A	90.	A
91.	D	92.	A	93.	C	94.	C	95.	B	96.	C	97.	D	98.	D	99.	A	100.	C
101.	B	102.	C	103.	D	104.	B	105.	A	106.	B	107.	B	108.	C	109.	A	110.	B
111.	A	112.	B	113.	A	114.	B	115.	C	116.	A	117.	D	118.	D	119.	C	120.	A
121.	B	122.	B	123.	D	124.	D	125.	A	126.	B	127.	D	128.	D	129.	A	130.	C
131.	C	132.	D	133.	A	134.	D	135.	A	136.	C	137.	D	138.	B	139.	D	140.	D
141.	B	142.	B	143.	B	144.	D	145.	C	146.	C	147.	D	148.	C	149.	D	150.	A
151.	A	152.	B	153.	B	154.	D	155.	B	156.	C	157.	C	158.	A	159.	D	160.	A
161.	C	162.	D	163.	D	164.	D	165.	B	166.	C	167.	B	168.	C	169.	C	170.	A
171.	B	172.	B	173.	A	174.	C	175.	A	176.	C	177.	B	178.	D	179.	A	180.	B
181.	A	182.	A	183.	C	184.	D	185.	A	186.	C	187.	C	188.	D	189.	A	190.	B
191.	B	192.	D	193.	A	194.	A	195.	A	196.	D	197.	D	198.	B	199.	D	200.	A
201.	D	202.	D	203.	C	204.	B	205.	D	206.	D	207.	B	208.	A	209.	C	210.	D
211.	B	212.	C	213.	A	214.	D	215.	A	216.	C	217.	D	218.	D	219.	D	220.	B
221.	A	222.	A	223.	B	224.	B	225.	C	226.	B	227.		228.		229.		230.	

B	8.	D	9.	B	10.	A
B	18.	B	19.	B	20.	B
D	28.	D	29.	A	30.	A
	38.	C	39.	C	40.	B
	48.	B	49.	A	50.	D
	58.	A	59.	A	60.	D
	68.	A	69.	A	70.	C
	78.	B	79.	A	80.	B
	88.	D	89.	A	90.	A
	98.	D	99.	A	100.	C
	108.	C	109.	A	110.	B
	118.	D	119.	C	120.	A
	128.	D	129.	A	130.	C
	138.	B	139.	D	140.	D
	148.	C	149.	D	150.	A
		A	159.	D	160.	A
		C	169.	C	170.	A
		D	179.	A	180.	B
		D	189.	A	190.	B
		B	199.	D	200.	A
		A	209.	C	210.	D
		D	219.	D	220.	B
			229.		230.	

ALKYL HALIDES

Q.1: An alkyl halide with two halogen atoms at same carbon is called:
A) vic-dihalide
B) gem-dihalide
C) poly haloalkane
D) primary alkyl halide

Q.2: An alkyl halide with two halogen atoms at two adjacent carbon atoms is called:
A) vic-dihalide
B) gem-dihalide
C) poly haloalkane
D) primary alkyl halide

Q.3: Alkyl halides are prepared from:
A) hydrogenation of alkane
B) hydrogenation of alkene
C) hydrogenation of alkyne
D) halogenation of alkane

Q.4: The maximum electronegativity difference is present between bound:
A) R-F
B) R-H
C) R-Cl
D) R-Br

Q.5: Rate of SN_1 reaction depends upon:
A) concentration of alkyl halide
B) attacking nucleophile
C) concentration of alkyl halide and attacking nucleophile
D) None of these

Q.6: In the reaction 1-Chloro-2-methylpropane + aq. KOH → X + KCl identify X
A) 1-methylpropane
B) 2-methylpropane
C) 1-propene
D) 2-methyl-1propanol

Q.7: Haloform is represented as:
A) CH_3X
B) CHX_3
C) CH_2X_2
D) CX_4

Q.8: Thionyl chloride is preferred in the preparation of chlorine compounds from alcohols because:
A) The reaction goes to completion
B) The reagent is cheap
C) The by products being gases, escapes hence there is no problem of separation of the product
D) None of the above

Q.9: Elimination bimolecular reactions involve
A) First order kinetics
B) third order kinetics
C) second order kinetics
D) All the three

Q.10: Alkyl halides are considered to be very reactive compounds towards nucleophiles, because
A) They have an electrophilic carbon
B) They have an electrophilic carbon and a good leaving group
C) They have an electrophilic carbon and a bad leaving group
D) They have a nucleophilic carbon and good leaving group

Q.11: The rate of E1 reaction depends upon
A) The concentration of substrate
B) The concentration of nucleophile
C) The concentration of substrate as well as nucleophile
D) None of the above

Q.12: In alkyl halides the 'R' cannot be
A) Alkyl
B) Aromatic
C) Aliphatic
D) Saturated hydrocarbon

Q.13: Elimination reactions are usually _____ catalyzed
A) Acid
B) Pt
C) Base
D) Ni

Q.14: Primary alkyl halides follow
A) E_1 mechanism
B) Both E_1& E_2
C) E_2 mechanism
D) None of these

Q.15: If alkyl halide is optically active, S_N1 reactions leads to:
A) Recemization
B) Retention
C) Inversion
D) Resolution

Q.16: Butanenitrile is formed by reaction of KCN with:
A) Propyl alcohol
B) Retention
C) Butyl chloride
D) Propyl chloride

Q.17: Arrange the following halides in the decreasing order of S_N1 reactivity:
(I) $CH_3CH_2CH_2Cl$ (II) $CH_2=CHCH(Cl)$ (III) $CH_3,CH_3CH_2CH(Cl)CH_3$
A) I > II > III
B) II > III > I
C) II > I > III
D) III > II > I

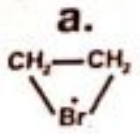
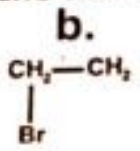
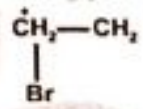
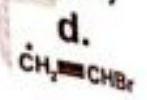
Q.18: In primary alkyl halides, the halogen atom is attached to a carbon which is further attached to how many H-atoms.
A) Two
B) One
C) Three
D) Both a and b

Q.19: The reactivity order of alkyl halides for a particular X group is
A) Et > Me > Pro > But
B) Me >Et > Pro > But
C) Me > Et > Pro > But
D) But > prop > Et > Me

Q.20: SN2 reaction can be carried out in non polar medium by which type of alkyl halide except
A) Primary alkyl halides
B) Tertiary alkyl halides
C) Secondary alkyl halides
D) Both a and b

Q.21: With the increase in size of halogen atom the reactivity of an alkyl halide
A) increase
B) remains Constant
C) decreases
D) None of these

Q.22: In the reaction of ethene with bromine the intermediate formed is: (2012)

a. 
b. 
c. 
d. 

A) a
B) b
C) c
D) d

Q.23: Which is not a nucleophile?
A) OH^-
B) SCN^-
C) $C_2H_5O^-$
D) None of these

Q.24: The reaction of methyl bromide with aq. KOH to form methyl alcohol is:
A) Electrophilic addition
B) Nucleopilic substitution
C) Nucleophilic addition
D) Electrophilic substitution

Q.25: Chloroform can be prepared from ethanol because:
A) It can be oxidized easily
B) It has alpha hydrogen atom
C) It is good solvent
D) It has low boiling point

Q.26: Chloropicrin is used as:
A) Solvent
B) Perfume
C) Anasthetic
D) Tear gas

Q.27: The elimination of hydrogen halide molecule from two adjacent Carbon atom of an alkyl halide is called------- and carried out by
A) Dehalogenation &$KOH_{(alc)}$
B) Dehydrohalogenation &$KOH_{(aq)}$
C) Dehydrohalogenation & $KOH_{(aq)}$
D) Dehydrogenation & $KOH_{(alc)}$

Q.28: In nucleophillic substitution reactions, carboinum ion formation is _____ stable than transition state formation.
A) Less
B) Equally
C) More
D) Not

Q.29: The SN – reaction whose rate of reaction depends upon the Concentrations of two molecules is called
A) SN1
B) SN3
C) SN2
D) SN4

Q.30: E_1 mechanism is generally shown by
A) 1°-RX
B) 3°-RX
C) 2°-RX
D) None of these

Q.31: The order of reactivity of alkyl halides towards nucleophile is: (2013)
A) RI > RBr > RF > RCl
B) RF > RBr > RCl > RI
C) RI > RBr > RCl > RF
D) RF > RCl > RBr > RI

Q.32: Both E_1& E_2 mechanism can be shown by
A) 1°-RX
B) 3°-RX
C) 2°-RX
D) None of these

Q.33: The number of asymmetric carbon atoms in tartaric acid is:
A) 1
B) 4
C) 2
D) 0

Q.34: Chloroform can be used in medicine as:
A) Antipyretic
B) anaesthetic
C) Anthistamine
D) Chloroethane

Q.35: A sample of chloroform which is being used by doctors as anesthetic is generally tested by:
A) $AgNO_{3(aq)}$
B) $AgNo_{3(aq)}$ after boiling with KOH
C) Fehling solution
D) Any of the above

Q.36: Ethyl bromide reacts with alcoholic KOH to form ethylene. The reaction is called
A) Dehydration
B) dehydrohalogenation
C) dehydrogenation
D) decarboxylation

Q.37: When an excess of alkyl halide reacts with alcoholic ammonia we get
A) a primary amine
B) a tertiary amine
C) a secondary amine
D) a mixture of these

Q.38: Which of the following is ionic in character?
A) C_2H_5Br
B) C_6H_5Cl
C) $C_6H_5CH_2Cl$
D) none of these

Q.39: Which is a weak nucleophile?
A) OH^-
B) NH_3
C) Br^-
D) Cl^-

Q.40: Which is a good nucleophile as well as a good leaving group?
A) F^-
B) Br^-
C) Cl^-
D) I^-

Q.41: In substitution reactions, dihaloalkane or secondary halogenoalkane give/show (2012)
A) S_N1 Mechanism
B) Both E_1 and E_2
C) S_N2 Mechanism
D) Both S_N1 and S_N2

Q.42: In alkaline hydrolysis of a tertiary halide by aqueous alkali if concentration of alkali is doubled, then the reaction rate:
A) Will be doubled
B) Will remain constant
C) Will have halved
D) Can't say

Q.43: S_N2 mechanism proceeds through the intervention of:
A) Carbonium ion
B) Free radical
C) Transition state
D) Carbanion

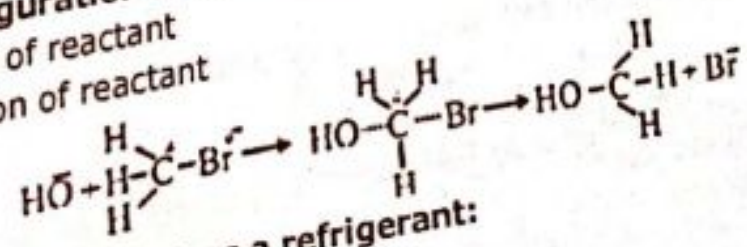
Q.44: Reagent is not used to prepare an alkyl halide from an alcohol is:
A) $HCl + ZnCl_2$
B) PCl_5
C) NaCl
D) $SOCl_2$

Q.45: The alkaline hydrolysis of bromoethane below gives alcohol as the product

$$CH_3-CH_2-Br \rightarrow CH_3-CH_2-OH$$

The reagent and the condition used in this reaction may be:
A) H_2O at room temperature
B) KOH in alcohol
C) Ethanal heat
D) Dil. $NaOH_{(aq)}$ warm

Q.46: In the below reaction, the configuration of product is:
A) 100% same of the configuration of reactant
B) 100% opposite from configuration of reactant
C) 50% retained
D) 50% inverted



Q.47: Which of the following compounds is used as a refrigerant:
A) CCl_4
B) CH_2Cl_2
C) $CHCl_3$
D) CF_2Cl_2

Q.48: Generally the reactions of alkyl halides fall into
A) Substitution
B) Both a & b
C) Elimination
D) None of these

Q.49: The general formula of alkyl halides is
A) $C_nH_{2n}X$
B) $C_nH_{2n+1}X$
C) $C_nH_{2n-1}X$
D) $C_nH_{2n-2}X$

Q.50: The halothane used in hospitals as an anesthetic is chemically: (2014)
A) 2-chloro-2-fluoro-1,1,1-
B) 2-fluoro-2-bromo-1,1,1-
C) 2,2-dibromo-1,1,1-trifluorethane
D) 2-bromo-2chloro-1,1,1-trifluorethane

Q.51: Consider the reaction given below: (2013)

$CH_3CH_2CH_2CH_2Br \xrightarrow{I} CH_3CH_2CH_2CH_2OH$

$CH_3CH_2CH_2CH_2Br \xrightarrow{II} CH_3-CH_2CH=CH_2$

Which statement is true?
A) Reagent for I is KOH in alcohol
B) Reaction I is debromination
C) Reagent for II is KOH in aqueous medium
D) Reaction II is elimination

Q.52: Which one of the following is used as a general anaesthetic in place of diethyl ether?
A) Chloroform
B) CF_3-$CHBr_2$
C) CF_3-CHClBr
D) None

Q.53: Which of the following is known as camphor substitute?
A) C_2Cl_6
B) CF_3-$CHBr_2$
C) $CHCl_3$
D) CF_2Cl_2

Q.54: Which of the following halides would undergo nucleophilic substitution most readily?
A) 1-Chloro-1-butene
B) 3-Chloro-1-butene
C) 2-Chloro-1-butene
D) 4-Chloro-1-butane

Q.55: The elimination of elements of H and X from two adjacent C-atoms is called
A) Dehalogenation
B) Dehydrohalogenation
C) Dehydrogenation
D) All of these

Q.56: If halogenoalkanes are mixed with an excess of ethanolic ammonia and heated under pressure amine are formed. Which amine is formed in the following reaction? (2014)
$CH_3CH_2Br + NH_3 \rightarrow$ Amine
A) $CH_3-CH_2-NH-CH_2-CH_3$
B) $CH_3-CH_2-CH_2-NH_3$
C) $CH_3-CH_2-NH_2$
D) $H_2N-CH_2-CH_2-NH_3$

Q.57: Nucleophile generally attack the site of molecule which is
A) Electron rich
B) Bonded
C) Electron deficient
D) All of these

Q.58: Among the halogen derivatives of ethane, the one which has the highest boiling point is
A) C_2H_5F
B) C_2H_5Br
C) C_2H_5Cl
D) C_2H_5I

Q.59: Preparation of $CHCl_3$ from ethanol and bleaching powder involves:
A) Hydrolysis
B) Chlorination
C) Oxidation
D) All of the above

Q.60: Partial reduction of chloroform is carried out by using:
A) Zn-dust and H_2O
B) Na-Hg and water
C) Zn-dust and HCl
D) Na-Hg and alcohol

Q.61: The product formed at position letter B will be
Ethane + $Br_2 \longrightarrow$ A + $KCN_{(aq)} \longrightarrow$ B
A) Ethene
B) Ethanol
C) Ethyl cyanide
D) No reaction

Q.62: Which one the following will be present at the position of letter B

$$C_2H_5Br \xrightarrow[\text{Alcohol}]{KOH} A \xrightarrow{H_2/Pt} B$$

A) Ethyl alcohol
B) Ethene
C) Acetaldehyde
D) Ethane

Q.63: The mechanism involved in the $H_3C-CH_2-I + NaNH_2$
A) Electrophilic addition
B) Nucleophilic substitution

Q.64: The rate determining step in
A) Carbonium ion formation
B) Neucleophilic attack

Q.65: Tertiary butyl chloride in the
A) S_N1 Mechanism
B) Both E_1 and E_2

Q.66: Methyl chloride in the pres
A) S_N1 Mechanism
B) Both E_1 and E_2

Q.67: Fire extinguisher Pyrene i
A) CO_2
B) $CHCl_3$

Q.68: The product formed by chlorobenzene in H_2SO_4
A) Chloretone
B) Chlorobenzaldichloride

Q.69: Gammhexane is the nar
A) $C_6H_3Cl_3$
B) $C_6H_6Cl_6$

Q.70: Mark the incorrect for
A) It is unimoleeular rea
B) It is two-step mechar
C) 50% inversion and 5
D) It takes place in the

Q.71: During SN2 reaction,
A) Remains same
B) Depends upon the

Q.72: Which of the followi
A) $(R)_2CHX > CH_3X >$
B) $(R)_2CHX > (R)_3C-X$

Q.73: For which mechani
A) E_1 and E_2
B) S_N^1 and S_N^2

Q.74: When $C_nH_{2+1}X_2$ is
A) 1^0 – Alkyl halide
B) 3^0 – Alkyl Halide

Q.75: Which one of the
A) H_2O
B) BF_3

Q.76: Which one of th
A) CH_3F
B) CH_3Br

Q.77: The order of re
A) RF >RCl>RBr
B) RCl>RBr> R

Q.78: S_N2 reaction i
A) Uni-
B) Multi-

Q.79: In secondary how may car
A) Two
B) One

Q.63: The mechanism involved in the following reaction is:
$H_3C - CH_2 - I + NaNH_2 \longrightarrow H_3C - CH_2 - NH_2 + NaI$
A) Electrophilic addition
B) Nucleophilic substitution
C) Electrophilic substitution
D) Nucleophilic addition

Q.64: The rate determining step in the S_N1 reaction is
A) Carbonium ion formation
B) Neucleophilic attack
C) Product formation
D) None

Q.65: Tertiary butyl chloride in the presence of aqueous KOH is likely to undergo
A) S_N1 Mechanism
B) Both E_1 and E_2
C) S_N2 Mechanism
D) Both S_N1 and S_N2

Q.66: Methyl chloride in the presence of aqueous KOH is likely to undergo
A) S_N1 Mechanism
B) Both E_1 and E_2
C) S_N2 Mechanism
D) Both S_N1 and S_N2

Q.67: Fire extinguisher Pyrene is:
A) CO_2
B) $CHCl_3$
C) CCl_4
D) H_2CO_3

Q.68: The product formed by the reaction between 2, 2, 2-trichloroehtanal (Chloral) and chlorobenzene in H_2SO_4 is:
A) Chloretone
B) Chlorobenzaldichloride
C) D.D.T
D) Benzene sulphonic acid

Q.69: Gammhexane is the name given to:
A) $C_6H_3Cl_3$
B) $C_6H_6Cl_6$
C) $C_6H_4Cl_2$
D) Diphenyltrichloroethane

Q.70: Mark the incorrect for SNI mechanism reaction w.r.t alkyl halide?
A) It is unimoleeular reaction
B) It is two-step mechanism reaction
C) 50% inversion and 50% retention of configuration in the product
D) It takes place in the presence of non-polar solvent

Q.71: During SN2 reaction, configuration of the alkyl halide molecule:
A) Remains same
B) Depends upon the carbon-atom
C) Depends on the Electronegativity of halogen
D) Gets Inverted

Q.72: Which of the following is correct order of ease of S_Nl reaction shown by alkyl halide:
A) $(R)_2CHX > CH_3X > (R)_3C\text{-}X > RCH_2X$
B) $(R)_2CHX > (R)_3C\text{-}X > RCH_2X > CH_3X$
C) $CH_3X > RCH_2X > (R)_2CHX > (R)_3C\text{-}X$
D) $(R)_3C\text{-}X > (R)_2CHX > RCH_2X > CH_3X$

Q.73: For which mechanism the only step involved is the same
A) E_1 and E_2
B) S_N^1 and S_N^2
C) E_2 and S_N^2
D) E_1 and S_N^1

Q.74: When $C_nH_{2+1}X_2$ is the general formula the compound is called:
A) 1^0 – Alkyl halide
B) 3^0 – Alkyl Halide
C) 2^0 – Alkyl Halide
D) None of these

Q.75: Which one of the following is not a nucleophile
A) H_2O
B) BF_3
C) H_2S
D) NH_3

Q.76: Which one of the following will have maximum dipole moment?
A) CH_3F
B) CH_3 Br
C) CH_3 Cl
D) CH_3I

Q.77: The order of reactivity of the following alkyl halides for SN2 reaction is
A) RF >RCl>RBr> RI
B) RCl>RBr> RF > RI
C) RF >RBr>RCl> RI
D) RI>RBr>RCl>RF

Q.78: S_N2 reaction is _____ step reaction.
A) Uni-
B) Multi-
C) BI-
D) All of these

Q.79: In secondary alky halides, the halogen atom in attached to a carbon which is attached to how may carbon atoms.
A) Two
B) One
C) Three
D) Four

Q.80: Ethylbromide and Isopropyl chloride can be distinguished by:
A) Alcoholic $AgNO_3$
B) Burning the compounds on spatial
C) Comparing their colours
D) Aqueous KOH solution

Q.81: Chloroform is used as a/an:
A) Fire extinguisher
B) Antiseptic
C) Industrial solvent
D) Insecticide

Q.82: Which of the following reactants will yield ethane?
A) Methyl bromide and sodium
B) Ethanol and H_2SO_4
C) Ethyl bromide and Mg
D) Ethyl bromide and KCN

Q.83: The reaction, whose rate determining equation is unimolecular, is Called
A) SN1
B) SN2
C) SN3
D) SN4

Q.84: The order of the ease of formation of cabonium ion of alkyl halide is
A) Prim. >Sec) >Tert
B) Sec) > Prim. >Tert
C) Tert. >Sec) > Prim.
D) Tert>Pri. >Sec)

Q.85: In elimination reaction, nucleophile attacks on
A) β – Hydrogen
B) β – Carbon
C) β – Carbon
D) none of the above

Q.86: Teflon is used in the making of
A) Adhesive
B) Non stick pans
C) Venyl Tiles
D) Carpets

Q.87: S_N reactions are normally carried out in the presence of
A) Aqueous KOH
B) Alcoholic/Aqueous Amonia
C) Alcoholic/Aqueous KCN
D) All of these

Q.88: When 2-bromobutane reacts with alcoholic KOH, the reaction is called
A) Chlorination
B) Halogenation
C) Dehydrohalogenation
D) Hydrogenation

Q.89: In $S_N1$reaction, the first step is formation of
A) Free Radical
B) Carbocation
C) Carbanion
D) Final product

Q.90: Which of the following is used as general anesthetic in place of diethyl ether
A) $CF_3 - CHCl_2$
B) $CF_3 - CHBr_2$
C) $CF_3 - CHClBr_2$
D) $CF_3 - O - CH_3$

Q.91: Which one of the following species is a nucleophile?
A) CH_3^+
B) BF_3
C) $(CH_3)_3\ C^+$
D) OH^-

Q.92: Which one of the following is an alkyl halide?
A) Chloroform
B) Chlorobenzene
C) Iso propyl chloride
D) Orthochloro toluene

Q.93: The compound is $CH_3 - \underset{Cl}{\overset{CH_3}{C}} - CH_3$

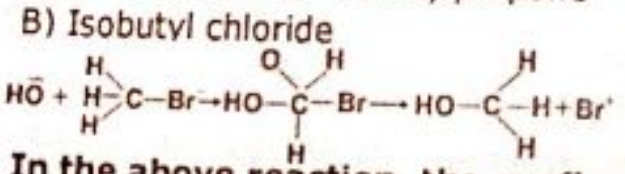
A) a primary alkyl halide
B) a tertiary alkyl halide
C) a secondary alkyl halide
D) not an alkyl halide

Q.94: The IUPAC name of the given compound is: (2015)

$$CH_3—\underset{\displaystyle CH_3}{\overset{|}{CH}}—CH_2—Cl$$

A) 1 – Chloro – 2 – methylpropane
B) Isobutyl chloride
C) 1 – Chloro – 2 – methylbutane
D) 2 – Methyl – 3 Chloropropane

Q.95:



In the above reaction, the configuration of the product is: (2015)
A) 100% same of the configuration of reactant
B) 50% retained
C) 50% inverted
D) 100 % opposite from configuration of reactant

Q.96: Non-sticking frying pan are coated with teflon which is:
A) Ethylene
B) Styrene
C) Tetrafluoreoethylene
D) Chlorofluoroethylene

Q.97: The ease of dehydrohalogenation of alkyl halides is in the order
A) 1° > 2° > 30°
B) 2° > 1° > 3°
C) 2° > 3° > 1°
D) 3° > 2° > 1°

Q.98: 1,2-Dibromo-3-chloropropane (DBCP) has been used in the control of earthworm in agricultural land is prepared by
A) $CH_3CH_2CH_2Cl + 2Br_2 \rightarrow DBCP + 2HBr$
B) $CH_2 = CHCH_2Cl + Br_2 \rightarrow DBCP$
C) $CH_3CHBrCH_2Br + Cl_2 \rightarrow DBCP + HCl$
D) $ClCH_2CH = CH_2 + PBr_5 \rightarrow DBCP + PBr_3$

Q.99: Select a nucleophile from the following:
A) Nitronium ion
B) Carbanion
C) Carbonium ion
D) Ammonium ion

Q.100: IUPAC name of isoprene is
A) 2-Methyl-1,3-butadiene
B) 2-Methyl-1,3-butadiyne
C) 3-Methyl-1,3-butadiene
D) 2-Chloro-1,3-butadiene

Q.101: Isopropyl chloride undergoes hydrolysis by
A) S_N 1 mechanism
B) S_N 2 mechanism
C) Both by S_N 1 and S_N 2 mechanism
D) Neither S_N 1 Nor S_N 2 mechanism

Q.102: For which mechanism only a step is involve:
A) E_1 and E_2
B) SN_1 and E_2
C) E_2 and SN_2
D) E_1 and SN_1

Q.103: Which of the following factors does not affect the S_N1 rate is:
A) Nucleophilicity of the attacking nucleophile
B) Solvent system
C) Stability of the carbonium ion
D) The nature of leaving group

Q.104: An Alkyl halide reacts with NH_3 to give
A) Amid
B) Amine
C) Cyanide
D) Aniline

Q.105: The reaction C_2H_5Cl + aqueous $KOH \rightarrow C_2H_5OH + KCl$ is
A) Electrophili addition
B) Electrophilic substitution
C) Nucleophilic addition
D) Nucleophilic substation

Q.106: Which compound is used as antiseptic
A) CCl_4
B) CCl_2F_2
C) CHI_3
D) $CHCl_3$

Q.107: Which of the following is not good leaving group?
A) HSO_4^-
B) OH^-
C) Cl^-
D) Br^-

Q.108: Which of the following alkyl halides undergoes S_N1 reaction fastest
A)Merthyl chloride
B) Isobutyl chloride
C) Ethyl chloride
D) Tertiary butyl chloride

Q.109: Which isomer of C_4H_9Br will produce 2-methyl propan-2-ol on treatment with aqueous KOH
A) n-butyl bromide
B) Isobutyl bromide
C) sec-butyl bromide
D) Tertiary butyl bromide

Q.110: Which is NOT correct for $CHCl_3$
A) It is used as anaesthetic
B) It can be used as a solvent
C) It has tetrahedral shape
D) In it C is sp^2 hybridized

Q.111: In elimination reaction i.e, in the formation of alkene, the ease of elimination of halogen from alkyl halide follows the order
A) CL > Br > I
B) I > Br > Cl
C) Br > Cl > I
D) I > Cl > Br

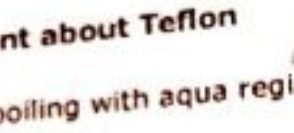
Q.112: If 1-chloropropane and 2-chloropropane are treated with alcoholic KOH, it gives
A) Propane
B) n-Hexane
C) Propene
D) A mixture of propene and propane

Q.113: Predict the decreasing order of nucleophilicity
A) $I^- < Br^- < Cl^-$
C) $I^- > Br^- > Cl^-$

B) Cl < I < Br D) F < Br < I

Q.114: Which intermediate is produce in SN2 reaction
A) Carbonium ion C) Activated complex ion
B) Carbanion ion D) Carbo free radical

Q.115: Consider the following structural formula of alkyl halide:



The correct name of the above structure according to IUPAC is:
A) 4-Bromo-2.3-dimethyl pentane C) 2-Bromo-2.3-dimethyl pentane
B) 2-Bromo-3,4-dimcthyl pentane D) 4-Bromo-3,3-dimethyl pentane

Q.116: The alkyl halide gives nucleophilic substitution reaction with aqueous KCN and it gives _____ reaction with alcoholic KCN
A) Nucleophilic substitution C) Addition
B) Elimination D) Electrophilic substitution

Q.117: Which one is incorrect statement about Teflon
A) It is good insulator
B) It remains unaffected even on boiling with aqua regia
C) It is useful lubricant
D) It catches fire

Q.118: Elimination unimolecular reactions involve
A) Second order kinetics C) First order kinetics
B) Third order kinetics D) Zero order kinetics

Q.119: Consider the reaction given below: (2016)

$$CH_3CH_2Br \xrightarrow[alcohol]{KOH} H_2C{=}CH_2 + HBr$$

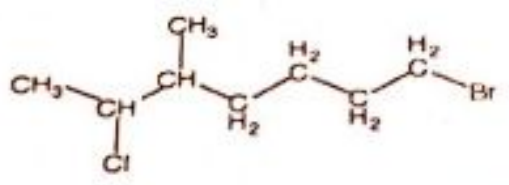
Mechanism followed by the reaction is:
A) E2 C) S_n1
B) E1 D) S_n2

Q.120: Which one of the following is NOT a nucleophile: (2016)
A) NH_2^- C) BF_3
B) H_2O D) CH_3^-

Q.121: In elimination reaction, alcoholic KOH is used – OH^- in this case will acts as: (2017)
A) Electrophile C) Leaving group
B) Base D) Acid

Q.122: During the S_{N1} reactions, the fast reaction involves: (2017)
A) Breakage of covalent bond C) Transition state
B) Formation of Carbocation D) Attack of nucleophile

Q.123: Which one of the following is the best name according to IUPAC system for the formula: given below: (2017)



A) 4-methyl-6-chloro helptane C) 2-chloro-4-n propyl hexane
B) 2-chloro-4-methyl heptane D) 2-chloro-4n propyl pentane

Q.124: Which is an intermediate compound in S_N1: (2017)
A) Ethoxide ion C) Alkene
B) Alkyl halide D) Carbocation

Q.125: Among the alkyl halides, which always follow SN2 mechanism: (2017)
A) Primary alkyl halides C) Tertiary alkyl halide
B) Secondary alkyl halides D) Both B & C

Q.126: Among the following, which one is a nucleophile: (2017)
A) H^+ C) Ca^{2+}
B) OH^- D) None of these

Q.127: In elimination reaction, —
A) Acidic $K_2Cr_2O_7$
B) CuCl

Q.128: What is the order of incr
A) Iodoalkane<bromoalka
B) fluoroalkane<chloroalk
C) Iodoalkane<bromoalka
D) Fluroalkane>chloroalk

Q.129: Which of the followin aqueous ammonia?
A) NH_3
B) H^+

Q.130: Alcohol in which ca group is
A) Aromatic alcohol
B) Tertiary alcohol

Q.131: Select the reagent
$CH_3CH(OH)CH(CH$
A) Acidified Potassi
B) Acidified Potass

Q.132: The pH of 10^{-2} M
A) 14
B) 10

Q.133: Which product hydroxide?
A) 1-butanal
B) 1-butanol

1.	B	2.	A
11.	A	12.	B
21.	A	22.	A
31.	C	32.	C
41.	D	42.	
51.	D	52.	
61.	C	62.	
71.	D	72	
81.	C	8	
91.	D	9	
101.	C		
111.	B		
121.	B		
131.	B		

Q.127: In elimination reaction, _____ is used:
A) Acidic $K_2Cr_2O_7$
B) CuCl
C) Acidic NaOH
D) Alcoholic KOH

Q.128: What is the order of increasing reactivity of alkyl halides? (2018)
A) Iodoalkane<bromoalkane<chloroalkane<Fluoroalkane
B) fluoroalkane<chloroalkane<bromoalkane<iodoalkane
C) Iodoalkane<bromoalkane>chloroalkane<iodoalkane
D) Fluroalkane>chloroalkane<bromoalkane<Iodoalkane

Q.129: Which of the following acts as a nucleophile in the reaction of alkyl halide with alcoholic aqueous ammonia? (2018)
A) NH_3
B) H^+
C) Br^-
D) NO_2^-

Q.130: Alcohol in which carbon atom bonded to OH group is further attached with three alkyl group is (2018)
A) Aromatic alcohol
B) Tertiary alcohol
C) Primary alcohol
D) Secondary alcohol

Q.131: Select the reagent X from the following choices for this conversion: (2019)
$CH_3CH(OH)CH(CH_3)_2 \xrightarrow{\text{Reagent X}} CH_3COCH(CH_3)_2$
A) Acidified Potassium hydroxide
B) Acidified Potassium dichromate (VI)
C) Acidified Phosphoric acid
D) Acidified Oxalic acid

Q.132: The pH of 10^{-2} M aqueous solution of sodium hydroxide is: (2019)
A) 14
B) 10
C) 12
D) 13

Q.133: Which product is obtained by the hydrolysis of 1- chorobutane with the aqueous sodium hydroxide? (2019)
A) 1-butanal
B) 1-butanol
C) 1-butene
D) Butanone

ANSWERS

1.	B	2.	A	3.	D	4.	A	5.	A	6.	D	7.	B	8.	C	9.	C	10.	B
11.	A	12.	B	13.	C	14.	C	15.	A	16.	D	17.	B	18.	D	19.	B	20.	B
21.	A	22.	A	23.	D	24.	B	25.	A	26.	D	27.	B	28.	C	29.	C	30.	B
31.	C	32.	C	33.	D	34.	B	35.	A	36.	B	37.	D	38.	D	39.	B	40.	D
41.	D	42.	B	43.	C	44.	C	45.	D	46.	B	47.	D	48.	B	49.	B	50.	D
51.	D	52.	C	53.	A	54.	B	55.	B	56.	C	57.	C	58.	D	59.	D	60.	B
61.	C	62.	D	63.	B	64.	A	65.	A	66.	C	67.	C	68.	C	69.	B	70.	D
71.	D	72.	D	73.	C	74.	D	75.	B	76.	C	77.	D	78.	A	79.	A	80.	D
81.	C	82.	A	83.	A	84.	C	85.	A	86.	B	87.	D	88.	C	89.	B	90.	C
91.	D	92.	C	93.	B	94.	A	95.	D	96.	C	97.	D	98.	B	99.	B	100.	A
101.	C	102.	C	103.	A	104.	B	105.	D	106.	C	107.	B	108.	D	109.	D	110.	D
111.	B	112.	C	113.	C	114.	C	115.	B	116.	A	117.	D	118.	C	119.	A	120.	C
121.	B	122.	D	123.	B	124.	D	125.	A	126.	B	127.	D	128.	D	129.	A	130.	B
131.	B	132.	C	133.	B	134.		135.		136.		137.		138.		139.		140.	

ALCOHOLS AND PHENOLS

Q.1: The process in which alcohols are converted to aldehydes and ketone is of alcohols:
A) reduction
B) oxidation
C) addition
D) substitution

Q.2: Oxidation of tertiary alcohol gives:
A) formaldehyde
B) acetaldehyds
C) acetone
D) no reaction

Q.3: Which alcohol is resistant to oxidation?
A) monohydric
B) primary
C) secondary
D) tertiary

Q.4: Dehydration of ethanol at 180°C at the presence of cone. H_2SO_4 gives:
A) alkene
B) ethar
C) $CH_2=CH_2$
D) ethyl acetate

Q.5: Dehydration of ethanol at 140°C in the presence of cone. H_2SO_4 gives:
A) alkene
B) ethar
C) $CH_2=CH_2$
D) diethyl acetate

Q.6: Secondary alcohol gives oily layer with cone. HCl in $ZnCl_2$:
A) on heating
B) standing for 5-10
C) immediately after mixing
D) after half an hour

Q.7: Iodoform test is not given by:
A) methanl
B) ethanol
C) ethanol
D) ethanone

Q.8: Reaction of iodine with methyl alcohol in the presence of NaOH gives:
A) an oily layer
B) oily layer of alkyl halides
C) oily layer of alkyl halide on heating only
D) no reaction in fact occur

Q.9: Reaction of iodine with ethyl alcohol in the presence of NaOH gives:
A) an oily layer
B) oily layer of alkyl halides
C) oily layer of alkyl halides on heating only
D) iodo crystals

Q.10: Denaturing of alcohol is done with:
A) methanol
B) ethanol
C) propanol
D) butanol

Q.11: Formalin is:
A) 10% solution of formaldehyde in water
B) 20% solution of formaldehyde in water
C) 40% solution of formaldehyde in water
D) 60% solution of formaldehyde in water

Q.12: Which of the following will have the highest boiling point?
A) Methanal
B) Ethanal
C) Propanal
D) 2-Hexanone

Q.13: Ketones are prepared by the oxidaiton of:
A) Primary alcohol
B) Secondar alcohol
C) Tertiary alcohol
D) None of these

Q.14: Which of the following compounds will not give iodoform test on treatment with I_2/NaOH?
A) Acetaldehyde
B) Acetone
C) Butanone
D) 3-Pentanone

Q.15: Essential conditions for fermentation process are:
A) normal temperature
B) proper aeration
C) dilution of solution
D) all of these

Q.16: Glucose is converted into ethanol in the presence of enzyme:
A) invertase
B) zymase
C) diastases
D) maltase

Q.17: Starch is converted into sucrose in the presence of enzyme:
A) invertase
B) zymase
C) diastase
D) maltase

Q.18: The maximum purity of alcohol obtained from fermentation is:
A) 10-12%
B) 12-14%
C) 14-16%
D) 16-18%

Q.19: Purification of alcohol above 14% si done by:
A) distillation
B) crystallization
C) solvent extraction
D) filtration

Q.20: Absolute alcohol is obtained from rectified spirit by:
A) redistilation
B) recrystallisation
C) solven extraction
D) chromatography

Q.21: Moisture from absolute alcohol is dried by using:
A) CaO
B) Na_2O
C) MgO
D) Li_2O

Q.22: Methylated spirit is obtained by mixing in alcohol:
A) methyl alcohol
B) Pyridine
C) acetone
D) All of these

Q.23: Solubitlity of alcohols in water is due to bonding:
A) comic
B) covalent
C) coordinate covalent
D) hydrogen

Q.24: When nucleophile attacks at ethyl alcohol, we get:
A) $CH_3^+CH_2$
B) $CH_3^+CH_2 - O^-$
C) $CH_3CH_2 - O^-$
D) $CH_3CH_2 - O^- + H^+$

Q.25: When electrophile attacks at ethyl alcohol we get:
A) $CH_3^+CH_2$
B) $CH_3^+CH_2 - O^-$
C) $CH_3CH_2 - O^-$
D) $CH_3CH_2 - O^- + H^+$

Q.26: A solution of ethyl alcohol?
A) Does not affect litmus paper
B) Changes the red, blue litmus red
C) Changes the red litmus red
D) Decolorizes litmus

Q.27: Isopropyl alcohol on passing over heated copper at 300°C is
A) propylene
B) Acetone
C) Acetone
D) Propane

Q.28: The reaction of C_2H_5Oh with H_2SO_4 does not give?
A) Ethylene
B) Diethyl ether
C) Ethyl hydrogen
D) Ethyl hydrogen sulphate

Q.29: The end production of the reaction
$CH_3Oh \xrightarrow[300^\circ C]{Cu} A \xrightarrow{NaOH} B$
A) Alkane
B) carboxylic acid
C) sodium salt of carboxylic acid
D) Ketone

Q.30: which of the following reacts with NaoH to give an alcohol?
A) Methanal
B) Ethanal
C) Propanol
D) Butanal

Q.31: Methyl alcohol on oxidation with acidified $K_2CR_2O_7$ gives?
A) CH_3COCH_3
B) CH_3CHO
C) HCOOH
D) CH_3COCH

Q.32: Lucas reagent is ?
A) Conc. HCI + anhy. $ZnCI_2$
B) Dil. HCI + hydrated $ZNCI_2$
C) Conc. HNO_3 + anhy $ZnCI_2$
D) Conc.HNO_3 + anhy $MgCI_2$

Q.33: Alcohol of low molecular weight are?
A) Soluble in water
B) Insoluble in water
C) Soluble in water on heating
D) Insoluble in all slvents

Q.34: Which of the following compounds is capable of hydrogen bonding ?
A) $C_6H_5CH_3$
B) $C_6H_5NO_2$
C) C_2H_5OH
D) C_6H_5CI

Q.35: Methylated spirit is ?
A) only methanol
B) Methanol and traces of water
C) Ethanol with traces of water
D) Ethanol containing methanol

Q.36: On reduction with $LiAIH_4$ a ketone Yields?
A) Primary alcohol
B) sec. Alcohol
C) TERt Alcohol
D) All

Q.37: In the presence of an acid catalyst, two alcohol molecules will undergo dehydration to give?
A) Ester
B) Anhydride
C) Ether
D) Unsaturated hydrocarbon

Q.38: C_2H_5OH can not be dried by anhydrous $CaCl_2$ because
A) C_2H_5OH in soluble in water
B) Explosion takes place
C) C_2H_5OH reacts with $CaCI_2$
D) None

Q.39: An alcohol produced in the manufacture of soap is ?
A) Butanol
B) Glycerol
C) Ethanol
D) Ethylene glycol

Q.40: on oxidation an alcohol produce an aldehyde having the same number carbonators as that of alcohol. The alcohol is?
A) 1° AlCohol
B) 2° Alcohol
C) 3° Alcohol
D) None

Q.41: Which of the following is not a characteristic of alcohols?
A) They are lighter than water
B) Their b.p rise fairly uniformly with increasing molecular weight
C) Lower member are insoluble in water and organic solvents but in solubility regularly increase with molecular weight
D) Lower member have pleasant smell and burning taste, while higher members are odorless an tasteless

Q.42: Which of the following will not give Iodoform test.
A) Methyl alcohol
B) Ethyl alcohol
C) Acetaldehyde
D) Acetone

Q.43: Vapours of an alcohol were passed over hot reduced copper. It gave an olefin. The alcohol is ?
A) Primary
B) Secondary
C) Tertiary
D) None

Q.44: Which of the following does not give iodoform on warning with Na_2Co_3 and I_2?
A) Acetone
B) Ethyl alcohol
C) Isopropyl alcohol
D) n-propyl alcohol

Q.45: Soduim atom reacts readily with ?
A) $R\text{-}NH_2$
B) R-O-R
C) R -CHO
D) RCH_2OH

Q.46: Which is primary alcohol?
A) 2-propanol
B) 1-butanol
C) 2-butanol
D) 2-pentanol

Q.47: Ethyl alcohol is manufactured on an industrial scale by the fermentation?
A) $C_6H_{12}O_6$
B) $C_{12}H_{22}O_{11}$
C) Moleasess
D) CH_3COOH

Q.48: Ethyl alcohol is soluble in water in proportions because?
A) its basic in nature
B) it is acidic in nature
C) it dissociates in water
D) it forms hydrogen bonds with water

Q.49: The IUPAC name of $(CH_3)_3COH$ is?
A) Trimethyl carbinol
B) 2 methyl 1-2 propanol
C) Trimethyl carbonate
D) 2-methyl 2-Propanol

Q.50: For drying of ether sodium metal is used but it cannot he used for In alcohol because
A) Ether is very reacts easily with Na
B) Ether reacts easily with Na
C) Ethyl alcohol react with sodium metal
D) None

Q.51: Which of the following is most acidic?
A) R_2CHOH
B) R_3COH
C) CH_3OH
D) RCH_2OH

Q.52: The correct order of solubility of 1° ,2 ° and 3° alcohol in water is?
A) 3° >2 °>1°
B) 1° > 2 > 3°
C) 3°> 1 > 2°
D) None

Q.53: Fermentation of sugar with yeast gives?
A) CH_3OH
B) HCHO
C) C_2H_5OH
D) $CH_3CH_2CH_2OH$

Q.54: They enzyme which converts glucose and fructose into ethyl alcohol is?
A) Diastase
B) inverse
C) Zymase
D) Maltase

Q.55: Primarying secondary alcohols on action reduced cooper give?
A) Aldehydes and ketones respectively
B) ketones and aldehydes respectively
C) only aldehydes
D) only ketones

Q.56: A vicinal diol has two groups on ?
A) Same carbon atom
B) different carbon atoms
C) Adjacnt carbon atom
D) none

Q.57: Which of the following is phenol?
A) Benzenol
B) Cresol
C) Catechol
D) all

Q.58: Phenol is?
A) a base weaker than NH_3
B) an acid stroner than carbonic acid
C) an acid weaker than carbonic acid
D) Neutral

Q.59: Passing vapours of phenol over heated zinc give
A) Benzene
B) Benzaldehyde
C) Chloroform
D) H_2CO_3

Q.60: Chlorobenzene on heatin with NaOH at 300° C Under pressure gives?
A) p-nitrophenol
B) Benzene
C) Picric acid
D) 0-Nitro phenol

Q.61: Phenol with Conc. NH
A) p-nitrophenol
B) Benzaldehyde

Q.62: Phenol is distillation
A) Benzene
B) Toluene

Q.63: Acidity of phenol is
A) Benzene ring
B) Phenolic group

Q.64: The IUPAC name of
A) 2,4,6- trinitrophen
B) 2,4,6-trinitro-1-hy

Q.65: Which concept bes
A) resonance
B) hydrogen bondin

Q.66: Phenol reacts wit
A) m-bromophenol
B) o- and p-bromo

Q.67: Which of the foll
A) Ethyl alcohol
B) Salicylaldehyd

Q.68: Picric acid is?
A) Trinitro aniline
B) Trinitro toluen

Q.69: Rate of substit
A) Greater than
B) Less than th

Q.70: Phenol is less
A) Acetic acid
B) Both A and

Q.71: 2-methyl phe
A) Acetic acid
B) o-Nitrophe

Q.72: Which of th
A) Acetic acid
B) Picric acid

Q.73: The boiling
A) NO_2 grou
B) Intermol
C) Intramo
D) p-nitrop

Q.74: The stron
A) o-nitro
B) p-chlor

Q.75: Phenol is
A) strong
B) strong

Q.76: Phenol
A) Na_2C
B) C_6H_5

Q.77: Carboli
A) C_6H_5
B) C_6H

Q.78: Nitrat
A) Cor
B) Co

Q.79: The g
A) me
B) et

Q.80: Whi
A) 2
B) B

Q.61: Phenol with Conc. NHO_3 is presence of Conc. H_2SO_4 forms?
A) p-nitrophenol
B) Benzaldehyde
C) Chlorophenol
D) None of these

Q.62: Phenol is distillation with zinc gives?
A) Benzene
B) Toluene
C) Ethylene
D) none of these

Q.63: Acidity of phenol is due to?
A) Benzene ring
B) Phenolic group
C) Hydrogen bonding
D) Resonance stabilization of its anion

Q.64: The IUPAC name of picric acid is?
A) 2,4,6- trinitrophenol
B) 2,4,6-trinitro-1-hydroxy hexane
C) 2,4,6-trinitro-1-hydroxy benzene
D) 1,3,5-trinitro-6-hydroxy benzene

Q.65: Which concept best explains that o-nitrophenol is more volatile than p-nitrophenol:
A) resonance
B) hydrogen bonding
C) hyperconjugation
D) steric hindrance

Q.66: Phenol reacts with Br_2 is CCl_4 at low temperature to give?
A) m-bromophenol
B) o- and p-bromophenol
C) p- bromophenol
D) 2,4,6 tribromophenol

Q.67: Which of the following contains intramolecular hydrogen bonding?
A) Ethyl alcohol
B) Salicylaldehyde
C) water
D) hydrogen sulphide

Q.68: Picric acid is?
A) Trinitro aniline
B) Trinitro toluene
C) A volatile liquid
D) 2,4,6 trinitrophenol

Q.69: Rate of substitution of phenol is?
A) Greater than that is benzene
B) Less than that in toulene
C) less than that is benzene
D) same as that in benzene

Q.70: Phenol is less acidic than?
A) Acetic acid
B) Both A and C
C) o-Nitrophenol
D) m-Cresol

Q.71: 2-methyl phenol is called?
A) Acetic acid
B) o-Nitrophenol
C) both
D) m-Cresol

Q.72: Which of the following acids does not contain COOH group?
A) Acetic acid
B) Picric acid
C) Benzoic acid
D) Salicylic acid

Q.73: The boiling point of p-nitrophenol is higher than that of o-nitrophenol because?
A) NO_2 group at p-position behaves differently from that at o-position
B) Intermolecular H-bonding exists in p-nitrophenol
C) Intramolecular H-bonding exists in p-nitrophenol
D) p-nitrophenol has a molecular weight higher than o-nitrophenol

Q.74: The strongest acid among the following is:
A) o-nitrophenol
B) p-chlorophenol
C) p-nitrophenol
D) m-nitrophenol

Q.75: Phenol is?
A) strong acid
B) strong base
C) weakly acidic
D) weakly basic

Q.76: Phenol does not react with?
A) Na_2CO_3
B) C_6H_5COOH
C) C_6H_5COOH
D) HCOOH

Q.77: Carbolic acid is?
A) C_6H_5OH
B) C_6H_5COOH
C) H_2CO_3
D) HCOOH

Q.78: Nitrating mixture is?
A) Conc. HNO_3 + Conc. H_2SO_4
B) Conc. HNO_3 + Conc. HCl
C) KNO_3 + Conc. HNO_3
D) KNO_3 + Conc. H_2SO_4

Q.79: The gas evolved on heating, CH_3MgBr in methanol is:
A) methane
B) ethane
C) propane
D) HBr

Q.80: Which one of the following compounds will not be soluble in sodium bicarbonate?
A) 2, 4, 6-Trinitrophenol
B) Benzoic acid
C) ortho-Nitrophenol
D) Benzene sulphonic acid

Q.81: Phenol, when it first reacts with concentrated sulphuric acid and then with concentrated nitric acid, gives
A) 2,4,6-trinitrobenzene
B) o-nitrophenol
C) p-nitrophenol
D) nitrobenzene

Q.82: When ethanol is warmed with ethanoic acid in the presence of conc. H_2SO_4, ethyl ethanoate (an ester) is formeD)H_2SO_4 (conc.) acts as a catalyst in this reaction:

$$CH_3CH_2OH + CH_3CO_2H \xrightarrow{conc\ H_2SO_4} CH_3CO_2CH_2CH_3 + H_2O$$

A) Alcohol is reduced
B) O-H bond in ethanol is broken
C) O-H bond in ethanoic acid is broken
D) Acid is oxidized

Q.83: Which of the following reaction is not shown by phenol?
A) Reaction with NaOH
B) Reaction with HX
C) Reaction with $FeCl_3$
D) Catalytic reduction

Q.84: Consider the following reaction

$$C_2H_5OH + PCl_5 \longrightarrow$$

Which product may be formed?
A) C_2H_5Cl, $POCl_3$, HCl
B) C_2H_5Cl only
C) C_2H_5Cl, HCl
D) C_2H_5Cl, $POCl_3$

Q.85: Which of the following is the most reactive alcohol when bond is to be broken between oxygen and hydrogen:
A) CH_3OH
B) R_2CHOH
C) RCH_2OH
D) R_3COH

Q.86: When ethanol is treated with excess conc. H_2SO_4 at 180°C then which of the following product is obtained?
A) Ethene
B) Ethyne
C) Ethoxy ethane
D) Ethane

Q.87: Which of the following is correct order of acidic strength of different types of alcohols?
A) 3° > 2° > 1°
B) 2° > 1° > 3°
C) 1° >2° > 3°
D) 3° > 1° > 2°

Q.88: Which of the following is most soluble in water?
A) isobutyl alcohol
B) sec-butyl alcohol
C) n-butyl alcohol
D) tert-butyl alcohol

Q.89: Ethyl alcohol exhibits acidic character on reacting it with:
A) hydrogen chloride
B) sodium metal
C) acetic acid
D) acidic $K_2Cr_2O_7$

Q.90: Phenol can be distinguished from ethyl alcohol by all reagents except:
A) Na
B) Br_2/H_2O
C) $FeCl_3$
D) NaOH

Q.91: In which of the following reactions of alcohol bond between O — H breaks:
A) Reaction of alcohol with thionyl chloride in the presence of pyridine solvent
B) Reaction of alcohol with carboxylic acid in the presence of conB) H_2SO_4
C) Reaction of alcohol with ammonia in the presence of ThO_2
D) Reaction of alcohol with HC1 in the presence of $ZnCl_2$

Q.92: The acidity of phenol is due to its
A) Nature of benzene
B) Nature of phenoxide
C) Double bond in benzene ring
D) Hydroxal group

Q.93: The alkaline hydrolysis of bromoethane shown below gives alcohol as the product: (2012)

$$CH_3 - CH_2 - Br \rightarrow CH_3CH_2OH$$

The reagent and the condition used in this reaction may be:
A) H_2O at room temperature
B) KOH in alcohol
C) Ethanol heat
D) Dilute $NaOH_{(aq)}$ Warm

Q.94: The compound which gives the most stable carbonium ion on dehydration is:
A) $(CH_3)_2CHCH_2OH$
B) $CH_3CH_2CH_2CH_2OH$
C) $(CH_3)_3COH$
D) $CH_3CHOHCH_2CH_3$

Q.95: The best reagent to convert pent-3-en-2-ol into pent-3-en-2-one is:
A) acidic permanganate
B) chromic anhydride in glacial acetic acid
C) acidic dichromate
D) pyridinium chloro-chromate

Q.96: Acid catalyzed hydration of alkenes except ethene leads to the formation of:
A) primary alcohol
B) secondary or tertiary alcohol
C) mixture of primary and secondary alcohols
D) mixture of secondary and tertiary alcohols

Q.97: A type of monohydric alcohols in which the hydroxyl bearing carbon is attached to one carbon and two hydrogen atoms is called:
A) Primary alcohol
B) Sec-alcohol
C) Ter-alcohol
D) Neo-alcohol

Q.98: When CH_3-CH_2-OH is oxidized in the presence of $K_2Cr_2O_7$? and conB) H_2SO_4, the final product formed is:

A) $CH_3-\overset{\overset{O}{\|}}{C}-OH$

B) $CH_3-\overset{\overset{O}{\|}}{C}-CH_3$

C) $H-\overset{\overset{O}{\|}}{C}-OH$

D) $CH_3-\overset{\overset{O}{\|}}{C}-OCH_3$

Q.99: Dehydration of alcohol is an example of?
A) Redox
B) substitution reaction
C) Elimination
D) Addition reaction

Q.100: Carbolic acid is the other name for
A) Methanol
B) Propanol
C) Ethanol
D) Phenol

Q.101: Primary, secondary and tertiary alcohols can be identified and distinguished by: (2014)
A) Lucas Test
B) Baeyer's test
C) Iodoform Test
D) Silver mirror test

Q.102: Phenol is _____ soluble in water.
A) Completely
B) Highly
C) Partially
D) None of these

Q.103: Mark the incorrect statement about alcohol:
A) 1° alcohol on oxidation with acid dichromate ($K_2Cr_2O_7$ + conB) H_2SO_4) yields aldehyde
B) 3° alcohol on oxidation with mild oxidizing agent yields ketone
C) 2° alcohol on oxidation with acid dichromate ($K_2Cr_2O_7$ + conB) H_2SO_4) yields ketone
D) 3° alcohol gives alkene in the presence of acid dichromate ($K_2Cr_2O_7$ + conB) H_2SO_4)

Q.104: Phenol is more readily soluble In
A) NaOH solution
B) Both NaOH and HCl
C) dil HCl
D) $NaHCO_3$

Q.105: Which one of the following alcohol can be prepared by indirect hydration of alkenes?
A) Methanol
B) isopropyl alcohol
C) Ethanol
D) Butyl alcohol

Q.106: Which one of the following was used as one of the earliest antiseptic and disinfectant? (2015)
A) Phenol
B) Ethanol
C) ether
D) Methanol

Q.107: Which is most acidic?
A) methanol
B) carbolic acid
C) ethanol
D) propanol

Q.108: Which one of the following is not able to denature the ethanol? (2015)
A) Methanol
B) Pyridine
C) Lactic acid
D) Acetone

Q.109: Isopropyl alcohol is obtained by reacting which of the following alkenes with concentrated H_2SO_4 followed by boiling with H_2O?
A) 2-methylpropene
B) isoprene
C) ethylene
D) propylene

Q.110: The two enzymes present in yeast that are responsible for the formatting of ethyl alcohol from molasses in the fermentation process are:
A) invertase, maltase
B) invertase, diastase
C) zymase, diastase
D) invertase, zymase

Q.111: Which of the following is correct?
A) reduction of any aldehyde gives secondary alcohols
B) reduction of vegetable oil with H_2SO_4 gives glycerine
C) reaction of ethanolic iodine with NaOH gives iodoform
D) sucrose on reaction with NaOH gives invert sugar

Q.112: Which of the following mechanism of reaction is shown by alcohol when C-O bond is broken?
A) Hleetrophilic substitution reaction
B) Nucleophilic substitution reaction
C) Acid base reaction
D) Redox reaction

Q.113: Glycerol on oxidation with Bismith nitrate produces
A) Oxalic acid
B) Glyoxalic acid
C) Glyceric acid
D) Meso oxalic acid

Q.114: The catalyst used in the preparation of alkyl chloride by the action of dry HCl on alcohol is
A) Cu
B) $FeCl_3$
C) Anhydrous $AlCl_3$
D) Anhydrous $ZnCl_2$

Q.115: With the increase in carbon number the solubility of an alcohol
A) Increases
B) Remains unaffected
C) Decreases
D) None of these

Q.116: The acidic reactivity of an alcohol is due to _____ bond
A) C-H
B) C-O
C) O-H
D) None of these

Q.117: The dehydration of ethyl alcohol with concentrated H_2SO_4 at 140° C gives. (2012)
A) Ethene
B) Alcohol
C) Diethyl ether
D) Carboxylic acid

Q.118: Phenol is completely miscible with water:
A) at all temperatures
B) below 18°C
C) above 67°C
D) above 100°C

Q.119: Amongst the following compounds, the strongest acid is:
A) 4-nitrophenol
B) 2,4,6-trinitrophenol
C) 2,4-dinitrophenol
D) 2,4,6-trinitrobenzoic acid

Q.120: Order of relative strength of phenol, acetic acid, water and ethanol is:
A) water< ethanol < phenol < acetic acid
B) phenol< water < ethanol < acetic acid
C) ethanol < phenol < water < acetic acid
D) ethanol < water < phenol < acetic acid

Q.121: Which of the following compound will be most easily attacked by an electrophile?
A) $C_6H_5 - Cl$
B) $C_6H_5 - CH_3$
C) C_6H_6
D) $C_6H_5 - OH$

Q.122: Carbolic acid is:
A) Phenol
B) phenyl acetate
C) phenyl benzoate
D) Salol

Q.123: Which of the following statement is correct?
A) Phenol is less acidic than ethyl alcohol
B) Phenol is more acidic than CH_3COOH
C) Phenol is more acidic than ethyl alcohol
D) Phenol is more acidic than carbonic acid

Q.124: Which one of the following alcohols is indicated by formation of yellow crystals in iodoform test? (2014)
A) Methanol
B) Butanol
C) Ethanol
D) Propanol

Q.125: The pH of phenolic solution is normally
A) 3
B) 5-6
C) 2
D) 8

Q.126: Which one of the following groups is indicated when HCl is formed by reaction ethanol with phosphorus pentachloride? (2014)

A) Amino group
B) Halide group
C) Hydroxyl group
D) Hydride group

Q.127: The product formed on reaction of n-butanol with $SOCl_2$ in presence of pyridine is:

A) chlorobutanol
B) chlorobutanone
C) 1-chlorobutane
D) 2-chlorobutane

Q.128: Which of the following organic compounds answers to both iodoform test and Fehling's test?

A) Ethanal
B) Propanone
C) Methanol
D) Ethanol

Q.129: Under different conditions, nitration of phenol yields:

(1) o-nitrophenol (2) p-nitrophenol (3) 2,4,5-trinitrophenol
The correct sequence of decreasing order of acidic nature of these phenols is:

A) 3, 2, 1
B) 2, 1, 3
C) 1, 2 3
D) 3, 1, 2

Q.130: The alcohol which does not give a stable compound on dehydration is:

A) Ethyl alcohol
B) n-propyl alcohol
C) Methyl alcohol
D) n-butyl alcohol

Q.131: The dehydration of alcohol in the presence of ConB)H_2SO_4 at 170°C involves:

A) Free radical intermediate
B) Addition of OH^- ion
C) A carbonium ion intermediate
D) A carbanion intermediate

Q.132: By reacting phenol with bromine water, the product obtained is:

A) O-bromophenol
B) p- bromophenol
C) m- bromophenol
D) 2, 4, 6-tribromophenol

Q.133: How will you distinguish between methanol and ethanol? (2015)

A) By Lucas test
B) By oxidation
C) By silver mirror test
D) By iodoform test

Q.134: Another name of grain alcohol is:

A) Methanol
B) 1-Propanol
C) Ethanol
D) I-Butanol

Q.135: Phenol reacts with bromine water in carbon disulphide at low temperature to give:

A) o-bromophenol
B) p-bromophenol
C) o- and p-bromophenols
D) 2, 4, 6-tribromophenol

Q.136: The alcohol which does not give a stable compound on dehydration is:

A) methyl alcohol
B) n-butyl alcohol
C) ethyl alcohol
D) n-propyl alcohol

Q.137: The compound when reacts fastest with Lucas reagent at room temperature is:

A) butan-1-ol
B) 2-methyl-2-propanol
C) butan-2-ol
D) 2-methylprpan-1-ol

Q.138: Methyl alcohol on oxidation with acidified $K_2Cr_2O_7$ gives

A) CH_3COCH_3
B) HCOOH
C) CH_3CHO
D) CH_3COOH

Q.139: The product formed when phenol reacts with Br_2+$FeBr_3$

A) O-bromophenol
B) p-bromophenol
C) 2,4,6,tribromophenol(white ppt)
D) Both a and c

Q.140: Secondary alcohol, 2 – Propanol is oxidized in the presence of$K_2Cr_2O_7$ / H_2SO_4 to produce

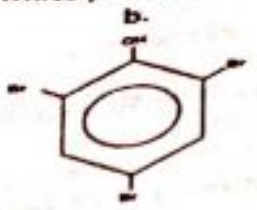
A) Propanal
B) Propene
C) Propanone
D) Butane

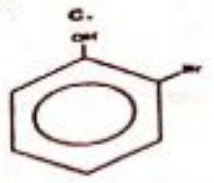
Q.141: The order of reactivity of alcohols when C-O bond breaks

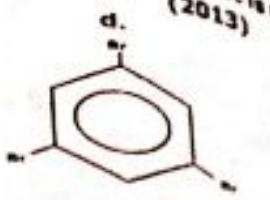
A) Primary > secondary >tertiary
B) Secondary > tertiary > primary
C) Tertiary > primary > secondary
D) Tertiary > secondary > primary

Q.142: Aqueous phenol decolorizes bromine water to form a white precipitate. What is the structure of the white precipitate formed? (2013)

a. 

b. 

c. 

d. 

A) a
B) b
C) c
D) d

Q.143: This is an example of O-H bond reactivity of an alcohol when it reacts with
A) HCl
B) $SOCl_2$
C) NH_3
D) Na

Q.144: Which of the following compound would not evolve CO_2 when treated with $NaHCO_3$ solution?
A) salicylic acid
B) benzoic acid
C) phenol
D) 4-nitrobenzene acid

Q.145: When treated with bromine water, phenol gives:
A) p-bromo phenol
B) o-bromo phenol
C) tribromophenol
D) a mixture of o and p-bromo phenol

Q.146: When phenol is nitrated with dilute nitric acid at low temperature, we get:
A) picric acid
B) m-nitro phenol
C) mixture o-, m- and p-nitrophenol
D) mixture of o- and p-nitrophenol

Q.147: Phenol gives ____colour with neutral $FeCl_3$ solution:
A) Violet
B) Red
C) Green
D) Blue

Q.148: Electrophilic substitution in phenol generally occurs at:
A) o- and p-position
B) o-position only
C) m-position
D) p-position only

Q.149: Phenol is does not make _____ when react with nitric acid dilute:
A) 0-nitro phenol
B) m-nitro phenol
C) p-nitro phenol
D) None of these

Q.150: Alcohol may be:
A) Saturated
B) Both a & b
C) unsaturated
D) none

Q.151: Which of the following is secondary alcohol: (2011)

a. $CH_3-CH(CH_3)-OH$

b. $CH_3-CH(CH_3)-CH_2-OH$

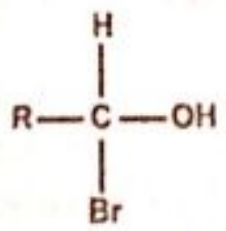
c. $CH_3-CH-CH_2-OH$

d. $CH_3-CH(CH_3)-C(OH)(CH_3)-CH_3$

A) a
B) b
C) c
D) d

Q.152: If a nucleophile attacks then _____ bond breaks first.
A) C-H
B) C-O
C) O-H
D) None of these

Q.153: The following structure is of: (2012)



A) Secondary alcohol
B) Tertiary alcohol
C) Primary alcohol
D) carboxylic acid

Q.154: Which of the following has maximum
A) ethyl amine
B) ethyl alcohol

Q.155: Which of the following is most acidi
A) o-cresol
B) p-nitrophenol

Q.156: The ionization constant of phenol
A) phenoxide ion is a stronger base th
B) phenoxide ion is stabilized through
C) phenoxide ion is less stable than
D) phenoxide ion is bulkier than eth

Q.157: Iodoform cannot be prepared fo
A) 2-Pentanol
B) 2-Butanol

Q.158: 1-propanol reacts with I_2 in pr
A) No yellow ppt
B) Red ppt

Q.159: Benzyl alcohol is oxidized in
A) Phenol
B) Benzoic acid

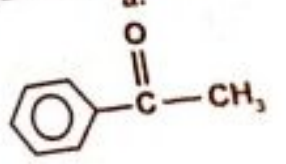
Q.160: If an electrophile attacks th
A) C- H
B) C-O

Q.161: Is named as:

A) Picric acid
B) Benzoic acid

Q.162: Dehydration of an alco
A) Alkene
B) Ester

Q.163: What is the structure (2013)

a. 

A) a
B) b

Q.164: During esterificat
A) alcohol
B) Carboxylic acid

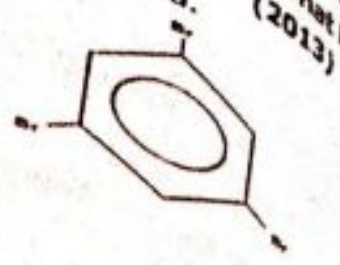
Q.165: Which of followi
A) Boiling point o
B) Nitration of ph
C) p-Nitrophenol
D) m-Nitrophen

Q.166: Which among
A) $CH_3CH_2CH_2C$

B) CH_3-OH

white precipitatB) What is th

d.



hen it reacts with

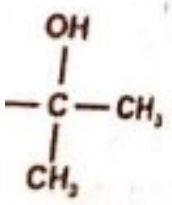
hen treated with $NaHCO_3$

e acid

nd p-bromo phenol
rature, we get:
nd p-nitrophenol
d p-nitrophenol

nitric acid dilute:

(2011)



(2012)

Q.154: Which of the following has maximum hydrogen bonding?
A) ethyl amine
B) ethyl alcohol
C) ammonia
D) diethyl ether

Q.155: Which of the following is most acidic?
A) o-cresol
B) p-nitrophenol
C) phenol
D) anisole

Q.156: The ionization constant of phenol is higher than that of ethanol because:
A) phenoxide ion is a stronger base than ethoxide ion
B) phenoxide ion is stabilized through delocalization
C) phenoxide ion is less stable than ethoxide ion
D) phenoxide ion is bulkier than ethoxide ion

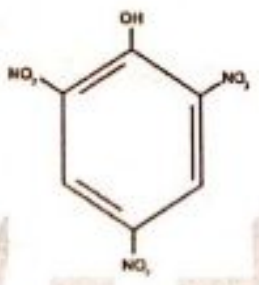
Q.157: Iodoform cannot be prepared form
A) 2-Pentanol
B) 2-Butanol
C) C_2H_5OH
D) Ter.butylacohol

Q.158: 1-propanol reacts with I_2 in presence of NaOH to give
A) No yellow ppt
B) Red ppt
C) Yellow ppt
D) White ppt

Q.159: Benzyl alcohol is oxidized in the presence of K_2Cr_2O/H_2SO_4 produce final product
A) Phenol
B) Benzoic acid
C) Benzaldehyde
D) Acetophenone

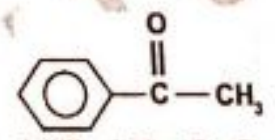
Q.160: If an electrophile attacks then _____ bond breaks first.
A) C- H
B) C-O
C) O-H
D) None of these

Q.161: Is named as: (2013)



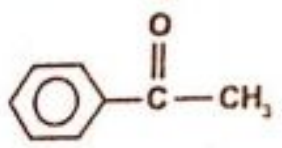
A) Picric acid
B) Benzoic acid
C) Nitro phenol
D) Malonic acid

Q.162: Dehydration of an alcohol at 180° and ConB) H_2SO_4 given
A) Alkene
B) Ester
C) Ether
D) an hydride

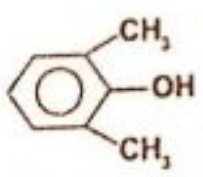


Q.163: What is the structure of alcohol which on oxidation with acidified $Na_2Cr_2O_7$ gives (2013)

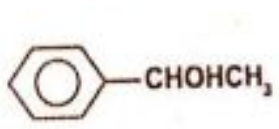
a.



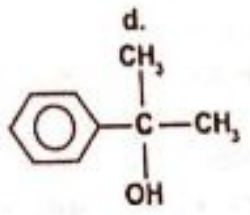
b.



c.



d.



A) a
B) b
C) c
D) d

Q.164: During esterification water along with ester is formed. H-atom in water comes from:
A) alcohol
B) Carboxylic acid
C) Catalyst
D) May be from alcohol or acid

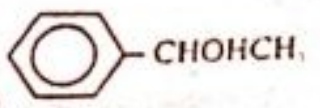
Q.165: Which of following statements is not true about o-, m-, and p-nitrophenol?
A) Boiling point of o-nitrophenol is lower than p-nitrophenol
B) Nitration of phenol with nitrating mixture gives p-nitrophenol as the major product
C) p-Nitrophenol is a stronger acid than o-nitropheol
D) m-Nitrophenl is the weakest acid among them

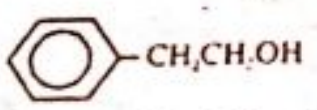
Q.166: Which among the following compounds is most acidic in character?
A) $CH_3CH_2CH_2OH$
B) $CH_3–OH$
C) $CH_3–CH_2–OH$
D) H_3C (OH, CH_3, CH_3)

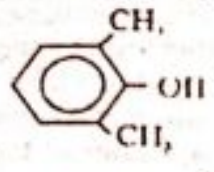
Q.167: When ethanol is oxidized by acidified $K_2Cr_2O_7$, the colour of solution turns green due to
A) Lose of oxygen from ethanol
B) Oxidation of Cr^{+3} into dichromate (VI)
C) Reduction of dichromate (VI) into Cr^{+3}
D) Oxidation of dichromate (VI) into Cr^{+3}

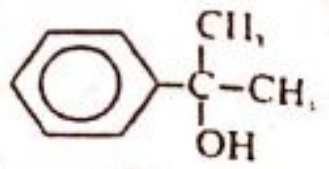
Q.168: General formula of alcohol is:
A) $C_nH_{2n}O$
B) $C_nH_{2n+1}O$
C) $C_nH_{2n+2}O$
D) $C_nH_{n-2}O$

Q.169: What is the structure of alcohol which on oxidation with acidified $Na_2Cr_2O_7$ gives ketone

A) 

B) 

C) 

D) 

Q.170: Which one of the following compounds will be most readily attacked by an electrophile
A) phenol
B) benzene
C) toluene
D) chlorobenzene

Q.171: Which of the following is the most suitable method for removing the traces of water from ethanol?
A) heating with sodium metal
B) distilling it
C) passing dry HCl gas through it
D) reacting with Mg

Q.172: What will be the bond angle C – O – H in alcohol if C and O-atom possess sp^3-hybridization?
A) 108°.30′
B) 111°.42′
C) 109°
D) 109°28′

Q.173: Which one of the following compounds has these properties?
(i) It is readily oxidized to ethanoic acid)
(ii) It gives positive iodoform test
(iii) It does not react with Fehling's solution.
A) $CH_3CH_2COCH_3$
B) CH_3CH_2OH
C) CH_3CH_2CHO
D) $CH_3CH_2-O-CH_2-CH_3$

Q.174: The oxidation of which of the following compound gives ethyl methyl ketone)
A) Propan-2-ol
B) Butan-2-ol
C) Butan-1-ol
D) 2-methylbutan-2-ol

Q.175: Acetaldehyde reacts with
A) Electrophiles only
B) Free radicals only
C) Neucleophiles only
D) All of these

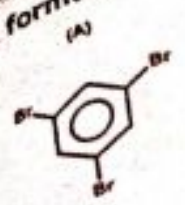
Q.176: An organic compound, "A" reacts with PCl_5 to give "B" the compound "B" with sodium metal gives n-butane. Thus "A" and "B" are
A) C_2H_5Cl and C_2H_5ONa
B) C_2H_5Cl and C_2H_5OH
C) C_2H_5OH and C_2H_5Cl
D) C_4H_9OH and C_4H_9Cl

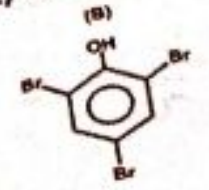
Q.177: Dehydration of ethyl alcohol with concentrated H_2SO_4 at 180°C gives
A) CH_3CHO
B) C_2H_4
C) $CH_{30}CH_3$
D) $C_2H_5OC_2H_5$

Q.178: Which one of the following is more acidic in nature
A) Water
B) Ethanol
C) Phenol
D) Ammonia

Q.179: When phenol reacts with dil. Nitric acid ____ nitrophenol is the dominant product.
A) Ortho
B) Para
C) Meta
D) No

Q.180: The formula of 2, 4, 6-tribromoph

(A) 

(B) 

A) A
B) B

Q.181: The most reactive mono-halo be
A) C_2H_5Br
B) C_2H_5Cl

Q.182: Methyl alcohol on oxidation
A) CH_3COCH_3
B) HCOOH

Q.183: Which of the following a ketones with $NaBH_4$
A) 1-Propanol
B) 2-Methyl-2-propanol

Q.184: Identify X and Y in the re
A) CH_3CH_2Cl and $CH_2=CH_2$
B) CH_3CH_2Cl and CH_3CH_3

Q.185: Which one of the follow presence of H_2SO_4
A) Ethlyformate is produc
C) Called Esterification

Q.186: Reacting phenol with b
A) o-bromophenol
B) p-bromophenol

Q.187: Phenol is partially mi
A) Non polar nature of
B) Non polar hydrocarb

Q.188: Phenoxide ion is for
A) Electron pair
B) Hydrogen

Q.189: In ethanol, the bon in presence of H_2S
A) C – C
B) O – H

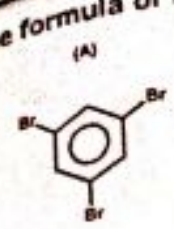
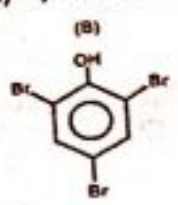
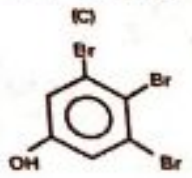
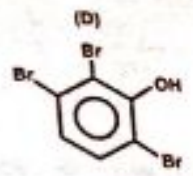
Q.190: Cl^+ from a reagent
A) O – H
B) Both O – H and

Q.191: Identify the final
Benzene+Cl_2/Fe
A) Benzoic acid
B) O-nitrophenol

Q.192: In the following
CH_3CH_2OH —P—
The compound
A) butanal
B) n-butyl alcoh

Q.193: 23g of Na sha
A) One mole o
B) Half mole o

Q.180: The formula of 2, 4, 6-tribromophenol is: (2014)

(A) 
(B) 
(C) 
(D) 

A) A
B) B
C) C
D) D

Q.181: The most reactive mono-halo derivatives of ethane towards nucleophilic substitution will be
A) C_2H_5Br
B) C_2H_5Cl
C) C_2H_5I
D)All are equally reactive

Q.182: Methyl alcohol on oxidation with acidified $K_2Cr_2O_7$ gives
A) CH_3COCH_3
B) HCOOH
C) CH_3CHO
D) CH_3COOH

Q.183: Which of the following alcohol cannot be produced by treatment of aldehydes for ketones with $NaBH_4$
A) 1-Propanol
B) 2-Methyl-2-propanol
C) 2-Propanol
D) Ethanol

Q.184: Identify X and Y in the reactions? $CH_3 - CH_2 - OH + HCl_{(conc)} \xrightarrow[Heat]{ZnCl_{2(s)}} X \xrightarrow{alc.\ KOH} Y$
A) CH_3CH_2Cl and $CH_2=CH_2$
B) CH_3CH_2Cl and CH_3CH_3
C) CH_3CH_2OH and CH_3CH_3
D) Reactions are incorrect

Q.185: Which one of the following is not correct when ethanol reacts with formic acid in the presence of H_2SO_4
A) Ethlyformate is produced
B) Nu-sub reaction of alcohol
C) Called Esterification
D) All are correct

Q.186: Reacting phenol with bromine water the product obtained is
A) o-bromophenol
B) p-bromophenol
C) m-bromophenol
D) 2,4,6-tribromophenol

Q.187: Phenol is partially miscible with water. It is due to
A) Non polar nature of phenol
B) Non polar hydrocarbon part in it
C) Acidic nature of – OH group
D) Acidic nature of phenol

Q.188: Phenoxide ion is formed from phenol by losing
A) Electron pair
B) Hydrogen
C) Hydroxyl group
D) Carbon atom

Q.189: In ethanol, the bond that undergoes heterolysis during its esterification with CH3COOH in presence of H_2SO_4 is
A) C – C
B) O – H
C) C – O
D) C – H

Q.190: $Cl^+$from a reagent attack on alcohol, the bond which breaks is
A) O – H
B) Both O – H and C – O
C) C – O
D) None of the above

Q.191: Identify the final product of the following reaction sequence ?
$Benzene + Cl_2/FeCl_3 \longrightarrow A + NaOH/HOH \longrightarrow B + HNO_3 + H_2SO_4 \longrightarrow C$
A) Benzoic acid
B) O-nitrophenol
C) Phenol
D) Sod phenoxide

Q.192: In the following sequence of reactions,
$CH_3CH_2OH \xrightarrow{PCl_5} A \xrightarrow[ether]{Mg} B \xrightarrow{HCHO} C \xrightarrow{H_3O^+} D$
The compound D is
A) butanal
B) n-butyl alcohol
C) n-propyl alcohol
D) propanal

Q.193: 23g of Na shall react with methyl alcohol to give
A) One mole o O_2
B) Half mole of H_2
C) One mole of H_2
D) Two mole of H_2

Q.194: In the following sequence of reactions, Z is

$$X \xrightarrow{PCl_5} Y \xrightarrow[2.\ H_2O\ boil]{1.\ Conc.\ H_2SO_4} Z$$

A) $CH_3CH_2CH_2OH$
B) $CH_3CHOHCH_3$
C) $CH_3CH_2CH_2CH_2OH$
D) $(CH_3)_3CCH_2OH$

Q.195: Consider the given sequence of reactions,

$$\xrightarrow{Zn\ dust} X \xrightarrow[anhy.\ AlCl_3]{CH_3Cl} Y \xrightarrow{alk.KMnO_4} Z$$

The product Z is:
A) toluene
B) benzoic acid
C) benzaldehyde
D) benzene

Q.196: The reactions of phenol with conB) HNO_3 gives
A) Benzonic acid
B) Picric acid
C) Adipic acid
D) m-Nitrophenol

Q.197: Which of the following is correct stability of phenoxide ion
A) Resonating structure o benzene
B) Localization of π electrons in phenoxide ion
C) Delocalization of π electrons in phenoxide ion
D) All are correct statements

Q.198: The compound which gives the most stable carbocation is
A) $CH_3CH_2CH_2CH_2OH$
B) $(CH_3)_2CHCH_2OH$
C) $CH_2CHOHCH_2CH_3$
D) $(CH_3)_3COH$

Q.199: How many π electrons are there in planar ring of phenol
A) 4
B) 10
C) 8
D) 6

Q.200: Phenol on heating with hydrogen gas in the presence of nickel gives:
A) benzene
B) cyclohexane
C) toluene
D) cyclohexanol

Q.201: The dehydration of neo-pentyl alcohol gives mainly

A) $CH_3-CH_2-CH=CH_2$

B) $CH_3-C(CH_3)=CH-CH_3$

C) $CH_3-C(CH_3)_2-CH=CH_2$

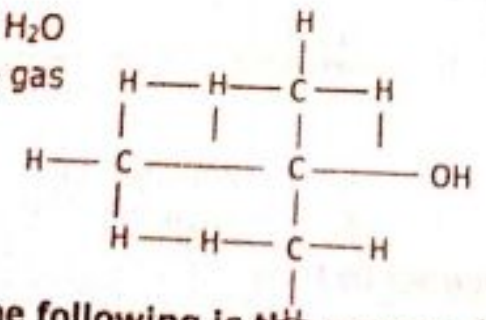
D) Dehydration cannot take place

Q.202: Which of the following can work as a dehydrating agent for alcohols
A) Al_2O_3
B) H_2SO_4
C) P_2O_5
D) All of these

Q.203: Which of the following statement is NOT correct about alcohols
A) Methanol evaporate quickly
B) Alcohols with less number of carbon atoms are less soluble
C) Ethanol is weaker acid than water
D) Alcohols with less number of carbon atoms are more soluble

Q.204: Which one of the following is an appropriate indication of positive iodoform test? (2016)

A) Formation of H_2O
B) Release of H_2 gas

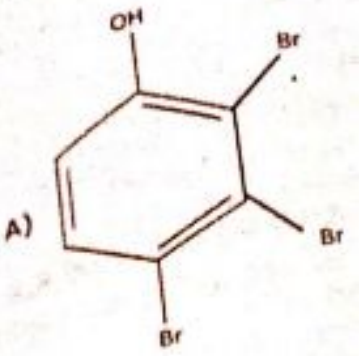


C) Brick red precipitate
D) Yellow crystal

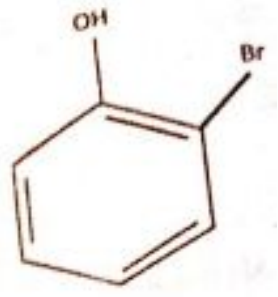
Q.205: Which one of the following is the proper classification of above formula: (2016)
A) Primary
B) Secondary
C) Tertiary
D) Polyhydride

Q.206: Which one of the follow

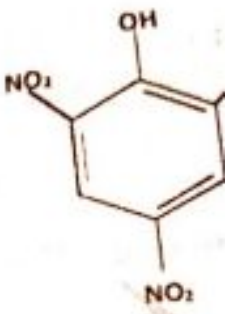
A)



B)



Q.207:



Which one of t
A) 1,3,6-Trinitro
B) m-Nitrophen

Q.208: Alcohol react concentration
A) Less acidic t
B) Less basic t

Q.209: $CH_3 - CH_2 -$ the present
A) Alkyl group
B) Hydroxyl G

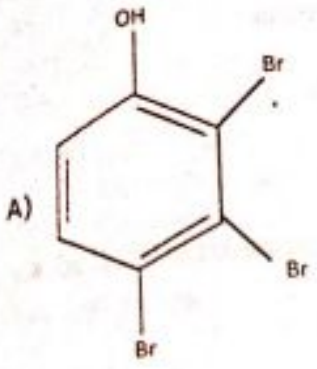
Q.210: The phenox
A) Lone pair
B) Oxygen a
C) The nega
D) The nega

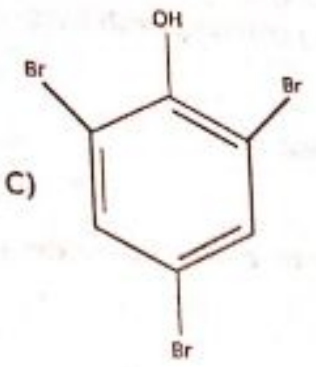
Q.211: At 25oC wi
A) (HNO_3 +
B) (HNO_3 +

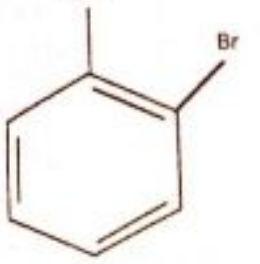
Q.212: Identify t
CH_3COOH
A) CH_3CO
B) CH_3CO

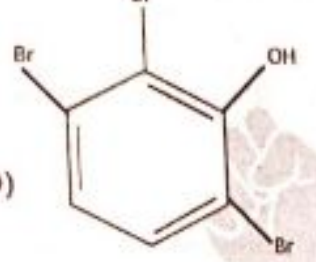
Q.213: Reaction
A) Ketone
B) Carbo

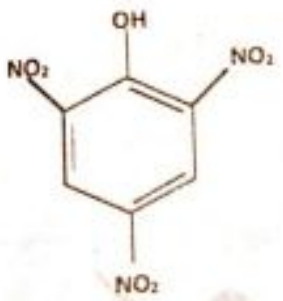
Q.206: Which one of the following is an appropriate structure of product of bromination **(2016)**

A) 

C) 

B) 

D) 

Q.207:  **(2016)**

Which one of the following is an appropriate name of above compound?

A) 1,3,6-Trinitrophenol
B) m-Nitrophenol
C) Tartaric acid
D) Picric acid

Q.208: Alcohol reacts slowly with Na – metal as compared to water because it has low concentration of H+ ion which suggests that it is: **(2017)**

A) Less acidic than water
B) Less basic than phenol
C) More acidic than phenol
D) More acidic than water

Q.209: $CH_3 - CH_2 - OH + PCl_5 \rightarrow CH_3 - CH_2 - Cl + POCl_3 + HCl$ ... formation of HCl is the test for the present of _____ in a compound: **(2017)**

A) Alkyl group
B) Hydroxyl Group
C) Saturated alkyl group
D) Acidic H^+ ion

Q.210: The phenoxide ion is more stable than ethoxide ion as: **(2017)**

A) Lone pair on oxygen atoms overlap with the delocalized bonding system in benzene
B) Oxygen atom is directly bonded with benzene ring in the phmoxide ion
C) The negative charge is localized on oxygen atom of phenoxide ion
D) The negative charge is deloclized on oxygen atom of ethoxide ion

Q.211: At 25oC with phenol 2-4-Dinitrophenol is formed by the reaction of: **(2017)**

A) ($HNO_3 + H_2SO_4$) with benzene
B) ($HNO_3 + H_2SO_4$) with phenol
C) NaOH with Benzene sulphonic acid
D) Sodium phenoxide with HCl

Q.212: Identify the product X in the following reaction: **(2017)**

$CH_3COOH + PCl_5 \xrightarrow{yields} X + POCl_3 + HCl$

A) CH_3COCl
B) CH_3COCl_2
C) $CH_3COCH_2Cl_2$
D) CH_2COCl_2

Q.213: Reaction of alcohol with hydrogen chloride yields _____: **(2017)**

A) Ketone
B) Carboxylic acid
C) Aldehyde
D) Ester

Q.214: The acidity of Phenol is due to its _____: (2017)
A) Nature of benzene
B) Double bond in benzene ring
C) Nature of phenoxide
D) Hydroxyl group

Q.215: Sodium phenoxide on treating with hydroxhloric acids yields: (2017)
A) Benzene
B) Benzoic acid
C) Phenol
D) Benzaldehyde

Q.216: Nylon-6,6 is also called (2018)
A) polyvinylalcohal
B) Polystyren
C) polyamide
D) Polyester

Q.217: Which compound will be produced by the oxidation of ethanol by acidified $K_2Cr_2O_7$? (2018)
A) Ethanone
B) Ethane
C) Ethanoic acid
D) Ethanol

Q.218: Select one which is alcohol (2018)
A) $CH_3 - CH_2 - OH$
B) $CH_3\ COOH$
C) $CH_3 - O - CH_3$
D) $CH_3 - CH_2 - Br$

Q.219: Which one of the following compounds act as catalyst when alcohols react with carboxylic acids. (2018)
A) Pt
B) Conc. H_2SO_4
C) Conc. HNO_3
D) Ni

Q.220: Which one of the following compounds is known as tertiary alcohol? (2018)
A) 1-propanol
B) 2-methyl-1-propanol
C) 2-propanol
D) 2-methyl-2-propanol

Q.221: Alcohol in which carbon atom bonded to OH group is further attached with three alkyl group is (2018)
A) Aromatic alcohol
B) Tertiary alcohol
C) Primary alcohol
D) Secondary alcohol

Q.222: Which of the following compounds will give a secondary alcohol after reaction with $NaBH_4$? (2019)
A) $CH_3\ COCH_3$
B) $CH_3\ COOCH_3$
C) $CH_3\ CH_2\ CHO$
D) $CH_3\ CH_2\ COOH$

Q.223: In the reaction sequence: (2019)

$$H_3C - CH_2 - CH_2 - Br \rightarrow C \xrightarrow[H_2O]{H_2SO_4} D$$

Product D will be
A) 1-propanol
B) Propanoic acid
C) 2-propanol
D) Mixture of methanol and ethanol

Q.224: The decomposition of phosphorus pentachloride in the presence of moisture takes place by the following mechanism: (2019)

$PCl_{5(s)} + 4H_2O_{(1)} \quad POCl_{3(1)} + 2HCl_{(aq)}$
$POCl_{3(1)} + 3H_2O_{(1)} \quad H3PO_{4(1)} + 3HCl_{(aq)}$

$PCl_{5(s)} + 4H_2O_{(1)} \quad H_3PO_{4(1)} + 5HCl_{(aq)}$

The rate equation for this reaction will be:
A) Rate = K $[POCl_3][H_2O]^3$
B) Rate = K $[PCl_3][H_2O]$
C) Rate = K $[PCl_5]\ [H_2O]^4$
D) Rate = K $[PCl_5][H_2O]$

Q.225: Carboxylic acids can be reduced into corresponding alcohols. Which of the following reagent can be used for this purpose? (2019)
A) $KMnO_4$
B) $LiAlH_4$
C) $K_2Cr_2O_4$
D) H_2SO_4

Q.226: Which of the following reagent is required for preparation of acyl chloride (CH_3COCl) from ethanoic acid? (2019)
A) PCl_5
B) $POCl_3$
C) CH_3Cl
D) HCl

Q.227: Which of the following reaction is used for the production of alcohols on industrial scale? (2019)
A) Hydrogenation of alkense
B) Hydration of alkenes
C) Hydrohalogenation of alkenes
D) Hydroxylation of alkenes

Q.228: The names of func

A) Secondary alco
B) Secondary alco
C) Secondary alc
B) Primary alcoh

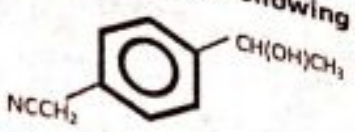
Q.229: 1UPAC name o
A) Phenoxy hep
B) 1-Phenoxy h

Q.230: Phenol is kno
A) Carpolic acid
B) Carbonylic a

Q.231: Phenol is mo
A) Delocalizati
B) Delocalizat
C) Delocalizat
D) Delocaliza

1.	B	2.	D
11.	C	12.	D
21.	A	22.	D
31.	C	32.	
41.	C	42.	
51.	C	52.	
61.	A	62.	
71.	D	72.	
81.	C	82.	
91.	B	92.	
101.	A	10	
111.	C	1	
121.	D	1	
131.	C		
141.	D		
151.	A		
161.	A		

Q.228: The names of functional group in the following compound X are: (2019)



A) Secondary alcohol nitrile and phenol ring
B) Secondary alcohol amine and benzene ring
C) Secondary alcohol nitrile and ary1 ring
B) Primary alcohol nitrile and benzene ring

Q.229: 1UPAC name of $C_6H_5O(CH_2)_6CH_3$ is: (no answer available in question)
A) Phenoxy heptyle
B) 1-Phenoxy heptane
C) Phenoxy methylene methyl
D) 2-Methyl Phenyle alcohol

Q.230: Phenol is known as: (2020)
A) Carpolic acid
B) Carbonylic acid
C) Carbolic acid
D) Carbolylic acid

Q.231: Phenol is more acidic than alcohols because of the following reason: (2020)
A) Delocalization of negative charge in the Oil group
B) Delocalization of positive charge on the carbon atom in ring
C) Delocalization of negative charge in the ring
D) Delocalization of positive charge in the OH group

ANSWERS

1.	B	2.	D	3.	D	4.	C	5.	D	6.	B	7.	A	8.	D	9.	D	10.	A
11.	C	12.	D	13.	B	14.	D	15.	D	16.	B	17.	C	18.	B	19.	A	20.	A
21.	A	22.	D	23.	D	24.	B	25.	D	26.	A	27.	B	28.	C	29.	C	30.	A
31.	C	32.	A	33.	A	34.	C	35.	D	36.	B	37.	C	38.	C	39.	B	40.	A
41.	C	42.	A	43.	C	44.	D	45.	D	46.	B	47.	C	48.	D	49.	A	50.	C
51.	C	52.	B	53.	C	54.	C	55.	A	56.	C	57.	D	58.	B	59.	A	60.	B
61.	A	62.	A	63.	D	64.	A	65.	B	66.	D	67.	B	68.	D	69.	A	70.	B
71.	D	72.	B	73.	B	74.	B	75.	C	76.	A	77.	A	78.	A	79.	A	80.	C
81.	C	82.	B	83.	B	84.	A	85.	A	86.	A	87.	C	88.	C	89.	C	90.	A
91.	B	92.	B	93.	D	94.	C	95.	D	96.	B	97.	A	98.	A	99.	C	100.	D
101.	A	102.	C	103.	B	104.	A	105.	C	106.	A	107.	B	108.	C	109.	D	110.	D
111.	C	112.	B	113.	D	114.	D	115.	C	116.	C	117.	C	118.	C	119.	B	120.	D
121.	D	122.	A	123.	C	124.	C	125.	B	126.	C	127.	C	128.	A	129.	A	130.	C
131.	C	132.	D	133.	D	134.	C	135.	C	136.	A	137.	B	138.	B	139.	D	140.	C
141.	D	142.	C	143.	D	144.	C	145.	C	146.	D	147.	A	148.	A	149.	B	150.	B
151.	A	152.	B	153.	C	154.	B	155.	B	156.	B	157.	D	158.	A	159.	B	160.	C
161.	A	162.	A	163.	B	164.	A	165.	B	166.	B	167.	C	168.	A	169.	A	170.	A

171.	A	172.	C	173.	B	174.	B	175.	D	176.	C	177.	B	178.	C	179.	B	180.	C
181.	C	182.	B	183.	B	184.	A	185.	C	186.	D	187.	B	188.	B	189.	B	190.	A
191.	B	192.	C	193.	B	194.	B	195.	B	196.	D	197.	C	198.	D	199.	D	200.	D
201.	D	202.	D	203.	B	204.	D	205.	C	206.	C	207.	D	208.	A	209.	B	210.	A
211.	B	212.	A	213.	C	214.	C	215.	C	216.	C	217.	C	218.	D	219.	B	220.	D
221.	B	222.	A	223.	C	224.	B	225.	B	226.	A	227.	B	228.	C	229.	B	230.	C
231.	C	232.		233.		234.		235.		236.		237.		238.		239.		240.	

ALD

Q.1 **A substance having sign**
A) addition
B) substitution

Q.2 **A substance having onl**
A) addition
B) substition

Q.3 **Approaching of reage**
A) non polar
B) polar

Q.4 **carbonyl group has r**
A) symmetrical
B) unsymmetrical

Q.5 **The nueleophilic add**
A) acids
B) bases

Q.6 **The product formed called:**
A) product
B) yield

Q.7 **Which reaction is**
A) Addition of HCN
B) Addition of Grign

Q.8 **Condensation of t gives:**
A) cyanohydrin
B) alcohols

Q.9 **Acetaldehyde an product:**
A) holoform
B) metaformaldeh

Q.10 **Formaldehyde**
A) holoform
B) metaformalde

Q.11 **Lactic acid can**
A) HCN
B) NH_2

Q.12 **The name ald**
A) aldehyde &
B) aldehyde &

Q.13 **Two molecul**
A) enol
B) aldol

Q.14 **On heating forms:**
A) single
B) double

Q.15 **Cannizaro's**
A) weak aci
B) weak ba

Q.16 **Aldol cond**
A) weak ac
B) weak ba

Q.17 **Crystals**
A) yellow
B) orange

Q.18 **Which ca**
A) alkene
B) alkyne

Q.19 **Which a**
A) alken
B) alkyn

ALDEHYDES AND KETONES

Q.1 **A substance having sigma and pi bond in it gives:**
A) addition
B) substitution
C) reduction
D) neutralization

Q.2 **A substance having only sigma bond gives reaction:**
A) addition
B) substition
C) reduction
D) neutralization

Q.3 **Approaching of reagent makes the carbonyl group:**
A) non polar
B) polar
C) ionic
D) covalent

Q.4 **carbonyl group has distribution of electron density:**
A) symmetrical
B) unsymmetrical
C) partially symmetrical
D) equally distributed

Q.5 **The nueleophilic addition reactions of carbonyl group are catalysed by:**
A) acids
B) bases
C) acids and bases
D) salts

Q.6 **The product formed during reactions of carbonyl group in aldehydes and ketone is called:**
A) product
B) yield
C) adduct
D) addict

Q.7 **Which reaction is base catalysed?**
A) Addition of HCN
B) Addition of Grignard's reagent
C) Addition of Sodium bisulphate
D) all

Q.8 **Condensation of two aldehydes having no α-hydrogen in the presence of strong base gives:**
A) cyanohydrin
B) alcohols
C) sodium bisulphate adduct
D) alcohol and salt of aldehydes

Q.9 **Acetaldehyde and methyl ketones react with halogens in the presence of NaOH gives product:**
A) holoform
B) metaformaldehyde
C) paraldehyde
D) ethanoloxine

Q.10 **Formaldehyde polymerizes in the presence of dil H_2SO_4 to give:**
A) holoform
B) metaformaldehyde
C) paraldehyde
D) ethanoloxine

Q.11 **Lactic acid can be prepared from reaction of acetaldehyde with:**
A) HCN
B) NH_2
C) H_2N-NHOH
D) $NaHSO_3$

Q.12 **The name aldol is given to a product because it contains functional group:**
A) aldehyde & alcohol
B) aldehyde & ketone
C) aldehyde & carboxylic
D) aldehyde and ether

Q.13 **Two molecules of the same carbonyl compound condense to form:**
A) enol
B) aldol
C) cresol
D) camphor

Q.14 **On heating aldol in the presence of dil. HCL, a bond between α- and β- carbon atoms forms:**
A) single
B) double
C) triple
D) polar

Q.15 **Cannizaro's condensation occurs in the presence of:**
A) weak acid
B) weak base
C) strong acid
D) strong base

Q.16 **Aldol condensation occurs in the presnce of:**
A) weak acid
B) weak base
C) strong acid
D) strong base

Q.17 **Crystals of 2-4-dinitrophenyl hydrazone are:**
A) yellow
B) orange
C) yellow and orange
D) red

Q.18 **Which can be reduced?**
A) alkenes
B) alkynes
C) aldehydes
D) all of these

Q.19 **Which are reduced to primary alcohol?**
A) alkenes
B) alkynes
C) aldehydes
D) ketones

Q.20 Which are reduced to secondary alcohols?
A) alkenes
B) alkynes
C) aldehydes
D) ketones

Q.21 Reducing agengt is:
A) $NaBH_4$
B) Ni
C) Cu
D) $KMnO_4/H_2SO_4$

Q.22 Oxidizing agent:
A) $NaBH_4$
B) Ni
C) Cu
D) $KMnO_4/H_2SO_4$

Q.23 Hydrating agent is:
A) $NaBH_4$
B) Ni
C) Cu
D) $KMnO_4/H_2SO_4$

Q.24 Methanal is reduced in the presence of catalyst into:
A) methane
B) alcohol
C) methanol
D) ethanol

Q.25 Aldehydes and ketones are reduced to:
A) methane
B) alcohol
C) carboxylic acids
D) phenol

Q.26 On reduction, carboxyl group is converted to:
A) methane
B) alcohol
C) methanol
D) ethanol

Q.27 Ethanal is reduced to:
A) methane
B) alcohol
C) methanol
D) ethanol

Q.28 Propanone (acetone) is reduced to:
A) acetic acid
B) ethone
C) ethane
D) 2-propanol

Q.29 Which bond can't be reduced by $NaBH_4$?
A) $C \equiv C$
B) $C = C$
C) $C = O$
D) Both A) & B)

Q.30 Hydrolysis of which regenerates the aldehydes?
A) aldol
B) enol
C) ketol
D) acetal

Q.31 Mild oxidizing agents used for aldehydes are:
A) Tollens reagent
B) Fehling solution
C) Benedict solution
D) All of these

Q.32 Strong oxidizing agents are
A) Tollens reagent
B) Fehling solution
C) Benedict solution
D) $KMnO_4$ or $K_2Cr_2O_7/H_2SO_4$

Q.33 Oxidation of ketones is:
A) tough
B) impossible
C) easy
D) very easy

Q.34 Oxidation of ketones require breaking of bond:
A) C – O
B) C – H
C) C – C
D) C = C

Q.35 The oxidizing agent(s) used for ketones:
A) $KMnO_4/H_2SO_4$
B) $K_2Cr_2O_7/H_2SO_4$
C) conc. HNO_3
D) All of these

Q.36 Which carbon atom is preferably oxidized in unsymmetrical ketones?
A) having least number of hydrogen atoms
B) maximum number of hydrogen atoms
C) maximum number of lakyl groups
D) a mixture of two carboxylic acids form

Q.37 Oxidation of symmetrical alkenes yield:
A) having least number of hydrogen atoms
B) maximum number of hydrogen atoms
C) maximum number of alkyl groups
D) a mixture of two carboxylic acids form

Q.38 Acetone oxidizes to:
A) acetic acid
B) formic acid
C) alcohol
D) alkanes

Q.39 Butanone oxidizes to:
A) acetic acid
B) formic acid
C) alcohol
D) alkanesl

Q.40 Aldehydes react with tollen's reagent forming:
A) yellow or red ppt
B) white ppt
C) silver mirror
D) brick red

Q.41 Aliphatic aldehydes rea
precipitate:
A) yellow or red ppt
B) white ppt

Q.42 $Ag(NH_3)_2NO_3$ is change
A) yellow or red ppt
B) white ppt

Q.43 Ketone gives test with
A) Fehling solution
B) Tollen's reagent

Q.44 Aldehydes give tests
A) Fehling solution
B) Benedict solution &

Q.45 Which test is given t
A) 2,4-DNPH
B) Fehling solution

Q.46 Resins like urea, fo
A) formaldehyde
B) ether

Q.47 Indigo and para-ro
A) formaldehyde
B) ether

Q.48 The decolourising
A) formaldehyde
B) ether

Q.49 To prepare medic
A) formaldehyde
B) ether

Q.50 Formamint used
A) formaldehyde
B) ether

Q.51 Which of the fo
A) $CH_3CO H$
B) $CH_3 CO CH_3$

Q.52 Cannizzaro's re
A) Formaldehyd
B) Acetaldehyde

Q.53 Which of the f
A) Grignard's re
B) Tollen's reag

Q.54 Aldehydes ar
A) Primary alc
B) Sec-alcohol

Q.55 The homolog
A) $C_6H_{2n}O$
B) C_6H_6O

Q.56 Iodoform te
A) Formaldeh
B) Formaldel

Q.57 Aldehydes
A) reduction
B) oxidation

Q.58 Cannizzaro
A) self oxid
B) dispropo

Q.59 Hydroxyl
A) alcohol
B) aldehyc

Q.60 Which is
A) Tollen'
B) $KMnO_4$

Q.61 Which is
A) KMnO
B) K_2Cr_2

Q.41 **Aliphatic aldehydes react with Fehling solution and Benedict solution forming precipitate:**
A) yellow or red ppt
B) white ppt
C) silver mirror
D) brick red

Q.42 **$Ag(NH_3)_2NO_3$ is changed to Ag in Tollen's test giving ppt:**
A) yellow or red ppt
B) white ppt
C) silver mirror
D) brick red

Q.43 **Ketone gives test with:**
A) Fehling solution
B) Tollen's reagent
C) Benedict solution
D) Sodium Nitroprusside test

Q.44 **Aldehydes give tests with:**
A) Fehling solution
B) Benedict solution & Tollen's test
C) Tollen's test
D) All of these

Q.45 **Which test is given by both aldehydes and ketones:**
A) 2,4-DNPH
B) Fehling solution
C) Tollen's reagent
D) Benedict solution

Q.46 **Resins like urea, formaldehyde, bakelite are prepared from:**
A) formaldehyde
B) ether
C) acetic acid
D) ethanol

Q.47 **Indigo and para-rosanline dyes are prepared from:**
A) formaldehyde
B) ether
C) acetic acid
D) ethanol

Q.48 **The decolourising agent in rat dyeing used is:**
A) formaldehyde
B) ether
C) acetic acid
D) ethanol

Q.49 **To prepare medicine of urinary antiseptic called arotropine, chemical used is:**
A) formaldehyde
B) ether
C) acetic acid
D) ethanol

Q.50 **Formamint used as throat lozenges is prepraed from:**
A) formaldehyde
B) ether
C) acetic acid
D) ethanol

Q.51 **Which of the following compounds will react with Tollen's reagent?**
A) $CH_3CO\,H$
B) $CH_3\,CO\,CH_3$
C) $CH_3\,COOH$
D) $CH_3\,CO\,CH_2CH_3$

Q.52 **Cannizzaro's reaction is not given by:**
A) Formaldehyde
B) Acetaldehyde
C) Benzaldehyde
D) Trimethyl acetaldehyde

Q.53 **Which of the following reagent will react with both alkehyde and ketones?**
A) Grignard's reagent
B) Tollen's reagent
C) Fehling's reagent
D) Benedict's reagent

Q.54 **Aldehydes are oxidized to give:**
A) Primary alcohol
B) Sec-alcohol
C) Ter-alcohol
D) Carboxylic acid

Q.55 **The homologous series of aldehydes and ketones have general formula:**
A) $C_6H_{2n}O$
B) C_6H_6O
C) $C_6H_{2n-1}O$
D) $C_6H_6O_6$

Q.56 **Iodoform test is given by:**
A) Formaldehyde and higher ketones
B) Formaldehyde
C) Acetaldehyde and methyl ketones
D) Acetaldehyde

Q.57 **Aldehydes and ketones can be prepared from alcohols by their:**
A) reduction
B) oxidation
C) decomposition
D) synthesis

Q.58 **Cannizzaro's reaction is type of reaction:**
A) self oxidation-Reduction reaction
B) disproportion reaction
C) addition
D) a and b

Q.59 **Hydroxyl amine is a derivative of:**
A) alcohol
B) aldehyde
C) ammonia
D) ketone

Q.60 **Which is mild oxidizing agent?**
A) Tollen's reagent
B) $KMnO_4/H_2SO_4$
C) $K_2Cr_2O_7/H_2SO_4$
D) dil HNO_3

Q.61 **Which is strong oxidizing agent?**
A) $KMnO_4$ in H_2SO_4
B) $K_2Cr_2O_7$ in H_2SO_4
C) dil HNO_3
D) All of these

Q.62 Ketones can be oxidized by:
A) Tollen's reagent
B) Benedict solution
C) Fehling solution
D) dil HNO_3

Q.63 Condensation of aldehydes with α-hydrogen gives:
A) acetal
B) ketal
C) aldol
D) cannizzaro product

Q.64 Dehydration of alcohol gives:
A) alkane
B) alkene
C) aldehyde
D) ketone

Q.65 Principal consitutent of many oils used as fragnances and flavours are:
A) aldehydes
B) ketones
C) halides
D) nitrides

Q.66 In camphor and menthane, the functional group present belongs to:
A) aldehydes
B) ketones
C) Halides
D) nitrides

Q.67 Aldehydes are prepared from:
A) Oxidation of prijmary alchols
B) Lucas test
C) Grignard's reagent
D) Frankland reaction

Q.68 Ketones are prepared from:
A) Oxidation of primary alcohol
B) oxidation of secondary alcohols
C) oxidation of tertiary alcohol
D) Grignard's reagent

Q.69 Pure acetaldehyde is obtained by:
A) redistillation
B) crystallization
C) evaporation
D) sublimation

Q.70 Ethanol in the presence of acidified sodium dichromate is oxidized to:
A) methanal
B) Methanol
C) ethanal
D) ethanoic acid

Q.71 Dry distillation of a mixture of calcium salts of formic and acetic acid gives:
A) methanal
B) methanol
C) ethanal
D) ethanoic acid

Q.72 Dry distillation of formic acid gives:
A) methanal
B) methanol
C) ethanal
D) ethanoic acid

Q.73 Oxidation of ethylene in the presence of catalyst $PdCl_2$ and promoter $CuCl_2$ gives industrially:
A) methanal
B) methanol
C) ethanal
D) ethanoic acid

Q.74 The I.U.P.A.C name of CH_3CHO is:
A) Ethanal
B) Acetaldehyde
C) Ethanol
D) Methyl aldehyde

Q.75 Hybridisation of carbon in – CHO group is:
A) sp
B) sp^2
C) sp^3
D) none of these

Q.76 Carbonyl group undergoes?
A) Electrophilic addition reactions
B) Nucleophilic addition reactions
C) both
D) none of these

Q.77 Which of the following carbonyl compounds is most active?
A) HCHO
B) CH_3CHO
C) CH_3COCH_3
D) C_2H_5CHO

Q.78 Which of the following does not undergoes aldol condensation?
A) HCHO
B) CH_3CHO
C) CH_3CH_2CHO
D) CH_3COCH_3

Q.79 Fehling's solution consists of two separate solution. One solution contains $CuSO_4$ the other contains?
A) NaHCO3
B) $H_2C_2O_4$
C) K_2CO_3
D) $KNaC_4H_4O_6$

Q.80 Which of the following gives silver mirror test:
A) Propanol
B) Propanal
C) Propanone
D) benzenone

Q.81 Which of the following undergoes haloform reaction?
A) HCHO
B) $(CH_3)_2CO$
C) $CH_3 - O - CH_3$
D) CH_3CH_2Cl

Q.82 **Isopropyl alcohol on passing over heated copper at 300 gives?**
A) propylene
B) acetaldehyde
C) Acetone
D) Propanone

Q.83 **Methylene chloride on hydrolysis yields?**
A) HCHO
B) CH_3CHO
C) CH_3CHO
D) none of these

Q.84 **Ammonia reacts with the following to produce urotropine?**
A) HCHO
B) CH_3CHO
C) CH_3COCl
D) none of these

Q.85 **Aldehydes having no α - hydrogen atoms undergo?**
A) Friedel Crafts reaction
B) Reimer Tiemann reaction
C) Cannizzaro's reaction
D) Rosenmund reaction

Q.86 **The IUPAC name of crotonaldehyde Is >**
A) Propental
B) But - 2 - ene -1- al
C) Butane -2 , 1 - al
D) None

Q.87 **Which of the following compounds will give a ketone on oxidation ?**
A) $(CH_3)_3C.OH$
B) $CH_3CH_2CH_2OH$
C) $CH_3CH_2CH(OH)CH_3$
D) $(CH_3)_2CH\ CHO$

Q.88 **Which of the following gives positive haloform test and positive Fehling solution test?**
A) Acetone
B) Acetaldehyde
C) Ethanol
D) Formaldehyde

Q.89 **HCHO undergoes condensation with phenol in presence of alkaline catalyst to form ?**
A) Formalin
B) Paraformer aldehyde
C) Bakelite
D) Meta formaldehyde

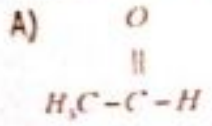
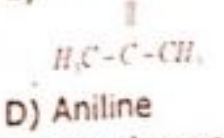
Q.90 **A Process that involves the union of two or more molecules to from a new molecular aggregate is knows as?**
A) Polarization
B) Polymerization
C) Photosensitization
D) Pasteurization

Q.91 **How many π electrons are there in planar ring of phenol**
A) 4
B)10
C) 8
D) 6

Q.92 **When calcium formate is dry heated it forms**
A) HCOOH
B) C_2H_5OH
C) CH_3CHO
D) HCHO

Q.93 **The oxidation of which of the following compound gives ethyl methyl ketone**
A) Propan-2-ol
B) Butan-1-ol
C) Butan-2-ol
D) 2-methyl butan-2-ol

Q.94 **An alkaline iodine solution (iodoform test) can be used to distinguish between which of the following members of the pair?**
A) CH_3CHO and CH_3COCH_3
B) CH_3CH_2CHO and CH_3COCH_3
C) CH_3CH_2OH and $CH_3CH_2CH(OH)CH_3$
D) CH_3OH and CH_3CH_2CHO

Q.95 **Which one of the following organic compounds don't reacts with Tollen's reagent and give SNP test?**
A) 
B) Propanal
C) 
D) Aniline

Q.96 **Aldehydes and ketones react with all of the following reagents EXCEPT?**
A) $Cl_2(CCl_4)$
B) 2.4-DNPH
C) Grignard reagent
D) Reaction with HCN

Q.97 **Which of the following will not form when calcium formate is distilled with calcium acetate**
A) Acetone
B) Ethanal
C) Propanal
D) Methanal

Q.98 **Acetaldehyde and ketones form addition product with**
A) Phenyl hydrazine
B) Hydroxylamine
C) Hydrazine
D) Hydrogen cyanide

Q.99 **The colour of precipitate of 2,4,6-tribromophenol is**
A) Yellow
B) Orange
C) Green
D) White

Q.100 Most of the reactions of carbonyl groups are
A) nucleophilic addition
B) electrophilic addition
C) nucleophilic substitution
D) electrophilic subsitution

Q.101 An alcohol is converted into an aldehyde with same number of carbon atoms as that of alcohol in the presence of $K_2Cr_2O_2$ / H_2SO_4. This alcohol is: (2011)
A) $CH_2C(CH)_2OH$
B) $CH_3CH_2CH_2OH$
C) $(CH_3)_3COH$
D) $(CH_3)_2CHOH$

Q.102 The nucleophilic addition reactions on a carbonyl functional group is catalysed by a / an
A) Acid
B) Both a & b
C) base
D) None of these

Q.103 In which of the following types of reactions are the carbonyl compounds and alkenes are similar in behaviour
A) Nucleophilic addition
B) Electrophilic addition
C) Nucleophilic substitution
D) Catalytic hydrogenation

Q.104 Which of the following can work as a dehydrating agent for alcohols
A) Al_2O_3
B) H_2SO_4
C) P_2O_5
D) All of these

Q.105 Propanone does not undergo
A) Condensation
B) Reduction of Fehling solution
C)Hydrazone formation with hydrazine
D) Reaction with HCN

Q.106 $NaBH_4$ reduces all the following compounds to respective alcohols EXCEPT:
A) $H-\overset{O}{\overset{\|}{C}}-H$
B) $H_3C-\overset{O}{\overset{\|}{C}}-CH_3$
C) $CH_3-\overset{O}{\overset{\|}{C}}-H$
D) $HC \equiv CH$

Q.107 Which of the following compounds will not give iodoform test on treatment
A) Acetaldehyde
B) Butanone
C) Acetone
D) 3-Pentanone

Q.108 Which of the following reagents will react with both aldehydes and ketones?
A) HCN
B) Fehling's reagent
C) Tollen's reagent
D) Benedict's reagent

Q.109 Which of the following ketone will not give iodoform test
A) Methyl isopropyl ketone
B) Dimethyl ketone
C) Ethyl isopropyl ketone
D) 2-hexanone

Q.110 Which of the following reagents react in same manner with HCHO, CH_3CHO and CH_3COCH_3
A) HCN
B) $Cu(OH)_2$ / NaOH
C) Ammonical $AgNO_3$
D) $Cu(OH)_2$ only

Q.111 The reaction of formaldehyde with HCN is
A)NUcleophilic substitution
B) Electrophilic substitution
C) Nucleophilic addition
D) Free radical addition

Q.112 Which of the following statement is NOT correct for ketone and acetaldehyde
A) Both from cyanohydrins when reacted with HCN
B) Both form alcohol o reduction
C) Both form acids while oxidized
D) Both form polymer with dilute H_2SO_4

Q.113 Which is a mixed ketone?
A) 3-Pentanon
B) Benzophenone
C) Acetophenone
D) All of these

Q.114 The least reactive compound towards nucleophilic addition reactions is:
A) propanone
B) pentane-3-one
C) pentane-2-one
D) 2, 4-Dimethylpentane-3-one

Q.115 Aldehydes ($R-\overset{O}{\overset{\|}{C}}-H$) behaves as _____ when treated with acidified $K_2Cr_2O_7$:
A) Oxidizing agent
B) Reducing agent
C) Dehydrating agent
D) Oxidizing agent and reducing agent

Q.116 **Among the methanal, propanone and ethanal, the order of reactivity is:**
A) HCHO > CH_3CHO > $(CH_3)_2CO$
B) $(CH_3)_2CO$ > CH_3CHO > HCHO
C) CH_3CHO > HCHO > $(CH_3)_2CO$
D) CH_3CHO > $(CH_3)_2CO$ > HCHO

Q.117 **Which reagent will give similar results with both propanone and propanal w.r.t product?**
A) Acidified $K_2Cr_2O_7$
B) An alkaline solution containing Cu^{+2} ions (Periling solution)
C) An alkaline containing $[Ag(NH_3)_2]^+$ (Tollen's reagent)
D) 2,4-DNPH reagent

Q.118 **Which of the following gives positive haloform test and positive Fehling solution test**
A) Acetone
B) Ethanol
C) Acetaldehyde
D) Formaldehyde

Q.119 **Which reagent will perform the following reduction**

$$CH_3\text{-}CH=CH\text{-}CHO \longrightarrow CH_3\text{-}CH=CH\text{-}CH_2\text{-}OH$$

A) V_2O_5
B) NaB_4
C) H_2/Ni
D) Both "B"and "C"

Q.120 **The addition compound obtained by reacting acetaldehyde and HCN, When hydrolyzed gives**
A) Ethyl alcohol
B) Methyl cyanide
C) 2-Hydroxpropanoic acid
D) Ethyl cyanide

Q.121 **Which of the following tests are positive with acetaldehyde and negative with acetone**
A) Tollen's test
B) Fehling test
C) Benedict test
D) All

Q.122 **The test use to differentiate aldehydes from ketones through reduction is:**
A) 2, 4 – DNPH test
B) $NaBH_4$ Test
C) Chromic Acid Test
D) Tollen's Test

Q.123 **Which one of the following compounds has these properties?**
(i) It gives positive iodoform test
(ii)It is readily oxidized to ethanoic acid.
(iii)It does not react with Fehling's solution.
A) $CH_3\ CH_2\ CO\ CH_3$
B) $CH_3\ CH_2$ OH
C) $CH_3\ CH_2$ CHO
D) $CH_3\ CH_2$ – O – CH_2 – CH_3

Q.124 **Which of the following products is not possible in the reaction given below?**

$$(C_2H_5COO)_2Ca + (C_6H_5COO)_2\ Ca \xrightarrow[\text{distilation}]{\text{Dry}}$$

A) $C_2H_5COC_2H_5$
B) $C_6H_5COC_6H_5$
C) $C_2H_5COC_6H_5$
D) $C_6H_5CH_2COCH_3$

Q.125 **The increasing order of the rate of HCN addition to compounds I-IV is:**
(I) HCHO
(II) CH_3COCH_3
(III) phCOCH$_3$
(IV) phCOPH
A) I < II < III < IV
B) IV < II < III < I
C) IV < III < II < I
D) III < IV < II < I

Q.126 **Consider the following reaction:** $R\text{-}CHO + 2[Ag(NH_3)_2]OH \rightarrow R\text{-}COONH_4 + 2Ag +$ $2NH_3+H_2O$ **This reaction represents one of the following tests:** (2011)
A)Fehlings test
B) Benedict test
C)Ninhydrine test
D)Tollen's test

Q.127 **A base catalyst increases the _____ character of the reagent.**
A) Electrophilic
B) Carbonyl
C) nucleophilic
D) None of these

Q.128 **Acetone reacts with HCN to form cyanohydrin. It is an example of:**
A) Electrophilic addition
B) Nucleophilic addition
C) Electrophilic substitution
D) Necleophilic substitution

Q.129 **Aldol product on heating undergoes:**
A) Decomposition
B) Rearrangement
C) Dehydration
D) hydrogenation

Q.130 Which compound will not give Iodoform test on treatment with I_2/NaOH?
A) Acetaldehyde
B) Butanone
C) Acetone
D) 3-Pentanone

Q.131 Which is most difficult to oxidize?
A) HCHO
B) CH_3 CHO
C) CH_3 CO CH_3
D) C_2H_5 CHO

Q.132 Positive Iodoform test is given by
A) 3 - Pentanone
B) 2 - Pentanone
C) 1 - Pentanol
D) 2,4-Dinitrophenyl hydrazinB)

Q.133 Which of the following aldehydes does not reduce Fehling's solution?
A) Acetaldehyde
B) Phenyl acetaldehyde
C) Formaldehyde
D) Benzaldehyde

Q.134 In aldehydes, one of the two available valencies of the carbonyl group is alwayattachedto:
A) Carbon atom
B) Nitrogen atom
C) Hydrogen atom
D) Oxygen atom

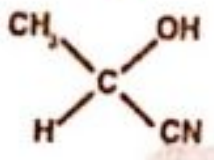
Q.135 Formalin is an aqueous solution of:
A) Formic acid
B) Acetaldehyde
C) Methanal
D) Acetic acid

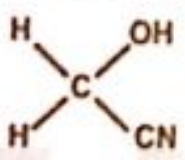
Q.136 It is an alkaline solution of tartarate complex of Cu (II):
A) Tollen's reagent
B) Fehling's solution
C) Rochelle salt
D) Nesseler's reagent

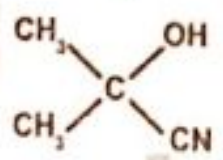
Q.137 Primary alcohols normally give us aldehydes when oxidized in the presence of $Na_2Cr_2O_7$, what the product will be, when secondary alcohols are oxidized in same conditions? (2012)
A) Alkenes
B) Alkyl halides
C) Alkynes
D) Ketones

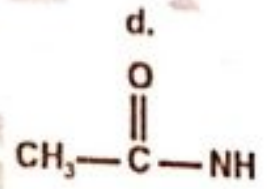
Q.138 Which is more reactive?
A) an aldehyde
B) both have same reactivity
C) a ketone
D) None of these

Q.139 Formaldehyde reacts with HCN (NaCN + HCl) to give a compounD)

a. 

b. 

c. 

d. 

(2012)

A) a
B) b
C) c
D) d

Q.140 Which of the following carbonyl compounds undergo haloform reaction?
A) Benzaldehyde (C_6H_5 - CHO)
B) Formaldehyde (H - CHO)
C) 3-Pentanone (C_2H_5 - CO - C_2H_5)
D) Ethanal (CH_3 - CO - H)

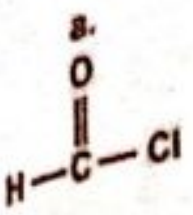
Q.141 Ketones are oxidized to form carboxylic acid having carbon atom ____ than paret ketone)
A) Less
B) Some time less and some time more
C) More
D) None of the above

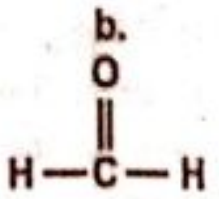
Q.142 At room temperature formaldehyde is:
A) Gas
B) Solid
C) Liquid
D) None

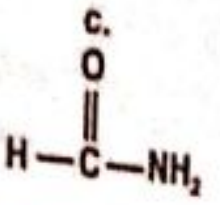
Q.143 The product formed in the presence of an acid and base for same carbonyl compounds is
A) different
B) reactive
C) same
D) unreactive

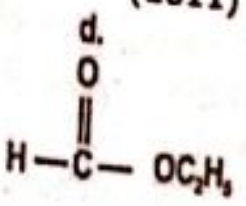
Q.144 Which is used for the reduction of aldehydes and ketones?
A) $NaBH_4$
B) Ni
C) Pt/Pd
D) All of these

Q.145 Which of the following compounds belong to the homologous series of Aldehydes? (2011)

a. 

b. 

c. 

d. 

A) a
B) b
C) c
D) d

Q.146 Which compound gives brick red precipitate of cuprous oxide with Benedict's solution:
A) Aromatic aldehyde
B) Aromatic ketones
C) Aliphatic aldehydes
D) Aliphatic ketones

Q.147 Ketones produced a wine red or orange red color on adding:
A) Fehling solution
B) Alkaline sodium nitroprusside solution
C) Tollen's solution
D) All of these

Q.148 An aqueous solution containing about 40% of formaldehyde and a little alcohol is sold under the name of _____
A) Formalin
B) Pyridine
C) Malt-sugar
D) Starch

Q.149 The addition compound obtained by reacting acetaldehyde and HCN, when hydrolyzed, gives
A) Ethyl alcohol
B) Methyl cyanide
C) Lactic acid
D) Ethyl cyanide

Q.150 Tollen's reagent contains
A) $[Ag(NH_3)_2]^+$ ions
B) Ag_2O
C) $[Cu(OH)_4]^{2+}$ ions
D) CuO

Q.151 Aldehydes and ketones can be reduced to corresponding hydrocarbons by
A) refluxing with strong acids
B) Refluxing with zinc amalgam
C) Passing the vapours under heated PbO_2
D) refluxing with strong alkali

Q.152 Aldehydes are oxidized to carboxylic acid by oxidizing agent like Fehling solution while thecupric ions (Cu^{2+}) of $Cu(OH)_2$ (Fehling solution) are reduced to:
A) Copric oxide
B) Cupric chloride
C) Cuprous sulphide
D) Cuprous oxide (Cu_2O)

Q.153 A compound containing aldehydic group and alcoholic group is known as:
A) Glycol
B) Glycerol
C) Ketol
D) Aldol

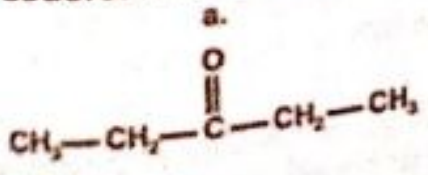
Q.154 Aldol condensation cannot occur between:
A) Two identical or different aldehydes
B) An aldehyde and a ketone
C) Two identical or different ketone
D) An aldehyde and an ester

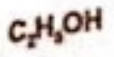
Q.155 Fehling's test is not commonly shown by: (2011)
A) aliphatic aldehydes
B) CH_3CHO
C) aromatic aldehydes
D) CH_3CH_2CHO

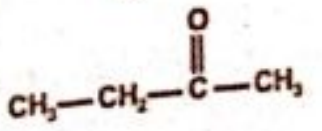
Q.156 Chromic acid is used to oxidize
A) Aldehyde
B) Both a & b
C) Ketone
D) None of these

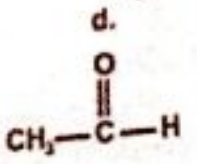
Q.157 Reactions in which Aldehydes differs from ketones such as reactions with $K_2Cr_2O_7$ + H_2SO_4, Tollen's reagent and Fehling solution are examples of _____ type of reactions.
A) oxidation
B) neutralization
C) reduction
D) None of these

Q.158 Iodoform test will not be positive with: (2012)

a. 

b. 

c. 

d. 

A) a
B) b
C) c
D) d

Q.159 Which one of the following reactions is not given by formaldehyde?
A) Reduction of Fehling's solution
B) Formation of phenol complexes
C) Reduction of Tollen's solution
D) Iodoform reaction

Q.160 The nucleophilic addition reaction of carbonyl group arecatalysed by:
A) Salt
B) Acids or bases
C) Transition element
D) All of these

Q.161 The C = O bond and C = C bond are similar in which of the following ways?
A) Both are made up of one sigma bond and one pi bond
B) Both are planer in nature
C) Both use sp^2 hybrid orbitals of the C atom for their formation
D) All the above

Q.162 Which reagent is used to reduce a carbonyl group to an alcohol
A) H_2/Ni
B) $NaBH_4$
C) H_2/Pt
D) $MAIH_4$

Q.163 Which one of the following aldehyde will not undergoes self-redox reaction?
A) Trichloro acetaldehyde
B) benzaldehyde
C) Formaldehyde
D) All of these

Q.164 Formation of cyanohydrin from CH_3 $COCH_3$ is called
A) Electrophilic substitution
B) Nucleophilic addition
C) Nucleoophlic substitution
D) Electrophilic addition

Q.165 Aldehydes and Ketones react with 2, 4 dinitrophenyl hydrazine solution to give precipitate of the colour:
A) Yellow or red
B) White or red
C) Orange or red
D) Black or red

Q.166 Which of the following reagent will react with both aldehydes and ketones:
A) Grignard reagent
B) Fehling's reagent
C) Tollen's reagent
D) Benedict's reagent

Q.167 Methyl ketones are characterized by:
A) Tollen's reagent
B) Benedict's reagent
C) Iodoform test
D) Fehling's solution

Q.168 Reaction in which Aldehydes differs from ketones such as reaction with sodium boron hydride is an examples of _____ type of reaction.
A) oxidation
B) neutralization
C) reduction
D) None of these

Q.169 Which of the compound will not give iodoform test on treatment with $I_2/NaOH$
A) Acetaldehyde
B) Butanone
C) Acetone
D) 3-Pentanone

Q.170 Which one of the following compound is ketone? (2014)
A) $CH_2 - O - CH_2 - CH_3$
B) $CH_2COCOOH$
C) $CH_3 - CO - CH_2 - CH_3$
D) $CH_3 - CH_2CHO$

Q.171 The compound used in the processing of anti-polio vaccine is:
A) Acetaldehyde
B) Acetone
C) Formaldehyde
D) Ethyl bromide

Q.172 Which one is not the general formula of aldehydes?
A) $C_nH_{2n+1}CHO$
B) $C_nH_{2n}O$
C) $C_nH_{2n+2}CO$
D) $C_nH_{2n}O_2$

Q.173 Which one of the following reaction sequences contains two compounds which both give a yellow precipitate on warming with a mixture of iodine and aqueous sodium hydroxide?
A) $CH_3CH_2Cl \longrightarrow CH_3CH_2OH \longrightarrow CH_3CO_2H$
B) $CH_3CH_2Cl \longrightarrow CH_3CH_2OH \longrightarrow CH_3COOH$
C) $CH_3CH_2Cl \longrightarrow CH_3CHO \longrightarrow CH_3CO_2H$
D) $CH_3CH_2OH \longrightarrow CH_3CH_2H \longrightarrow (CH_3CO)_2O$

Q.174 The product of the reaction between propanone and hydrogen cyanide is hydrolyzed under acidic conditions. What is the formula of the final product:
A) $CH_3CH(OH)CO_2H$
B) $CH_3CH_2CH_2CO_2H$
C) $CH_3CH_2CH(OH)CO_2H$
D) $(CH_3)_2C(OH)(COOH)$

Q.175 The table shows the results of simple test on a compound "S".

Reagent	Result
2,4-DNPH	Positive
Tollen's reagent	Negative
Alkaline aqueous Iodine	Positive

From the results of the tests, what could "S" be?

A) CH_3CHO
B) CH_3CH_2CHO
C) CH_3COCH_3
D) $H_3CCH(OH)CH_3$

Q.176 The oxidation of which of the following compound gives ethyl methyl ketonB)
A) Propan-2-ol
B) Butan-2-ol
C) Butan-1-ol
D) 2-methylbutan-2-ol

Q.177 Formaldehyde and acetaldehyde are manufactured by dehydrogenation of methanol and ethanol respectively. The catalys used in the reaction is
A) ConC) H_2SO_4
B) Nickel
C) Copper
D) H_3PO_4

Q.178 Consider the following general reaction of carbonyl group with a reagent:

$$\overset{\delta+\ \delta-}{C=O} + \overset{\delta+\ \delta-}{H-NU} \longrightarrow NU-\underset{|}{\overset{|}{C}}-OH$$

The mechanism of above reaction is:
A) Electrophilic addition reaction
B) Nucleophilic addition reaction
C) Electrophilic substitution reaction
D) Nucleophilic substitution reaction

Q.179 Formaldehyde when reacted with methyl magnesium bromide gives:
A) C_2H_5OH
B) HCHO
C) CH_3COOH
D) CH_3CHO

Q.180 Calcium acetate on dry distillation gives:
A) Formaldehyde
B) Acetic acid
C) Acetone
D) Ethanol

Q.181 The colour of ppts formed by Benedict's test is
A) brick red
B) yellow
C) Orange
D) orange

Q.182 Which of the following is the structure of a ketone? (2013)

a. $CH_3-\overset{O}{\overset{\|}{C}}-CH$
b. $CH_3-\overset{O}{\overset{\|}{C}}-Cl$
c. $CH_3-\overset{O}{\overset{\|}{C}}-NH_2$
d. $CH_3-\overset{O}{\overset{\|}{C}}-CH_3$

A) a
B) b
C) c
D) d

Q.183 Which group gives a yellow precipitate of triiodomethane when warmed with alkaline aqueous iodine? (2013)

A) Methyl Ketone group $CH_3-\overset{O}{\overset{\|}{C}}-$
B) Ethyle ketone group $C_2H_5-\overset{O}{\overset{\|}{C}}-$
C) A primary alcohol group as in propanol $CH_3CH_2CH_2OH$
D) An amide group $CH_3-\overset{O}{\overset{\|}{C}}-NH_2$

Q.184 A student mixed ethyl alcohol with small amount of sodium dichromate and added it to the hot solution of dilute sulphuric aciD) A vigorous reaction took placB) He distilled the product formed immediately. What was the product?
A) Acetone
B) Dimethyl ether
C) Acetic Acid
D) Acetaldehyde

Q.185 Iodoform test is show by aldehydes and ketones having _____ group.
A) Ethyle
B) Propyl
C) Methyl
D) Butyle

Q.186 Both aldehydes and ketones are planer to the neighborhoods of carbonyl ($>C=O$) group. Which one the following bonds is distorted towards the oxygen atoms?(2015)
A) n bond of C and O
B) Sigma Bond of C and O
C) Sigma bond of C and H
D) Sigma bond of C and C

Q.187 Which reactive intermediate is formed during the condensation reaction between acetaldehyde and formaldehyde?
A) $^{-}CH_2CHO$
B) $^{+}CH_2OH$
C) $^{\cdot}CH_2CHO$
D) $^{\cdot}CHCHO$

Q.188 An alkene, C_7H_{14}, on reductive ozonolysis gave propanal and a ketone. The probable ketone is:
A) acetone
B) ethyl methyl ketone
C) pentane-2-one
D) pentane-3-one

Q.189 Reaction of acetaldehyde with HCN followed by hydrolysis gives a compound which shows:
A) optical isomerism
B) geometrical isomerism
C) metamerism
D) tautomerism

Q.190 All of the following reactions of carbonyl compounds are base catalyzed reactions EXCEPT:
A) Addition of $NaHSO_3$
B) Cannizzaro reaction
C) Aldol condensation reaction
D) Addition of ammonia derivatives

Q.191 Which of the following reagents can be used to convert propanone into 2-Propanol:
A) $NaBH_4/H_2O$
B) $NaOH_{(aq)}$
C) KMnO4/dil. H_2SO_4
D) $NaHSO_3$

Q.192 A new carbon-carbon bond is not formed in
A) Friedel-Crafts acylation
B) Reimer-Tiemann reaction
C) Clemmensen's reduction
D) Aldol condensation

Q.193 Which of the following aldehydes contains α-carbon atom but does not have any α-H atom?
A) Propionaldebyde
B) Furfural
C) Isobutyraldehyde
D) Formaldehyde

Q.194 Which one of the following reactions is not shown by aldehydes and ketones?
A) Nucleophilic addition reaction
B) Oxidation and reduction reaction
C) Nucleophilic addition reaction followed by the loss of carbonyl oxygen
D) Electrophilic substitution reaction

Q.195 All of the following are strong oxidizing agent EXCEPT:
A) $K_2Cr_2O_7$ + dil. H_2SO_4
B) ConC. HNO_3
C) $AgNO_3$+ NH_4OH
D) $KMnO_4$+ dil. H_2SO_4

Q.196 Which of the following reagents can distinguish between acetaldehyde and benzaldehyde?
A) NH_4OH
B) Fehling's solution
C) 2,4-DNPH
D) NH_3

Q.197 Which is the major product formed when acetone is heated with iodine and potassium hydroxide?
A) Iodoacetone
B) Acetic acid
C) Iodoform
D) Acetophenone

Q.198 Iodoform can be prepared from all except:
A) ethyl methyl ketone
B) isopropyl alcohol
C) 3-Methyl-2-butanone
D) isobutyl alcohol

Q.199 HCN adds to carbonyl compounds. The table shows the relative rates of reaction under different conditions?

Conditions	Relative Rate
Aqueous solution	Slow
Acidified solution	Virtually zero
Alkaline solution	Very rapid

Which of the following is likely to be involved in the rate determining step of reaction?
A) CN^-
B) H^+
C) OH^-
D) HCN

Q.200 Identify the incorrect statement:
A) Organic compounds which contain carbonyl group ($\backslash C=O /$) are called carbonyl compounds
B) Ketonic group is present in most sugars and camphor
C) In aldehyde, $\backslash C=O /$ is bonded with at least one H-atom
D) In ketones. $\backslash C=O /$ is bonded with two C-atoms

Q.201 Reaction between acetaldehyde and acetone in the presence of strong base like NaOH is called as
A) Cannizaroz's reaction
B) Cross aldol condensation
C) Disproportionation reaction
D) Both a and b

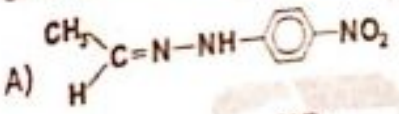
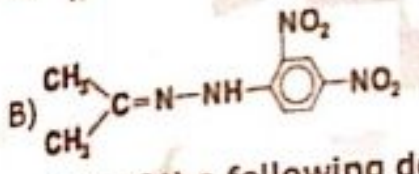
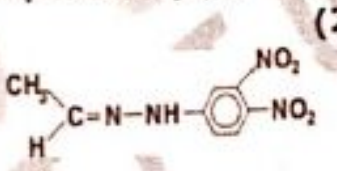
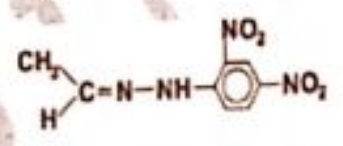
Q.202 Acidified oxidizing agent for the laboratory preparation of Acetaldehyde is:
A) $K_2Cr_2O_7 + H_2O \rightarrow$
B) $K_2Cr_2O_7 + H_2S \rightarrow$
C) $Na_2Cr_2O_7 + H_2SO_4 \rightarrow$
D) $Na_2Cr_2O_7 + NO_2 \rightarrow$

Q.203 Formation of acetaldehyde from ethanol is known as:
A) Reduction
B) Oxidation
C) Addition
D) Substitution

Q.204 Addition of alcohol in carbonyl compounds gives acetal, the geometry of acetal is:
A) Linear
B) Tetrahedral
C) Trigonal
D) Planar

Q.205 Acetone reacts with HCN to form cyanohydrin. It is an example of
A) Electrophilic addition
B) Nucleophilic substitution
C) Electrophilic substitution
D) Nucleophilic addition

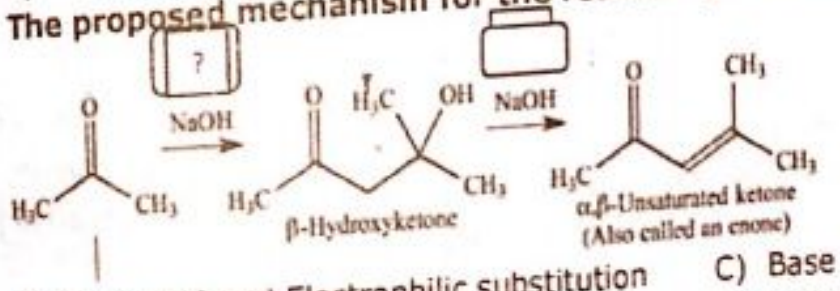
Q.206 Which one of the following is also called silver mirror test? (2015)
A) Fehling's solution test
B) Tollen's reagent
C) Iodoform test
D) Benedict's solution tests

Q.207 When acetaldehyde reacts with 2, 4 – dinitrophenylhydrazine (2, 4 – DNPH), which one of the following products is formed: (2015)
A) 
B) 
C) 
D) 

Q.208 Which of the following does not give brick red precipitate with Fehling's solution
A) Acetone
B) Formalin
C) Acetaldehyde
D) D-glucose

Q.209 Iodo-form is water
A) insoluble
B) Reactive
C) Soluble
D) None of these

Q.210 Cyanohydrin of a compound X gives lactic acid on hydrolysis. X is
A) HCHO
B) CH_3COCH_3
C) CH_3CHO
D) $C_6H_5CH_2CHO$

Q.211 The proposed mechanism for the reaction given below will be


A) Base catalyzed Electrophilic substitution
B) Base catalyzed Nucleophilic addition
C) Base catalyzed Electrophilic addition
D) Acid catalyzed Nucleophilic addition

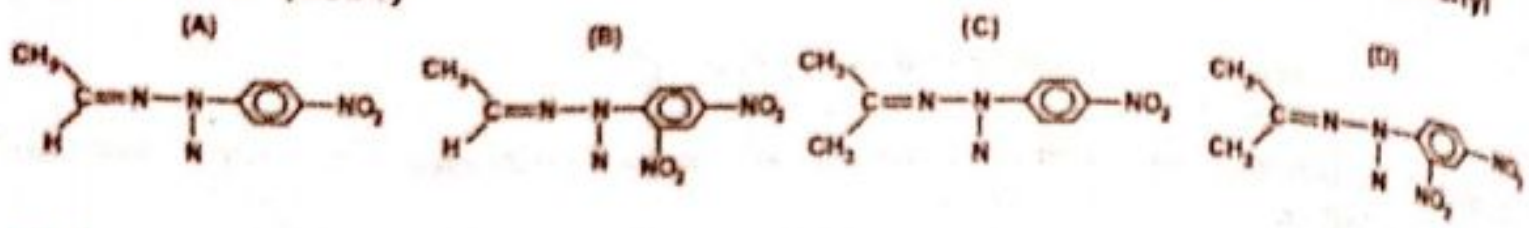
Q.212 Which of the following compounds will react with Tollen's reagent?
A) Acetaldehyde
B) Acetic acid
C) Acetone
D) 2-Butanone

Q.213 In the reaction $CH_3CH{=}CHCHO \xrightarrow[\text{agent}]{\text{oxidizing}} CH_3CH{=}CHCOOH$, the oxidizing agent can be:

A) alkaline $KMnO_4$
B) acidified $K_2Cr_2O_7$
C) Fehling's solution
D) All of above

Q.214 The structural formula of the product of reaction of acetone with 2, 4 – dinitrophenyl hydrazine is: (2014)

(A) (B) (C) (D)

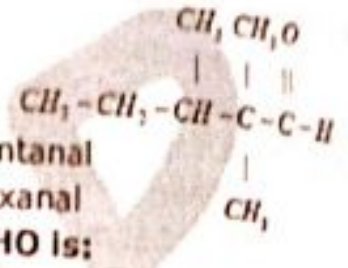


A) A
B) B
C) C
D) D

Q.215 When ethanal is treated with Fehling's solution, it gives a precipitate of

A) Cu
B) Cu_2O
C) CuO
D) $Cu_2O + Cu_2O_3$

Q.216 Consider the following structural formula of ketone:



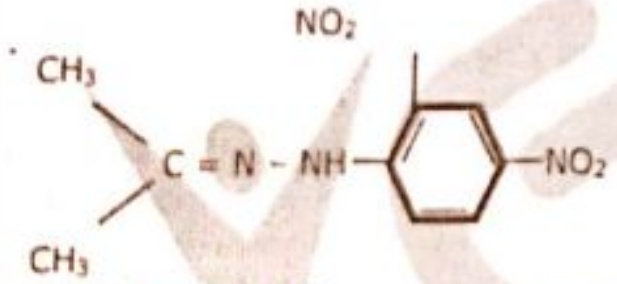
The correct name according to IUPAC is:

A) 3,4.4-Trimethyl pentanal
B) 3.4.4-Trimethyl butanal
C) 2,2,3-Trimethyl pentanal
D) 2.2.3-Trimethyl hexanal

Q.217 The most suitable reagent for the conversion of $RCH_2OH \rightarrow RCHO$ is:

A) $KMnO_4$
B) $K_2Cr_2O_7$
C) CrO_3
D) PCC (Pyridiniumchlorochromate)

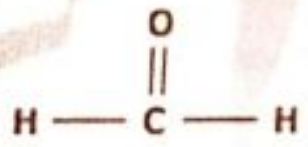
Q.218 (2016)



It is general formula of:

A) 2, 4-Dinitrophenyl hydrazine
B) 1, 3-Dinitropheny hydrazone
C) Phenyl hydrazone
D) 2, 4-Dinitrophenyl hydrazone

Q.219 (2016)



Which one of the following is the IUPAC name of above given structure:(2016)

A) Propionaldehyde
B) Methanone
C) Acetaldehyde
D) Methanal

Q.220 Which one of the following test is given by both aldehyde and ketone? (2016)

A) Silver mirror test
B) Fehling's solution test
C) 2, 4 DNPH test
D) Benedict's solution test

Q.221 Ethanol reacts with HCN to form cyanohydrin, it is an example of: (2017)

A) Nucleophilic addition
B) Electrophilic addition
C) Electrophilic Substitution
D) Nucleophilic Substitution

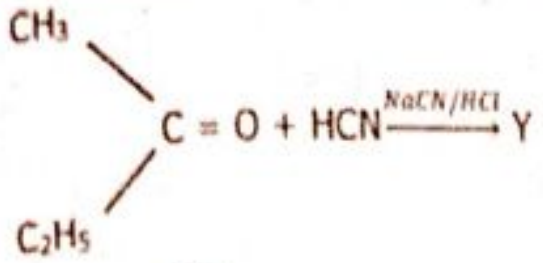
Q.222 The reaction of aldehydes and ketones with ammonia derivatives G-NH3 to form compounds containing > C=N-C and water is known as _____ reaction:(2017)

A) Nucleophilic addition
B) Electrophilic addition
C) Electrophilic Substitution
D) Nucleophilic Substitution

Q.223 Which one of the following compounds will give iodoform test on treatment with aqueous iodine? (2017)

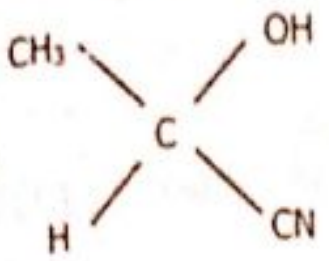
A) 3-pentanone
B) Propanone
C) Propanal
D) Butanal

Q.224 What will be the product of reaction given below: **(2017)**

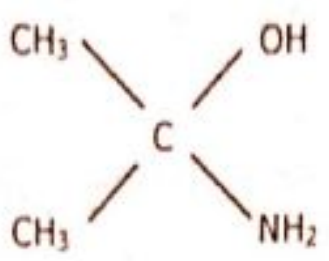


$$C=O + HCN \xrightarrow{NaCN/HCl} Y$$

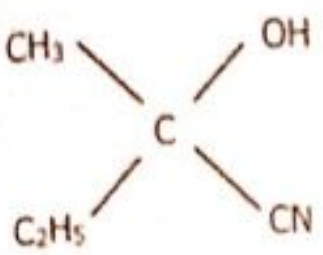
A)



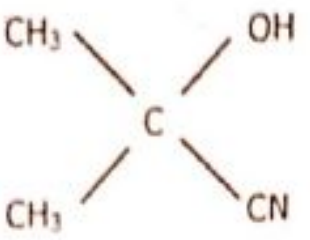
C)



B)



D)



Q.225 Which reagent is responsible for the conversion of ketone to secondary alcohol: **(2017)**

A) $NaAlH_4$
B) $NaBH_4$
C) Al
D) Red P

Q.226 Both aldehyde and ketones give _____: **(2017)**

A) Tollen's Test
B) 2,4-DNPH test
C) Benedict's solution test
D) Sodium nitroprusside test

Q.227 To distinguish aldehyde from ketone which solution is used: **(2017)**

A) Alkaline solution
B) Fehling's solution
C) A solution containing $K_2Cr_2O_7$
D) A solution containing acid only

Q.228 Identify the compound, which give iodoform test: **(2017)**

A) Methanol
B) Methyl ketone
C) 3-Hexanol
D) Propionaldehyde

Q.229 2-propanate on oxidation gives _____: **(2017)**

A) Aldehyde
B) Ketone
C) Carboxylic Acid
D) Alcohol

Q.230 Which one of the following reagents is used to distinguish between aldehydes and ketones? **(2018)**

A) 2,4 DNPH
B) Bromine
C) Alkaline Iodine
D) Tollen's reagent

Q.231 Why is the necessary to distill aldehyde formed from oxidation of primary alcohol through acidified potassium dichromate (VI) solution or acidified sodium dichromatic (VI) Solution? **(2018)**

A) Aldehyde formed may be oxidised further to carboxylic acid concerned
B) Aldehyde formed may react with primary alcohol the original reactant
C) Aldehyde formed may be oxidised further to a ketone
D) Aldehyde formed is unstable and decomposed back to orginal precursor, i.e. primary alcohol

Q.232 Which mechanism of reactions is shown by carbonyl compounds? **(2018)**

A) Nucleophilic addition
B) Electrophilic substitution
C) Free radical substitution
D) Electrophilic addition

Q.233 Ketone can be made by oxidation of: **(2019)**

A) Aldehydes
B) Primary Alcohols
C) Secondary Alcohols
D) Tertiary Alcohols

Q.234 Nitriles (RCN) on hydrolysis in the presence of a mineral acid yield: **(2019)**

A) Ethers
B) Carboxylic acid
C) Aldehydes
D) Alcohols

Q.235 Moleic acid fumaric acid, both have chemical formula $C_4H_4O_4$ The structure of these acids is shown below. (2019)

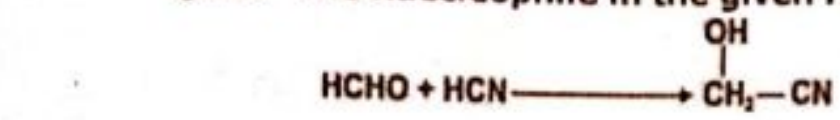
Maleic acid and fumaric acid are:

A) Cis-trans isomers
B) Structural isomers
C) Metamers
D) Position isomers

Q.236 Which of the following will give a positive test with Tollen's reagent? (2019)

A) Tertiary Alcohols
B) Carboxylic Acids
C) Aldehydes
D) Ketones

Q.237 The nuecleophile in the given reaction is: (2011)



A) CN^-
B) HCl
C) Cl^-
D) OH^-

Q.238 Alkyl Halides involving-C-X bond breakage and –C-Nu bond formation simultaneously would follow the mechanism. (2020)

A) S_{N1}
B) S_{N2}
C) E_1
D) E_2

Q.239 Secondary Alkyl Halides is: (2020)

A) $H-\underset{\displaystyle H}{\overset{\displaystyle CH_3}{\overset{|}{\underset{|}{C}}}}-Cl$

B) $H-\underset{\displaystyle H}{\overset{\displaystyle H}{\overset{|}{\underset{|}{C}}}}-Cl$

C) $CH_3-\underset{\displaystyle H}{\overset{\displaystyle CH_3}{\overset{|}{\underset{|}{C}}}}-Cl$

D) CH_3Cl

Q.240 R-X on reaction with alcohols forms: (2020)

A) Ar-OH
B) ROR
C) R-X-OH
D) RH

Q.241 The common name of the following aldehyde is: (2020)

$$Cl-\underset{\displaystyle CH_3}{\overset{|}{CH_3-CH}}-CHO$$

A) α-methyl, y-chloro Propionaldehyde
B) β-Chloro-y-methyl Propionaldehyde
C) β-Chloro-a-methyl Proionaldehyde
D) β-methyl-a-Chloro Propionaldehyde

Q.242 Which of the following reagent is use to separate and purify carbonyl and non-carbonyl compounds? (2020)

A) HCN
B) $BrMgCH_3$
C) $NaHSO_3$
D) H_2O

Q.243 Secondary alcohol is the product of reduction of which carbonyl compound? (2020)

A) $CH_3-\overset{\displaystyle O}{\overset{\|}{C}}-H$

B) $CH_3-\overset{\displaystyle O}{\overset{\|}{C}}-CH_3$

C) $H-\overset{\displaystyle O}{\overset{\|}{C}}-H$

D) $CH_3-CH_2-\overset{\displaystyle O}{\overset{\|}{C}}-H$

ANSWERS

1.	A	2.	B	3.	B	4.	B	5.	C	6.	C	7.	D	8.	D	9.	A	10.	B
11.	A	12.	A	13.	B	14.	B	15.	D	16.	D	17.	C	18.	D	19.	C	20.	D
21.	A	22.	D	23.	C	24.	C	25.	B	26.	B	27.	D	28.	D	29.	D	30.	D
31.	D	32.	D	33.	A	34.	C	35.	D	36.	A	37.	D	38.	C	39.	A	40.	C
41.	D	42.	C	43.	D	44.	D	45.	A	46.	A	47.	A	48.	A	49.	A	50.	A
51.	D	52.	B	53.	A	54.	D	55.	A	56.	C	57.	B	58.	D	59.	C	60.	A
61.	D	62.	D	63.	D	64.	D	65.	A	66.	B	67.	A	68.	B	69.	A	70.	C
71.	C	72.	A	73.	C	74.	A	75.	B	76.	B	77.	A	78.	A	79.	D	80.	B
81.	B	82.	C	83.	A	84.	A	85.	C	86.	B	87.	C	88.	B	89.	C	90.	B
91.	D	92.	D	93.	C	94.	B	95.	C	96.	A	97.	C	98.	D	99.	D	100.	A
101.	B	102.	B	103.	D	104.	D	105.	B	106.	A	107.	D	108.	A	109.	C	110.	A
111.	C	112.	D	113.	C	114.	D	115.	B	116.	A	117.	D	118.	C	119.	B	120.	C
121.	D	122.	B	123.	B	124.	D	125.	C	126.	D	127.	C	128.	B	129.	C	130.	D
131.	C	132.	B	133.	D	134.	C	135.	C	136.	B	137.	D	138.	A	139.	C	140.	D
141.	A	142.	A	143.	C	144.	D	145.	B	146.	C	147.	B	148.	A	149.	C	150.	A
151.	B	152.	D	153.	D	154.	D	155.	C	156.	B	157.	A	158.	A	159.	D	160.	C
161.	D	162.	B	163.	D	164.	B	165.	C	166.	A	167.	C	168.	C	169.	D	170.	C
171.	C	172.	B	173.	C	174.	D	175.	C	176.	B	177.	C	178.	B	179.	A	180.	C
181.	A	182.	D	183.	A	184.	D	185.	C	186.	A	187.	A	188.	B	189.	A	190.	D
191.	A	192.	C	193.	B	194.	D	195.	C	196.	B	197.	C	198.	D	199.	A	200.	B
201.	B	202.	C	203.	A	204.	B	205.	D	206.	B	207.	D	208.	A	209.	A	210.	C
211.	B	212.	A	213.	D	214.	D	215.	B	216.	C	217.	D	218.	D	219.	D	220.	C
221.	A	222.	D	223.	D	224.	D	225.	D	226.	D	227.	B	228.	B	229.	B	230.	D
231.	A	232.	A	233.	C	234.	B	235.	A	236.	C	237.	A	238.	B	239.	C	240.	B
241.	C	242.	C	243.	B	244.		245.		246.		247.		248.		249.		250.	

CARBOXYLIC ACIDS

Q.1: **The compound that does NOT liberate CO_2, on treatment with aqueous sodium bicarbonate solution, is:**
A) benzoic acid
B) benzenesulphonic acid
C) salicylic acid
D) carbolic acid

Q.2: **The formation of ester from acetyl chloride and alcohol is an example of**
A) electrophilic addition
B) nucleophilic addition
C) nucleophilic substitution
D) electrophilic substitution

Q.3: **Which of the following compound will not retain its oxygen atom when it is reduced by $LiAlH_4$?**
A) Acetyl chloride
B) Acetic acid
C) Methyl ethanoate
D) n-Methyl ethanamide

Q.4: **Which is the strongest acid:**
A) HCOOH (pKa = 3.77)
B) C_6H_5COOH (pKa = 4.22)
C) CH_3COOH(pKa = 4.7)
D) CH_3CH_2COOH (pKa = 4.88)

Q.5: **Propionic acid is subjected to reduction with HI in the presence of little P, the product formed is:**
A) Ethane
B) Butane
C) Propane
D) none of these

Q.6: **When n-butyl benzene is oxidized by hot $KMnO_4$ solution. Which of the following is formed:**
A) Benzoic acid
B) Phenyl butyric acid
C) Phenyl propionic acid
D) Phenyl butyraldehyde

Q.7: **A liquid was mixed with ethanol and a drop of concentrated H_2SO_4 was added) A compound with a fruity smell was formed) The liquid was:**
A) CH_3OH
B) CH_3COCH_3
C) HCHO
D) CH_3COOH

Q.8: **The carboxyl functional group (-COOH) is present in:**
A) picric acid
B) barbituric
C) ascorbic acid
D) aspirin

Q.9: **The reagent that can be used to convert butane-2-one to propanoic acid is:**
A) NaOH, NaI/H^+
B) Fehling's solution
C) Tollen's reagent
D) NaOH, I_2/H^+

Q.10: **When a carboxylic Acid reacts with a metal _____ gas is evolveD)**
A) H_2
B) Cl_2
C) CO_2
D) none of there

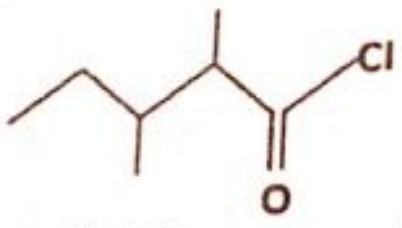
Q.11: **Salt formation from a carboxylic Acid is an evidence of _____ bond reactivity.**
A) C–H
B) COO
C) O– H
D) C–OH

Q.12: **$CH_3CN+HCl \rightarrow A+B$** **(2011)**
In the above reaction, A and B are:
A) Acetic acid and Acid amide
B) Acetic acid and ammonia
C) Acetic acid and methyl chloride
D) Acetic acid and ammonium chloride

Q.13: **Acid hydrolysis of an ester is reversible because:**
A) Alcohol and acid react together to form ester
B) Protonation of ester makes carbonyl carbon more reactive
C) Proton being strong, nucleophile, flavors hydrolysis
D) H_3O^+ in a nucleophile as well as electrophile

Q.14: **An acid that also exhibits the properties of an aldehyde is:**
A) benzoic acid
B) salicylic acid
C) formic acid
D) acetic acid

Q.15: **The IUPAC name of:**



A) 2-ehtyl-3methylbutanoyl chloride
B) 3,4-dimethylpentanoyl chloride
C) 2,3-dimethylpentanoyl chloride
D) 1-chloro-1-oxo-2,3-dimethylpentane

Q.16: **The increasing order of acidity for acetic acid, sulphuricacid , carbonic acid ,formic acid and carbolic acid is:**
A) $CH_3COOH < H_2SO_4 < H_2CO_3 < C_6H_5OH < HCOOH$
B) $C_6H_5OH < H_2CO_3 < CH_3COOH < HCOOH < H_2SO_4$
C) $CH_3COOH < H_2CO_3 < H_2SO_4 < HCOOH < C_6H_5OH$
D) $H_2SO_4 < H_2CO_3 < C_6H_5OH < CH_3COOH < HCOOH$

Q.17: Properties of carboxylic acids like acidic strength or reactivity is effected by :
A) Nature of > C = O group
B) Nature of –COOH group
C) Nature -R group
D) none of these

Q.18: Which one of the following carboxylic acid show maximum solubility in water and minimum boiling point:
A) HCOOH
B) C_2H_5COOH
C) CH_3COOH
D) C_3H_7COOH

Q.19: Among the following acids, which has the lowest pK_a value?
A) CH_3COOH
B) HCOOH
C) $(CH_3)_2CH\text{-}COOH$
D) CH_3CH_2COOH

Q.20: Ammonium acetate on strong heating gives:
A) Urea
B) Uric acid
C) Formamide
D) Acetamide

Q.21: Which reaction does not yield an ester as one of the products?
A) A carboxylic acid is heated with an alcohol
B) A Grignard reagent is added to a carboxylic acid
C) An acid halide is treated with an alcohol
D) An alkyl halide is heated with the salt of a carboxylic acid

Q.22: In general, carboxylic acids can be prepared:
A) by the hydrolysis of corresponding nitriles
B) by the complete oxidation of primary alcohols
C) by the hydrolysis of respective esters
D) all of these

Q.23: Acetamides are formed by the reaction of carboxylic Acids with
A) Acids
B) Salts
C) gases
D) NH_3

Q.24: Partial reduction of acetic acids happens with
A) NH_3
B) P
C) $LiAlH_4$
D) PCl_5

Q.25: When ethanol is warmed with ethanoic acid in the presence of strong acid catalyst, and ester ethyl ethanoate is formed: $CH_3CH_2OH + CH_3CO_2H \rightarrow CH_3CO_2CH_2CH_3$ During this reaction: (2012)
A) Alcohol is reduced
B) O – H bond in ethanol is broken
C) O – H bond in ethanoic acid broken
D) Acid is oxidized

Q.26: Which of the following orders of relative strengths of acids is correct?
A) $ClCH_2COOH > FCH_2COOH > BrCH_2\text{-}COOH$
B) $ClCH_2COOH > BrCH_2COOH > FCH_2\text{-}COOH$
C) $BrCH_2COOH > ClCH_2COOH > FCH_2\text{-}COOH$
D) $FCH_2COOH > ClCH_2COOH > BrCH_2\text{-}COOH$

Q.27: Among the following acids which has the lowest pKa value?
A) CH_3COOH
B) $(CH_3)_2CH\text{-}COOH$
C) HCOOH
D) CH_3CH_2COH

Q.28: The end product (C) in the following sequence of reactions

$$CH_3Cl \xrightarrow{KCN} (A) \xrightarrow{H^+/H_2O} (C)$$ **is:**

A)HCOOH
B) CH_3COOH
C) CH_3NH_2
D) CH_3COCH_3

Q.29: During the preparation of acid amides from ammonium salts of carboxylic acid, which one of the following appears as a by-product?
A) NH_3
B) H_2O
C) CO_2
D) N_2

Q.30: The formation of acid halides from carboxylic acids involves:
A) Replacement of carboxyl group by X^-
B) Replacement of hydrogen atom of carboxyl group by X^-
C) Replacement of OH group by X^-
D) Decarboxylation

Q.31: Which set of the following give exact sequence of processes that involved in the conversion of ethanol into acetic acid?
A) Dehydration, oxidation
B) Oxidation, Oxidation
C) Oxidation, dehydration
D) Dehydration, rearrangement

Q.32: Methyl cyanide on boiling with mineral acids or alkalis produces
A) HCOOH
B) CH_3CH_2COOH
C) CH_3COOH
D) $H_2C_2O_4$

Q.33: Esters have fruity smell and are used as artificial flavours. Ethylbutyrate gives flavor of
A) Banana
B) Pineapple
C) Jasmine
D) Orange

Q.34: **All are nucleophilic substitution reactions of carboxylic acids except**
A) Amide formation
B) Acid chloride formation
C) Acetyl chloride
D) Acid anhydride formation

Q.35: **Ethanenitrile can be converted into ethanoic acid through _____ Intermediate**
A) Ethyl alcohol
B) Acetamide
C) Acetyl chloride
D) Methyl cyanide

Q.36: **Acetic acid is manufactured on commercial scale by**
A) Distillation
B) Ozonolysis
C) Fermentation
D) Esterification

Q.37: **Ethyl butyrate and butyl butanoate are esters with the flavor of:** **(2014)**
A) Pear
B) Pineapple
C) Banana
D) Apple

Q.38: **Acetamide is formed by dehydration of:** **(2014)**
A) Oxalic acid
B) Butanoic acid
C) Ethanoic acid
D) Propanoic acid

Q.39: **A carboxylic acid contains**
A) a hydroxyl group
B) a hydroxyl and carboxyl group
C) a carboxyl group
D) a carboxyl and an aldehydic group

Q.40: **Which is an amphoteric in nature**
A) CH_3COCl
B) $(CH3CO)_2O$
C) $CH_3COOC_2H_5$
D) CH_3CONH_2

Q.41: **Which compound will react with each of these (I)ColdNaOH (ii)CH_3OH with conB) H_2SO_4 (iii) PCl_5**
A) CH_3COCl
B) $HOCH_2CO_2CH_3$
C) RCO_2H
D) $CH_3CH_2CO_2CH_3$

Q.42: **$HCOOCH(CH_3)R$ on acid hydrolysis producing**
A) $RCH_2CH_3+CO_2$
B) $RCH = CH_2+HCOOH$
C)$RCH(CH_3)COOH+HCOOH$
D) $RCH(CH_3)OH+HCOOH$

Q.43:

$$CH_3COOH + NH_3 \xrightarrow{X} CH_3-\overset{\overset{O}{\|}}{C}-NH_2 \xrightarrow{Y} CH_3COO^- + NH_3$$

The "X" and "Y" are
A) X = Heat , $Y=H_2O/OH^-$
B) X = Alcohol , $Y=H_2O/HCl$
C) X = Heat , $Y=H_3^+O$
D) X = Cold , Y= $KMnO_4$ / $O\bar{H}$

Q.44: **An acyl halide and alkyl halides are formed when PCl_5 reacts with:**
A) Carboxylic Acid and Amide
B) Amide and Carboxylic Acid
C) Alcohol and Carboxylic Acid
D) None

Q.45: **Alkyl halides react with which one of the following reagents followed by acid hydrolysis to produce carboxylic acid?**
A) $CI - NH_2$
C) KCN
C) KOH (alchoholic).
D) Mg in the presence of ether

Q.46: **The basic hydrolysis of ethyl acetate produces:**
A) Ethanol
B) both acetic acid ethanol
C) Acetic acid
D) both alcohol and sodium acetate

Q.47: **All are dicarboxylic acids except**
A) Oxalic acid
B) Lactic acid
C) Malonic acid
D) Tartaric acid

Q.48: **The weakest acid among the following is**
A) Formic acid
B) Benzoic acid
C) Carbolic acid
D) Acetic acid

Q.49: **The total number of amino acids which contain non-polar alkyl group**
A) Ten
B) Nine
C) Six
D) Fourteen

Q.50: **The M.P of carboxylic containing even number of carbon atoms is _____than the next.**
A) Higher
B) equal
C) low
D) none

Q.51: **Relative acidic strength of alcohol, water and carboxylic acid is:** **(2011)**
A) carboxylic acid > alcohol > phenol > water
B) carboxylic acid> phenol> water> alcohol
C) phenol > carboxylic acid > alcohol > water
D) water > alcohol > phenol > carboxylic aci

Q.52: **$CH_3COOH+PCl_5 \rightarrow$? In the above reaction the products are:** **(2011)**
A) $CH_3COCH+POCl_3 + HCl$
B) $CH_3COCl+POCl_3 + HCl$
C) $CH_3CL+POCl_3 + HCl$
D) $CH_3COCH+POC_3 + H_2$

Q.53: **Hot acidified potassium permanganate cannot oxidize**
A) Ethanoic acid
B) Ethane-1,2-diol
C) Ethanal
D) Toluene

Q.54: **The organic acid containing a carboxylic acid group is**
A) Carbolic acid
B) Acetic acid
C) Picric acid
D) Carbonic acid

Q.55: **Acetic acid exist as cyclic dimer in benzene due to _____ with _____ atoms in the ring**
A) Hydrogen bonding, Eight
B) Covalent bond, Three
C) Dipole-Dipole force, Eight
D) Hydrogen bonding, Three

Q.56: **Which of the following statement is not correct for formic acid?**
A) Hydrogen bond is present in formic acid
B) Formic acid does not give CO_2 on heating
C) formic acid gives CO_2 on heating
D) CO is formed on heating HCOOH with H_2SO_4

Q.57: **An organic compound gives effervescence when reacted with saturated aqueous solution of $NaHCO_3$. The compound is:**
A) Ketone
B) Acetic acid
C) Alkene
D) Ethyl alcohol

Q.58: **Amide formation in basic media is used as a test because ammonia is evolved by?**
A) Freezing
B) Cooling
C) Spontaneously
D) Heating

Q.59: **In the following reaction, X and Y respectively are: $CH_3COOH + NH_3 \rightarrow X \rightarrow Y$**
A) CH_3CONH_2, CH_4
B) CH_3CONH_2, CH_3COOH
C) CH_3COONH_4, CH_3CONH_2
D) CH_3NH_2, CH_3CONH_2

Q.60: **Velaric acid is obtained from a herb velarian, its IUPAC name is**
A) Propionic acid
B) Butyric acid
C) Pentanoic acid
D)Caproic acid

Q.61: **Propanoic acid is functional group isomer of**
A) Methylacetate
B) Propanal
C) Ethylacetate
D) Propanone

Q.62: **The strongest acid is**
A) CH_3COOH
B) $Cl_2CHCOOH$
C) $ClCH_2OOH$
D) Cl_3CCOOH

Q.63: **Methyle cyanides, on boiling with mineral acids or alkalies, yield:** **(2013)**
A) Acetic acid
B) Formic acid
C) Propanioc acid
D) Butanoic acid

Q.64: **The formation of ester from acetic acid in presence of acid and ethanol is a:** **(2013)**
A) Nucleophilic substitution reaction
B) Electrophillic substitution reaction
C) Nucleophilic addition reaction
D) Electrophillic addition reaction

Q.65: **Organic compounds X and Y both can react with Na-metal to evolve hydrogen gas. X and Y if react with each other form an organic compound Z which gives fruity smell. What types of compounds X, Y and Z are?** **(2014)**

	X	Y	Z
A	Alcohol	Ester	Acetic acid
B	Alcohol	Ester	Mineral Acid
C	Alcohol	Acetic Acid	Ester
D	Alcohol	Mineral Acid	Ester

Q.66: **_____ class of organic compound is commonly used for the artificial flavourings in jams**
A) Aldehyde
B) Carboxylic acid
C) Ester
D) Ketones

Q.67: **The pH of _____ compound is lowest for same concentration in aqueous solution**
A) Chloroacetic acid
B) Ethanoic acid
C) Ethyl amine
D) Phenol

Q.68: **Malic acid has formula $HOOCH(OH)CH_2COOH$. Three moles of which will react with one mole of the malic acid**
A) Sodium bicarbonate
B) Sodium metal
C) Potassium hydroxide
D) Ethanol in conB)H_2SO_4

Q.69: **Which of the following carboxylic acid has smallest pKa value?**
A) Ethanoic acid
B) Bromo-ethanoic acid
C) Chloro-ethanoic acid
D) Iodo-ethanoic acid

Q.70: **Strength of an acid is determined by the readiness with which they donate a proton. Which of the following statements is incorrect regarding strength of carboxylic acids:**
A) Acidic strength increases with the increase of stability of carboxylate ion
B) Electron donating alkyl groups decrease the acidity
C) Electron withdrawing groups (-CI. -Br. -F. -OH. -CN) increase acidity
D) Strength of carboxylic acids is not affected by electron donating or electron withdrawing group

The structural formula for alanine is:

Q.71: When ethanol is warmed with ethanoic acid in the presence of strong acid catalyst, an ester ethyl ethanoate is formed:

$$CH_3CH_2OH + CH_3CO_2H \rightarrow CHLCO_2CH_2CH_3$$

A) Alcohol is reduced
B) C—O bond in ethanol is broken
C) C—O bond in ethanoic acid is broken
D) Acid is oxidized

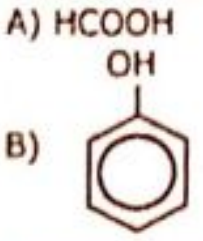
Q.72: The correct priority of functional groups in IUPAC nomenclature is:

A) Amides > acid > ester > ketone
B) Ketone > acid > ester > amide
C) Ester > amide > ketone > acid
D) Acid > ester > amide > ketone

Q.73: What is the main reason for the fact that carboxylic acids can undergo ionization?

A) Resonance stabilization of the carboxylate ion
B) Hydrogen bonding
C) Absence of alpha hydrogen
D) High reactivity of alpha hydrogen

Q.74: Which of the following is the weakest acid>

A) HCOOH
B) 
C) CH_3COOH
D) 

Q.75: When ethanoic acid is treated with thionyl chloride, then ethanoyl chloride is formed along with side products. Mechanism of the reaction is:

A) Electrophilic substitution
B) Electrophilic addition
C) Nucleophilic substitution
D) Nucleophilic addition

Q.76: Which of the following is weakest acid in nature:

A) CHF_2-COOH
B) HC ≡ CH
C) CH_3-OH
D) H_2O

Q.77: Identify the incorrect statement:

A) General formula of carboxylic acid is $C_nH_{2n+1}COOH$
B) Structural formula of carboxylic acid is $R-\overset{O}{\overset{\|}{C}}-OH$
C) In IUPAC name, the alphabet "e" of alkane is replaced by -oic acid
D) The C-atom in carboxylic group is called a-carbon

Q.78: By aerial oxidation, which one of the following gives phthalic acid?

A) benzene
B) toluene
C) naphthalene
D) mesitylene

Q.79: Acetic acid reacts with ethanol in the presence of H_2SO_4 to form X and water, which of the following is X?

A) $CH_3COC_2H_5$
B) $CH_3CH_2COOC_2H_5$
C) CH_3COCH_3
D) $CH_3COOC_2H_5$

Q.80: Lithium aluminum hydride reduces carboxylic acids to primary alcohols via what intermediate?

A) a ketone
B) an aldehyde
C) a methyl ester
D) a secondary alcohol

Q.81: An aqueous solution of an organic compound reacts with sodium carbonate to produce carbon dioxide gas. Which one of the following could be the organic compound?

A) $CH_2 = CH - CH_3$
B) $CH_3COOC_2H_5$
C) CH_3–CHO
D) $CH_3 - CH_2 - COOH$

Q.82: An organic acid 'z' reacts separately with sodium bicarbonate, sodium hydroxide and sodium carbonatB) Which one of the following represents the structure of 'Z'. (2015)

A) $HCOOC_2H_5$
B) $CH_3 - CH = CH_2$
C) CH_3CH_2OH
D) $H_3C - CH_2 - COOH$

Q.83: Carboxylic acids are rather hard to reduce, which powerful reducing agent can be used to convert them to the corresponding primary alcohol. (2015)

A) H_2SO_4/ $HgSO_4$
B) $LiAlH_4$
C) V_2O_5
D) $K_2Cr_2O_7$/ H_2SO_4

Q.84: To convert nitriles into acids:

A) NaOH + NaI/H_+
B) I_2/NaOH/H^+
C) Fehling's test
D) H_2O/H^+

Q.85: When benzene sulphonic acid and p-nitrophenol are treated with $NaHCO_3$, the gases released respectively are:

A) SO_2, NO_2
B) SO_2, CO_2
C) SO_2, NO
D) CO_2, CO_2

Q.86: **Ethanoic acid reacts with all of these to produce water except**
A) Ethanol
B) Caustic soda
C) Sodium
D) Sodium hydrogen carbonate

Q.87: **Ethanoic acid undergoes partial reduction with $LiAlH_4$ to give:**
A) Ethane
B) Ethanal
C) Ethanol
D) Ethyne

Q.88: **Which of the following halo-substituted carboxylic acid is the strongest acid:**
A) FCH_2COOH
B) $BrCH_2COOH$
C) $ClCH_2COOH$
D) ICH_2COOH

Q.89: **When ethanoyl chloride reacts with methylamine, an amide is formed. What is the structure of the amide formed?**

A) $CH_3-CH_2-\overset{\overset{O}{\|}}{C}-NH_2$

B) $CH_3-\overset{\overset{O}{\|}}{C}-NH_2$

C) $CH_3-CH_2-\overset{\overset{O}{\|}}{C}-NHCH_3$

D) $CH_3-\overset{\overset{O}{\|}}{C}-NHCH_3$

Q.90: **$R-CH_2-CH_2OH$ can be converted into RCH_2CH_2COOH. The correct sequence of reagent is:**
A) PBr_3, KCN, H^+
B) KCN, H^+
C) HCN, PBr_3, H^+
D) PBr_3, KCN, H_2

Q.91: **The end product of the reaction** $C_2H_5OH \xrightarrow{PCl_5} C_2H_5Cl \xrightarrow{KCN} C_2H_5CN \xrightarrow{H_3O^+}$
A) propanol
B) propanamide
C) propanoic acid
D) none of these

Q.92: **Which of the following converts acetic acid to acetyl chloride?**
A) Cl_2/P
B) NaCl
C) HCl
D) PCl_3

Q.93: **In the chemical reaction, the products will be: $CH_3COOH + Mg_{(metal)} \rightarrow ?$** **(2011)**
A) Magnesium formate
B) magnesium acetate
C) magnesium ion
D) Peptide Linkage

Q.94: **Esterification is catalyzed by**
A) Acids
B) Salts
C) gases
D) none of these

Q.95: $CH_3COOH + PCl_5 \longrightarrow CH_3-\overset{\overset{O}{\|}}{C}-Cl + POCl_3 + HCl$
In the above reaction the nucleophile which attacks on the carbon atom of acid is:
(2012)
A) OH^+
B) Cl^-
C) Cl^+
D) H

Q.96: **When ethanoyl chloride reacts with methylamine *an* amide is formeD) What is the structure of the amide formed?**

a. $CH_3-CH_2-\overset{\overset{O}{\|}}{C}-NH_2$

b. $CH_3-CH_2-\overset{\overset{O}{\|}}{C}-NHCH_3$

c. $CH_3-\overset{\overset{O}{\|}}{C}-NH_2$

d. $CH_3-\overset{\overset{O}{\|}}{C}-NHCH_3$

A) a
B) b
C) c
D) d

Q.97: **At pH 4.5, which of the following acids would be most dissociated?**
A) p-nitrobenzoic acid ($pK_a = 3.41$)
B) hexanoic acid ($pK_a = 4.88$)
C) acetic acid (ethanoic acid) $pK_a = 4.74$
D) octanoic acid ($pK_a = 4.89$)

Q.98: **Arrange the following carboxylic acids in the decreasing order of the reactivities:**
1. CH_3COOH 2. $ClCH_2COOH$ 3. $Cl_2CHCOOH$ 4. Cl_3CCOOH
A) 1 > 2 > 3 > 4
B) 2 > 1 > 3 > 4
C) 4 > 3 > 2 > 1
D) 2 > 4 > 1 > 3

Q.99: **When propionic acid is treated with aqueous sodium bicarbonate, CO_2 is liberated) The C of CO_2 comes from:**
A) Bicarbonate
B) Carboxylic acid group
C) Methyl group
D) Methylene group

Q.100: **Ester have fruity smell and are used as artificial flavours. Ester ethyl butyrate has the flavour of:**
A) Raspberry
C) Jasmine
C) Apricot
D) Pineapple

Q.101: Ethanoic acid is stronger acid than ethanol because:
I. Both carboxylic acid and carboxylate ion are stabilized due to resonance
II. Neither alcohol nor alkoxide are stabilized due to resonance
III. Carboxylic acid ion has two contributing structure while ethanol only one
IV. Ethanol is less acidic than ethanoic acid but more than water
A) I only
B) I, II, III
C) II only
D) I. II. III. IV

Q.102: Which of the following reaction of carboxylic acid is reversible?
A) Esterification
B) Reaction with PCl_5
C) Salt formation
D) Reaction with $SOCl_2$

Q.103: The reaction of carboxylic acid with sodium metal to form salt with evolution of H_2 gas. It is an example of
A) Electrophilic substitution
C) Nucleophilic substitution
B) Electrophilic addition
D) Nucleophilic addition

Q.104: The weakest oxidizing agent can be used in the reaction

$$CH_3CHO + [O] \longrightarrow CH_3COOH$$

Ethanal — Ethanoic acid

A) $K_2Cr_2O_7/H_2SO_4$
B) $Na_2Cr_2O_7/H_2SO_4$
C) $KMnO_4/H_2SO_4$
D) $AgNO_3$ / NH_4OH

Q.105: The O – H bond braks in carboxylic acid when product is
A) Salt
B) Acid chloride
C) Ester
D) Acid amide

Q.106: Ethanol can be converted in to ethanoic acid by: (2012)
A) Oxidation
B) Hydration
C) Fermentation
D) Hydrogenation

Q.107: Complete reduction of a carboxylic Acid happens with
A) NH_3
B) P
C) $LiAlH_4$
D) PCl_5

Q.108: When $CH_3 - CH_2 - OH$ is oxidized in the presence of $K_2Cr_2O_7$ and H_2SO_4 the product formed is: (2012)

a. $CH_3-\overset{\overset{O}{\|}}{C}-OH$
b. $H-\overset{\overset{O}{\|}}{C}-OH$
c. $CH_3-\overset{\overset{O}{\|}}{C}-CH_3$
d. $CH_3-\overset{\overset{O}{\|}}{C}-OCH_3$

A) a
B) c
C) b
D) d

Q.109: In the following reaction, X and Y are respectively:

$$CH_3COOH + NH_3 \rightarrow X \xrightarrow{\Delta} Y + H_2O$$

A) CH_3NH_2, CH_3CONH_2
B) CH_3CONH_2,CH_4
C) CH_3CONH_2, CH_3COOH
D) CH_3COONH_4,CH_3CONH_2

Q.110: Which of the following acids has the smallest dissociation constant?
A) FCH_2CH_2COOH
B) $BrCH_2CH_2COOH$
C) $CH_3CHFCOOH$
D) $CH_3CHBrCOOH$

Q.111: In the presence of hot alkaline potassium permanganate solution propene will give
A) Formic acid + Acetic acid
C) Two moles of methanic acid
B) Two moles ethanoic acid
D) Propylene glycol

Q.112: In the conversion of wine to vinegar:
A) Ethanol is oxidized to ethanoic acid
B) Methanol is mixed with ethanol
C) Ethanol is reduced to ethanoic acid
D) Methanol is mixed \vithethano

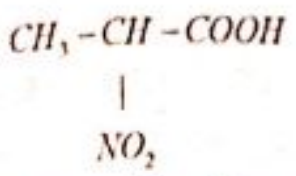
Q.113: When $CH_3CH(OH)CH_3$ is oxidized in the presence of $K_2Cr_2O_7$- and H_2SO_4, the product formed is:

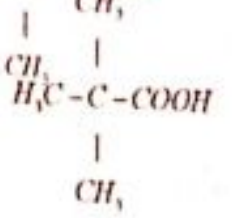
A) $CH_3-\overset{\overset{O}{\|}}{C}-OH$
B) $CH_3-\overset{\overset{O}{\|}}{C}-CH_3$
C) Propionic acid
D) $CH_3-\overset{\overset{O}{\|}}{C}-OCH_3$

Q.114: Which of the following carboxylic acid is stronger acid?

A) CH_3-CH_2-COOH

B) 

C) 

D) 

Q.115: Ease of esterification of the following acids with CH3OH is

A) U > UU > III
B) II < I < III
C) III > II > I
D) Equal

Q.116: $CH_3COOH \xrightarrow{CaCO_3} W \xrightarrow{heat} X$

'X' will be _____

A) Calcium acetate
B) Acetone oxime
C) Acetone
D)Ethane nitrile

Q.117: The IUPAC name of given organic compound HOOC – CH_2– COOH

A) Ethane dioic acid
B) Propane dioic acid
C) Malonic acid
D) Both "B" and "C"

Q.118: 'Ka' values of few organic acids are given. **(2015)**

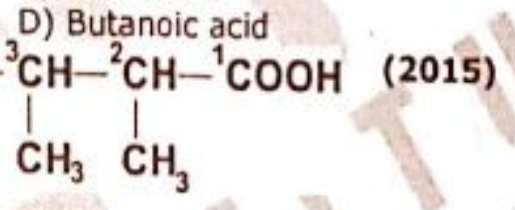
Acid	Ka
CH_3COOH	1.85×10^{-5}
CCl_3COOH	2.3×10^{-2}
$CHCl_2COOH$	5.0×10^{-3}
$CH_2ClCOOH$	1.3×10^{-3}

The order of the acid strength is:

A) $CCl_3COOH > CHCl_2COOH > CH_2ClCOOH > CH_3COOH$
C) $CH_3COOH > CHCl_2COOH > CCl_3COOH > CH_2ClCOOH$
B) $CHCl_2COOH > CH_3COOH > CCl_3COOH > CH_2ClCOOH$
D) $CCl_3COOH > CH_3COOH > CHCl_2COOH > CH_2ClCOOH$

Q.119: Which of the following is a closed type of organic acid?

A) Propanoic acid
B) Phtalic acid
C) Acetic acid
D) Butanoic acid

Q.120: In Which one is α – carbon atom?  **(2015)**

A) 1
B) 2
C) 3
D) 4

Q.121: Ease of the esterification of the following alcohol with formic acid is
(I) $-CH_3CH_2OH$,(II)-$(CH_3)_2CHOL$ and (III) $-(CH_3)_2$ COH

A) III > I > II
B) III > II > I
C) I > II > III
D) II > I > III

Q.122: $CH3COOH \xrightarrow{P_4/Cl_2} M \xrightarrow{NH3(excess)} Z$ **the product "Z" is**

A)Acetamide
B) Glycine
C) Ammonium acetate
D) Alanine

Q.123: Strongest acid among the following is

A) FCH_2COOH
B) $BrCH_2COOH$
C) $ClCH_2COOH$
D) ICH_2COOH

Q.124: An acid chloride (ROCI) on reaction with a carboxylic acid salt (R'COONa) will produce

A) An ester PCOOR'
B) An acid anhydride RCOOCO R'
C) A ketone R'COR'
D) An ester R'COOR

Q.125: Identify the incorrect statement about carboxylic acid —COOH:

A)-COOH is planar and sp2 hybridized
B) Resonance stabilization of the carboxylate ion allow the negative charge to be delocalized between the two electronegative O-atoms
C) It forms H-bonding with other carboxylic acid or other hydrogen system
D) In non-aqueous solvent, it forms 6-membered dimeric structure

Q.126: Which acid does not react with Cl2 in the presence of red phosphorous

A) Formic acid
B) Valeric acid
C) Acetic acid
D) Butyric acid

Q.127: Ethanoic acid has pKa=4.7. Which of the following have the highest pKa value

A) $ClCH_2COOH$
B) HCOOH
C) C_6H_5COOH
D) C_6H_5OH

Q.128: Which of the following chlorosubstituted acid has greater strength of acid:

A) $CH_3CH_2CHCOOH$ (Cl)

B) $CH_2CH_2CH_2COOH$ (Cl)

C) CH_3CHCH_2COOH (Cl)

D) $CH_2CH_2CH_2CH_2COOH$ (Cl)

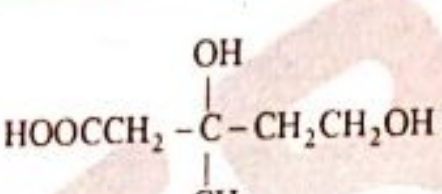
Q.129: Which of the following is correct order with respect to acid strength?

A) Methanoic acid > Ethanoic acid > Propanoic acid > Carbolic acid
B) Ethanoic acid > Carbolic acid > Propanoic acid >Methanoic acid
C) Carbolic acid > Propanoic acid >Methanoic acid > Ethanoic acid
D) Methanoicucid> Ethanoic acid > Carbolic acid > Propanoic acid

Q.130: 'S' and 'T' react with sodium metal and release H_2. S and T react with each other to

A)	CH_3COOH	C_2H_5OH
B)	HCOOH	C_2H_5OH
C)	CH_3COOH	CH_3OH
D)	CH_3CH_2COOH	C_2H_5OH

Q.131: Mevalonic acid is an intermediate in biosynthesis of cholesterol. Which statement is correct about its structure



A) It contains both primary and secondary alcohol groups
B) It contains two chiral carbon atoms
C) It can be esterified either by ethanoic acid or alcohol using H^+
D) It id dicarboxylic acid

Q.132: On hydrolysis of proteins the product obtained is:

A) Fatty acids
B) Monosaccharides
C) α-amino acids
D) Glyccrol

Q.133: Which one of the following gives the correct order of acid strengtil (strongest first) for etliaiioic acid, chloroethanoic acid, and phenol:

A) CH_3CO_2H, C_6H_5OH, CH_2ClCO_2H
B) CH_2ClCO_2H, C_6H_5OH, CH_3CO_2H
C) CH_2CO_2H, CH_2ClCO_2H, C_6H_5OH
D) CH_2ClCO_2H, CH_3CO_2H, C_6H_5OH

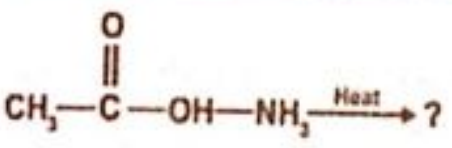
Q.134: One of an organic compound requires 0.5 mole of oxygen to produce on acid)The compound may be:

A) Alcohol
B) Ketone
C) Ether
D) Aldehyde

Q.135: Organic compounds 'X' and 'Y' both can react with Na-Metal to evolve hydrogen gas. If 'X' and 'Y" react with each other form an organic compound 'Z' which gives fruity smell. What type of compound 'X', 'Y' and 'Z' are?

Options	X	Y	Z
A)	Alcohol	Ester	Acetic Acid
B)	Alcohol	Ester	Mineral Acid
C)	Alcohol	Acetic Acid	Ester
D)	Alcohol	Mineral Acid	Ester

Q.136: Amides are:



A) Acidic
B) Neutral
C) Basic
D) Amphoteric

Q.137: In the reaction? Represents which one of the following products: (2016)

A) Ketone
B) Aldehyde
C) Formic Acid
D) Ether

Q.138: Compounds having – CN group are called as: (2017)

A) Cyano compounds
B) Nitro compounds
C) Carbon nitrogen compounds
D) Nitriles

Q.139: The final products formed are: (2013)

a. $CH_3-C(=O)-NH_2 + CO_2$

b. $CH_3-C(=O)-NH_2 + H_2O$

c. $CH_3-C(=O)-NH_2 + H_2$

d. $CH_3-C(=O)-NH_2 + HCl$

A) a
B) b
C) c
D) d

Q.140: $CH_3COOH + CH_3CH_2OH \rightleftharpoons CH_3COOC_2H_5 + H_2O$ (2016)
Which one of the following will act as a catalyst in above reaction?
A) HNO_3
B) H_2SO_4
C) Acidified potassium dichromate
D) $SOCl_2$

Q.141: $CH_3COOH + PCl_5 \rightarrow$? (2016)
Which one of the following options shows the products of above reaction?
A) $POCl_2 + CH_3COCl_2 + HCl$
B) $POCl_3 + CH_3COCl_2 + H_2$
C) $CH_3COCl + POCl_2 + HCl$
D) $POCl_3 + CH_3COCl + HCl$

Q.142: Which one of the following reaction of carboxylic acid is reversible? (2016)
A) Esterification
B) Salt formation
C) Reaction with PCl_5
D) Reaction with $SOCl_2$

Q.143: Select the correct acidic strength order of chlorosubstituted acids: (2017)
A) $CH_3COOH > Cl_2CH_2COOH > Cl_2CHCOOH > Cl_3CCOOH$
B) $CH_3COOH > ClCH_2COOH > Cl_3COOH > Cl_3CCOOH$
C) $Cl_3CCOOH > Cl_2CHCOOH > ClCH_2COOH > CH_3COOH$
D) $CH_3COOH > ClCH_2COOH > Cl_2CHCOOH > Cl_3CCOOH$

Q.144: $C_2H_5OH + CH_3COOH \xrightarrow{H_2SO_4}$?? What will be the exact product? (2017)
A) Diethyl ether
B) Methyl propyl ether
C) Ethyl acetate
D) Butyl alcohol

Q.145: Final product of hydrolysis of nitrile yield _____: (2017)
A) Ketone
B) Aldehyde
C) Alcohol
D) Carboxylic acid

Q.146: During esterification, the bond from alcohol that breaks is between _____: (2017)
A) Carbon and oxygen
B) Oxygen and hydrogen
C) Carbon and carbon
D) None of these

Q.147: Which product is formed by the reaction of carboxylic acid with alcohol? (2018)
A) Aldehyde
B) Ether
C) Alkane
D) Ester

Q.148: Which one will be act as a strong acid. (2018)
A) Dichloroethanoic acid
B) Ethanoic acid
C) Chloroethanoic acid
D) Trichlorothanic acid

Q.149: Which one of the following compounds act as catalyst when alcohols react with carboxylic acids. (2018)
A) Pt
B) Conc. H_2SO_4
C) Conc. HNO_3
D) Ni

Q.150: The Ka values of HCl, CH_3COOH, HF and H_2SO_4 and 10^{+7}, 1.85×10^{-5}, 6.7×10^{-5} and 10^{+2} respectively. The decreasing order of acidic strength is: (2011)
A) $CH_3COOH > HF > H_2SO_4 > HCl$
B) $HCl > H_2SO_4 > HF > CH_3COOH$
C) $HCl > CH_3COOH > HF > H_2SO_4$
D) $HCl > HF > H_2SO_4 > CH_3COOH$

Q.151: Which balanced chemical equation show the formation of ethanoyl chloride using thionyl chloride? (2011)
A) $HCOOH + SOCl_2 HCOCl + SO_2 + HCl$
B) $CH_3CH_2COOH + 2SOCl\ CH_3CH_2COCl + SO_2 + HCl$
C) $CH_3CH_2COOH + 2SOCl\ CH_3CH_2COCl + SO_3 + HCl$
D) $CH_3COOH + SOCl_2\ CH_3COCl + SO_2 + HCl$

Q.152: Which of the following is the strongest acid? (2020)
A) Propanoic acid
B) Flouroethanoic acid
C) Tnchloroethanoic acid
D) Nitroethanoic acid

Q.153: Hydrolysis of acyl chloride results in the formation of: (2020)
A) Acid anhydride
B) Carboxylic acid
C) Amides
D) Esters

Q.154: The exact reactivity order for carboxylic acid derivatives is: (2020)
A) Anhydride > Acylchloride > ester
B) Ester > Anhydride > Acylchloride
C) Amide > Acylchloride > ester
D) Acylchloride > Anhydride > ester

ANSWERS

1.	D	2.	C	3.	B	4.	A	5.	C	6.	A	7.	D	8.	B
9.	A	10.	A	11.	C	12.	D	13.	B	14.	C	15.	C	16.	B
17.	C	18.	A	19.	C	20.	D	21.	B	22.	D	23.	D	24.	C
25.	B	26.	D	27.	C	28.	B	29.	B	30.	C	31.	B	32.	C
33.	B	34.	D	35.	B	36.	C	37.	B	38.	C	39.	C	40.	D
41.	C	42.	D	43.	A	44.	D	45.	C	46.	D	47.	B	48.	C
49.	B	50.	A	51.	B	52.	B	53.	A	54.	B	55.	A	56.	B
57.	B	58.	D	59.	C	60.	C	61.	A	62.	D	63.	A	64.	A
65.	C	66.	C	67.	A	68.	B	69.	C	70.	D	71.	C	72.	D
73.	A	74.	B	75.	C	76.	B	77.	D	78.	C	79.	D	80.	B
81.	D	82.	D	83.	B	84.	D	85.	D	86.	C	87.	C	88.	A
89.	D	90.	A	91.	C	92.	D	93.	B	94.	A	95.	B	96.	A
97.	A	98.	C	99.	A	100.	D	101.	A	102.	A	103.	A	104.	D
105.	A	106.	A	107.	B	108.	A	109.	D	110.	B	111.	A	112.	A
113.	B	114.	C	115.	C	116.	C	117.	B	118.	A	119.	B	120.	B
121.	C	122.	B	123.	A	124.	B	125.	D	126.	A	127.	A	128.	A
129.	A	130.	D	131.	C	132.	C	133.	D	134.	D	135.	C	136.	D
137.	C	138.	B	139.	D	140.	A	141.	B	142.	D	143.	C	144.	C
145.	D	146.	B	147.	D	148.	D	149.	B	150.	B	151.	D	152.	C
153.	B	154.	D												

MACROMOLECULES

Q.1 **Enzymes are the most important group of proteins which are biologically?**
A) Energetic
B) Active
C) Inactive
D) Dynamic

Q.2 **The type of bonding in disulfide bridges is**
A) Covalent bonding between R groups of Cysteine amino acids
B) Ionic bonding
C) Hydrogen bonding
D) Polar interactions

Q.3 **Enzymes are very _____ in their function?**
A) specific
B) Precise
C) General
D) Exact

Q.4 **In beta pleated sheet, the hydrogen bonding is between**
A) sulfur linkage
B) amide group
C) polypeptide units of folded sheet
D) inside a single sheet

Q.5 **Without the enzymes the reactions would proceed at a very slow speedmaking life?**
A) Difficult
B) Possible
C) Troublsome
D) Impossible

Q.6 **The linear sequence of amino acids forms**
A) 1° structure
B) 2° structure
C) 3° structure
D) 4° structure

Q.7 **An activated enzyme consisting of polypeptide chain and a co-factor is known as?**
A) Apoenzyme
B) Holoenzyme
C) Co-enzyme
D) Enzyme activation

Q.8 **When the hydrophobic side chain si placed in aqueous solution than the change in entropy is**
A) positive
B) negative
C) no change
D) both A and B

Q.9 **The functional specificity of very enzyme is the consequence of its specific chemistry and?**
A) Physics
B) Amino acids
C) Catalytic power
D) Configuration

Q.10 **In electrophoresis the protein will move until**
A) Its pH is greater than PI
B) Its pH is smaller than PI
C) Its pH is equal to PI
D) PI is greater than pH

Q.11 **The charge and shape of the active site is formed by some amino acids present in the _____ chain of the enzyme?**
A) Globular
B) Polynucleotide
C) Polypeptide
D) Straight

Q.12 **Interactions between multiple polypeptide chains forms**
A) 1° structure
B) 2°structure
C) 3° structure
D) 4° structure

Q.13 **At low concentration of substrate the reaction rate is directly proportional to the?**
A) Enzyme available
B) Substrate available
C) All of these
D) Ph available

Q.14 **The benefit of hydrophobic interaction includes**
A) protein aggregation
B) decreases the surface area to allow interaction with water
C) both A and B
D) none of above

Q.15 **Like enzymes, co enzymes can be used?**
A) None of above
B) again and again
C) only few times
D) only once

Q.16 **PH at which the amino acids does not migrate in an electric field in**
A) isoelectric
B) electric point
C) field point
D) all of above

Q.17 **The reactant which is attached to the active site of enzyme is called as a?**
A) Food particle
B) substance
C) substrate
D) reactant particle

Q.18 **The process in which an optically active compound is converted into optically inactive compound, is called**
A) formylation
B) amidation
C) racemization
D) phosphorylation

Q.19 Lock and key Model was proposed by?
A) Peter Fleming
B) Francis
C) Koshland
D) Emil Fischer

Q.20 The alpha-helix structure was discovererd by
A) Linus Pauling
B) Herman Branson
C) both A and B
D) Miller and Harley

Q.21 If the vibrations due to increase in heat energy become too violent, globular, structure essential for enzyme activity is lost and enzyme is said to be?
A) Dead
B) Inactive
C) Denatured
D) Destructured

Q.22 An enzyme and its substrate react with each other through definite charge bearing sites called?
A) Passive sites
B) Binding sites
C) Charged sites
D) Active sites

Q.23 Amino acids interact with each other to produce a well-defined 3D structure known as
A) Native state
B) synthesis of proteins
C) denaturing
D) 1° structure of proteins

Q.24 By increasing the enzyme molecules, an increase in the number of _____ takes place?
A) Catalytic sites
B) Binidng sites
C) Passive sites
D) Active sites

Q.25 2° structure of proteins is of
A) only one type
B) two types
C) three types
D) four types

Q.26 Pepsin is a powerful protein digesting enzyme and is produced in inactive form known as?
A) Pepsinogen
B) Ptyalin
C) Pepsi-gen
D) Pepsi

Q.27 The coiling and folding of polypeptide chain gives us
A) 1° structure
B) 2° structure
C) 3° structure
D) 4° structure

Q.28 A process by which a protein structure assumes its functional shape or conformation is
A) denaturing
B) hydrolysis
C) folding
D) synthesis

Q.29 Enzymes are composed of hundreds of?
A) Amino acids
B) Carboxylic acid
C) Nucleotides
D) Nucleic

Q.30 If the entropy is increased than overall reaction is
A) non spontaneous
B) displacement reaction
C) spontaneous
D) no reaction

Q.31 The binding site helps the enzyme in the recognition and binding of a proper substrate to produce?
A) enzyme product complex
B) ES comples
C) enzyme substrate complex
D) A % B both

Q.32 In the peptide chain the alpha helix is secured by
A) sulfur linkage
B) amide group
C) carboxyl group
D) hydrogen bonding

Q.33 All enzyme can work at their maximum rate at a specific temperature called?
A) specified temperature
B) Optimum temperature
C) Maximum ranged temperature
D) Minimum ranged temperature

Q.34 At certain pH environments the isoelectric point affects the
A) solubility of molecule
B) density of molecule
C) Solubility of solvent
D) temperature

Q.35 Proteins that do not function but recover their activity upon folding are
A) denatured
B) folded
C) synthesized
D) hydrolyzed

Q.36 For enzyme of human body the optimum temperature is?
A) 44° C
B) 37°C
C) 51°C
D) 98°C

Q.37 A slight change in a single amino acid in polypeptide chain results in
A) Mutation
B) genetic code
C) polymerization
D) replication

Q.38 Enzymes are very _____ in their function?
A) Exact
B) Precise
C) Specific
D) General

Q.39 If proteins are separated according to their electrophoretic mobility than the type of electrophoresis is
A) SDS page
B) free flow electrophoresis
C) electro focusing
D) affinity electrophoresis

Q.40 A technique which separates charged particles using electric field is
A) Hydrolysis
B) electrophoresis
C) protein synthesis
D) protein denaturing

Q.41 An enzyme is a three dimensional?
A) Globular protein
B) Straight protein
C) Branched protein
D) Fibrous protein

Q.42 In agarose gel electrophoresis, the DNA is moved towards the
A) cathode
B) Moves slowly
C) anode
D) DNA doesn't move

Q.43 The non-protein part of enzyme is known as?
A) Co-factor
B) coordinated part
C) prosthetic group
D) co-enzyme

Q.44 The process of folding depends upon the
A) Solvent
B) pH
C) the concentration fo salts
D) all of above

Q.45 The catalytic activity of enzymes is restricted to a small portion of the enzyme known as?
A) Active site
B) Non binding site
C) Catalytic site
D) Binding site

Q.46 The interactions which holds and stabilized the sub units in 4° structure of proteins are
A) hydrophilic interactions
B) hydrogen bonding
C) hydrophobic interactions
D) ionic bonding

Q.47 According to Lock and Key Model active site is a?
A) General structure
B) Specific structure
C) Rigid structure
D) Globular structure

Q.48 In SDS electrophoresis, the proteins are separated on the basis of
A) charge
B) mass
C) both A and B
D) structure

Q.49 The alternative name for the spheroproteins is
A) Linear protein
B) Secondary proteins
C) Globular proteins
D) Beta structure

Q.50 Biological molecules (proteins) which catalyze a biochemical reaction and remain unchanged after completion of reaction are called
A) Cofactor
B) Activator
C) Coenzymes
D) Enzymes

Q.51 Which statement about enzyme is incorrect:
A) Some of them consist solely of protein with no non protein part.
B) They catalyze a chemical reaction without being utilized
C) All enzymes are fibrous Proteins.
D) They without their cofactor are called apoenzyme.

Q.52 In which of the following location enzymes controlling cellular respiration are present?
A) Nucleus
B) Milochondria
C) Chlorophast
D) Ribosome

Q.53 An activated enzyme consisting of polypeptide chain and a cofactor is called:
A) Apoenzyme
B) Activated enzyme
C) Holoenzyme
D) Both b and c

Q.54 Which one forms the raw material for coenzymes?
A) Vitamins
B) Proteins
C) Carbohydrates
D) Metals

Q.55 A cofactor made of inorganic ion which is detachable is called
A) Prosthetic group
B) Activator
C) Coenzyme
D) Cofactor

Q.56 Enzymes _____ the activation energy of a chemical reaction
A) Increases
B) Decreases
C) Does not effect
D) Increases or decreases depending upon individual enzyme

Q.57 A three dimensional dcavity bearing a specific charge by which the enzyme reacts with its substrate is called
A) Active site
B) Catalytic site
C) Binding site
D) Allosteric site

Q.58 Which step causes activation of catalytic site of an enzyme?
A) Change in pH of the surroundings.
B) Formation of Enzyme Susstrate complex.
C) Change in the charge of the active site.
D) Change in temperature

Q.59 Lock and Key model was proposed by
A) Emil Fischer
B) Robin Williams
C) Koshland
D) Rudolph Virchow

Q.60 Which statement is incorrect about Lock and Key Model?
A) Specific enzyme can transform only a specific substrate
B) Active site of an enzyme is a non flexible structure.
C) Active site does not change before during or even after the reaction.
D) It explains the mechanism of every chemical reaction.

Q.61 The rate of reaction is directly proportional to the concentration of an enzyme which statement is incorrect in this respect:
A) Increase in enzyme molecule increases the available active sites.
B) This relation is for unlimited time period with unlimited enzyme concentration
C) If the concentration is doubled the rate will become two folD)
D) None of these.

Q.62 If the concentration of enzyme is kept constant and amount of substrate is increased a point is reached where increase in substrates concentration does not affect the reaction rate because of
A) Enzymes get denatured at higher substrate conc.
B) Rate of reaction is indirectly proportional to substrate concentration at this point.
C) All the active sites on enzyme molecule are occupied.
D) None of these.

Q.63 If more substrate to already occurring enzymatic reaction is added more enzyme activity is seen because:
A) There is probably more substrate present than there is enzyme.
B) There is probably more enzayme available than there is substrate.
C) There is probably more product present than there is either substrate or enzyme.
D) The enzyme substrate complex is probably failing to form during the reaction.

Q.64 If more substrate to already occurring enzymatic reaction is added and there is no effect on the rate of the reaction what is the form given to this situation:
A) Saturation
B) Composition
C) Denaturation
D) Inhibition

Q.65 The active site of an enzyme:
A) Never changes
B) Forms no chemical bond with substrate
C) Determined by structure and the specificity of the enzyme.
D) They are non specific in their action.

Q.66 Excessive increase in temperature of medium causes the enzyme molecule to
A) Activate
B) Denatured
C) Unaffected
D) None of these.

Q.67 Extreme change in pH results in:
A) Change in ionization of amino acids at the active site of the enzyme.
B) Change in the ionization of the substrate.
C) Denaturation of the enzyme
D) Increase in the reaction rate.

Q.68 Optimal temperature of enzymes present in human body is
A) 27?C
B) 47?C
C) 37?C
D) 30?C

Q.69 A chemical substance which can react (in place of substrate) with the enzyme but is not transformed into product/s and thus blocks the active site temporarily or permanently is called
A) Co-enzyme
B) Inhibitor
C) Blocker
D) Cofactor

Q.70 Inhibitors which block the enzyme by forming weak bond are called
A) Competitive inhibitors.
B) Irreversible inhibitors.
C) Non-competitive inhibitors
D) Both a and b

Q.71 A substance which binds at the active site of the enzyme but does not result in the formation of the products is called:
A) Irreversible inhibitor
B) Competitive inhibitor
C) Reversible inhibitor
D) Non-competitive inhibitor

Q.72 The structure of an enzyme is altered by:
A) Irreversible inhibitor
B) Competitive inhibitor
C) Reversible inhibitor
D) Non-competitive inhibitor

Q.73 Malonic acid is an example of:
A) Irreversible inhibitor
B) Competitive inhibitor
C) Reversible inhibitor
D) Non-competitive inhibitor

Q.74 If enzyme concentration is low than substrate pH and temperature values are equal to requirement then which of the following will increase rate of reaction.
A) increase in concentration of enzyme
B) increase in pH
C) increase in concentration of substrate
D) increase in temperature

Q.75 Which of the following factors is not responsible for the denaturation of proteins?
A) Heat
B) pH change
C) Charge
D) Organic solvents

Q.76 Which of the following is responsible for specifying the 3D shape of a protein?
A) The peptide bond
B) Interaction with other polypeptides
C) The amino acid sequence
D) Interaction with molecular chaperons

Q.77 _____ is not a classified form of conjugated proteins.
A) Lipoproteins
B) Metalloproteins
C) Glycoproteins
D) Complete proteins

Q.78 What is the average molecular weight of an amino acid residue in a protein?
A) 120
B) 130
C) 110
D) 140

Q.79 Which of the following proteins was first sequenced by Frederick Sanger?
A) Myosin
B) Myoglobin
C) Insulin
D) Haemoglobin

Q.80 Which of the following statements is true about proteins?
A) Proteins are made up of amino acids.
B) Proteins are essential for the development of skin, teeth and bones.
C) Protein is the only nutrient that can build, repair and maintain body tissues.
D) All of the above

Q.81 How many amino acids make up a protein?
A) 10
B) 30
C) 20
D) 50

Q.82 What is a bond between amino acids called?
A) Ionic bond
B) Peptide bond
C) Acidic bond
D) Hydrogen bond

Q.83 Which of the following statements is true about proteins?
A) Proteins are polymers of glucose
B) Proteins are polymers of peptide bonds
C) Proteins are polymers of amino acids
D) Proteins are polymers of disulfide bridges

Q.84 Which of the following food products are high in protein content?
A) Tofu and eggs
B) Milk and milk products
C) Grains and legumes
D) All of the above

Q.85 Which of the following statements is true about the complete proteins?
A) High-protein foods that stabilize body weight
B) Food that has a balanced amount of fat and protein
C) Foods that provide all the amino acids that the body needs
D) All of the above

Q.86 Which of the following techniques is used to determine the protein structures?
A) X-ray crystallography
B) Magnetic resonance imaging (MRI)
C) Kryptonics X-ray vision
D) None of the above

Q.87 Which of the following disorders is caused by the deficiency of proteins?
A) Weight loss
B) Loss in muscle strength
C) Muscle fatigue
D) All of the above

Q.88 Which of the following cell organelles is involved in the process of protein synthesis?
A) Vesicles
B) Synchrotrons
C) Ribosomes
D) Mitochondria

Q.89 Which of the following is not the function of proteins?
A) Helps in digesting food
B) Fights against the invading pathogens
C) Carries genetic information
D) Helps in transporting oxygen in the blood

Q.90 The 3-D structure of proteins can be determined by_____.
A) Spectroscopy
B) Nuclear magnetic resonance
C) X-ray crystallography
D) Both B) and C)

Q.91 Which of the following is true about enzymes?
A) Proteins
B) Carbohydrates
C) Nucleic acids
D) DNA molecule

Q.92 Which of the following statements is true about the (primary) 1° structure of proteins?
A) The helical structure of the protein
B) Subunit structure of the protein
C) Three-dimensional structure of the protein
D) The sequence of amino acids joined by a peptide bond

Q.93 Which of the following diseases is caused by protein deficiency?
A) Anaemia
B) Hypothyroidism
C) Kwashiorkor
D) All of the above

Q.94 The process of protein synthesis takes place in which of the following cell organelles?
A) Nucleus
B) Cytoplasm
C) Vacuoles
D) Mitochondria

Q.95 Proteins are composed of which biomolecule?
A) Fats
B) Lipids
C) Amino acids
D) Vitamins

Q.96 Amino acids in proteins are linked through which bond?
A) Covalent bond
B) Glycosidic
C) Peptide bond
D) None of the above

Q.97 Which of the following proteins are also known as scelro-proteins?
A) Fibrous proteins
B) Regulatory proteins
C) Globular proteins
D) Contractile proteins

Q.98 Which of the following is the example of defense proteins?
A) Dehydrogenase
B) Hemoglobin
C) Myoglobin
D) Immunoglobin

Q.99 Which of the following is the example of storage proteins?
A) Dehydrogenase
B) Hemoglobin
C) Myoglobin
D) Immunoglobin

Q.100 Which of the following is the example of transport proteins?
A) Dehydrogenase
B) Hemoglobin
C) Myoglobin
D) immunoglobin

Q.101 Match the following-
A) Fibrous protein , Peptones
B) Primary protein , Albumin
C) Globular protein , metaproteins
D) Secondary protein , Keratin

Q.102 Which of the following proteins are coagulated by heat?
A) Albumin
B) Glutelins
C) Globulin
D) All of the above

Q.103 Which of the following are soluble in neutral salts solution?
A) Albumin
B) Protamine
C) Glutelins
D) None of the above

Q.104 Which of the following statement for fibrous protein is NOT true?
A) Fibrous protein are insoluble
B) There peptide chain is coiled
C) They have high molecular weight
D) Their axial ratio is more than 10

Q.105 Which type of proteins are also known as denatured proteins?
A) Primary proteins
B) Conjugated proteins
C) Secondary proteins
D) None of the above

Q.106 Ceruloplasmin protein carries which metal?
A) Magnesium
B) Iron
C) Copper
D) Sodium

Q.107 The secondary structure of protein is held together by which type of bonding
A) Covalent bonding
B) Arrangement in space
C) 3-D stereochemical folding
D) Hydrogen bonding

Q.108 High density lipoproteins is an example of which kind of protein?
A) Regulatory proteins
B) derived proteins
C) Conjugated proteins
D) none of the above

Q.109 Which type of prosthetic group is present in nucleoproteins?
A) Neurons
B) Nucleic acid
C) Nerve cells
D) Axons of nerve cells

Q.110 Watson and crick noticed that the double stranded structure provide a mechanism:
A) Duplication
B) Reproduction
C) Replication
D) Evolution

Q.111 Polymers can be classified on the bases of:
A) Structure
B) Thermal properties
C) Nature of monomer
D) All of the above

Q.112 The pair of macromolecules having same type of linkage:
A) Protein and Nylon-6,6 resin
B) Nylon and polyethylene
C) Protein and PVC
D) PVC and Bakelite

Q.113 Terylene, a polyester is an example of: **(2011)**
A) biopolymer
B) lipids
C) condensation polymer
D) addition polymer

Q.114 Addition polymerization has all of the properties EXCEPT:
A) It involves unsaturated monomers
B) It is fast type polymerization
C) Initiator is necessary to catalyze it
D) Small molecule is eliminated in it

Q.115 Adjacent nucleotides are joined by
A) covalent bond
B) ionic bond
C) phosphodiester bond
D) peptide bond

Q.116 Gene expression is activation of a gene to produce a specific:
A) protein
B) amino acid
C) tRNA
D) DNA

Q.117 Which of the following can be a codon for an amino acid?
A) TTT
B) AT
C) GG
D) UUU

Q.118 The main structural features of proteins is:
A) peptide linkage
B) glycoside linkage
C) ether linkage
D) All of these

Q.119 Which of the following is/are the thermoplastic polymer?
A) Nylon 6, 6
B) Bakelite
C) Polystyrene
D) Terylene

Q.120 Which of the following is formed through free radical mechanism:
A) PVC
B) Polyester
C) Nylon
D) Bakelite

Q.121 Polymer can be classified on the following basis EXCEPT:
A) Structure
B) Thermal properties
C) Process of polymerization
D) Nature of bond

Q.122 Which is not a macromolecule
A) DNA
B) Glycine
C) Protein
D) Polystyrene

Q.123 A polymer in which the number of amino acids residue is greater than 100 or molecular mass greater than 10000 is known as: (2011)
A) Protein
B) Polypepdde
C) Dipeptide
D) Tripeptide

Q.124 When hexanedioic acid is heated with hexamethylenediamine, the compound formed is: (2011)
A) Polypeptide
B) Addition polymer
C) Ester
D) Nylon 6, 6

Q.125 Genetic mutation occurs in
A) Protein
B) DNA
C) RNA
D) Nucleus

Q.126 Nylon is prepared by hexamethylenediammines and adipic aciD) Total number methylene groups present in adipic acid are
A) 2
B) 3
C) 4
D) 6

Q.127 During unzipping of DNA which of the following intermolecular forces breaks?
A) H-Bonding
B) Debye forces
C) Dipole - dipole forces
D) London dispersion forces

Q.128 Which one of the following is an example of co-polymer?
A) Polyamide
B) Polyvinyl acetate
C) Polystyrene
D) Polyvinyl chloride

Q.129 Which one of the following mineral acid is involved in the composition of DNA (2012)
A) H_3PO_3
B) HNO_3
C) H_2SO_4
D) H_3PO_4

Q.130 Globular proteins differ from fibrous proteins in
A) Having amino acids
B) Being soluble in aqueous medium
C) Their repeating units joined by peptide bond
D) Being noncrystalline

Q.131 Polyvinyl acetate (PVA) is colourless and non – toxic resin used as an adhesive and as a binder for making;
A) Toys
B) Emulsion paints
C) Gramophone recorders
D) Compact discs

Q.132 What type of structure is obtained by three dimensional twisting and folding of polypeptide chain
A) Primary
B) Secondary
C) Tertiary
D) Quaternary

Q.133 Which statement is incorrect about DNA
A) Double helical structure
B) Deoxyribose sugar present
C) Transfer genetic information
D) Does not replicate

Q.134 The polymer which one is NOT synthetic
A) PVC
B) Silica
C) Bakelite
D) Nylo-6,6

Q.135 The sequence of amino acids combined in a peptide chain to form a protein is referred as:
A) Primary structure
B) Tertiary structure
C) Secondary structure
D) Quaternary structure

Q.136 Haemoglobin is a
A) Genetic protein
B) Transport protein
C) Building protein
D) Structural protein

Q.137 A prosthetic group of a protein is a nonprotein structure that is:
A) a ligand of the protein.
B) a part of the secondary structure of the protein.
C) a substrate of the protein.
D) permanently associated with the protein.

Q.138 The proteins with a prosthetic group are known as:
A) Complex proteins
B) Secondary proteins
C) Conjugated proteins
D) Essential proteins

Q.139 In nucleic acids, the sequence is:
A) Phosphate-Base-Sugar
B) Phosphate - Sugar - Base
C) Sugar – Phosphate - Base
D) Base-Phosphate- Sugar

Q.140 Haemoglobin is a **(2015)**
A) Genetic protein
B) Transport protein
C) Building protein
D) Structural protein

Q.141 The proteins with a prosthetic group are known as :
A) complex proteins
B) conjugated proteins
C) secondary proteins
D) essential proteins

Q.142 Which of the following is a test for proteins?
A) Molisch's test
B) Beilstein test
C) Biuret test
D) Benedic'ts test

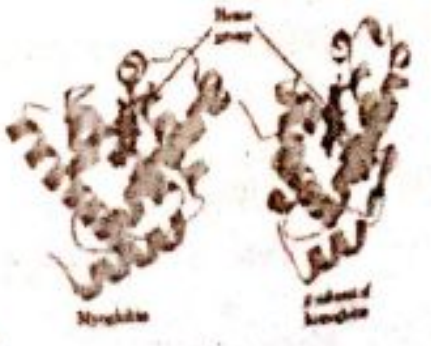
Q.143 The destruction of the biological nature and activity of proteins by heat or chemical agent is called:
A) dehydration
B) denaturation
C) Biuret test
D) deamination

Q.144 A polymer in which the number of amino acids residue is greater than 100 or the molecular mass is greater than 10,000 is called?
A) Protein
B) Polypeptide
C) Dipeptide
D) Tripeptide

Q.145 In secondary structure of protein, zigzagging of polypeptide chain is caused by
A) Covalent bonding
B) Ionic bonding
C) Hydrogen bonding
D) Debye forces

Q.146 Both ribose and deoxyribose are monosaccharides containting _____ carbon atoms. **(2013)**
A) Four
B) Six
C) Five
D) Seven

Q.147 Myoglobin and the subunits of hemoglobin have:
A) no obvious structural relationship.
C) very different primary and tertiary structures.
B) very similar primary and tertiary structures.
D) very similar tertiary structures, but different primary structures.



Q.148 Amino acids are arranged in proper sequence during protein synthesis according to the instructions transcribed on
A) Transfer RNA
B) Messenger RNA
C) Ribosomal RNA
D) DNA Collagen is a fibrous

Q.149 Which of the following is an example of globular protein?
A) myosin
B) collagen
C) keratin
D) haemoglobin

Q.150 Based on the physiochemical properties, proteins may be classified into
A) Two types
B) Four types
C) Three types
D) Five types

Q.151 A regular coiling or zigzagging of polypeptide chains by hydrogen bonding between NH and C = 0 groups of amino acids near each other in the chain is called
A) Primary structure of protein
B) Tertiary structure of protein
C) Secondary structure of protein
D) none of the above

Q.152 In which of these processes are small organic molecules made into macromolecules?
A) the cracking of petroleum fractions
B) the polymerization of ethene
C) the fractional distillation of crude oil
D) the hydrolysis of proteins

Q.153 The predominant structural feature in myosin molecules is:
A) a b structure.
B) the Fab domain.
C) an a helix.
D) the light chain.

Q.154 Which of the following is the most common and stable conformation for a
A) Alpha helix
B) Anti parallel beta pleated sheet
C) Beta pleated sheets
D) Tertiary structure

Q.155 A polymer of empirical formula CH has molar mass of 26000 g mole $^{-1}$. Its molecular formula will be: (2014)
A) 100 times of its empirical formula
B) 500 times that of its empirical formula
C) 200 times of its empirical formula
D) 2000 Times that of its empirical formula

Q.156 Which one of the following elements in not present in all proteins?
A) carbon
B) nitrogen
C) hydrogen
D) sulphur

Q.157 The common type of secondary structure of proteins is/are:
A) α-Helix structure only
B) Both A and B
C) β-Flat sheet and β-Pleated sheet structure
D) Neither A nor B

Q.158 Out of these which nitrogen base in not present in DNA? (2015)
A) Adenine
B) Uracil
C) Guanine
D) Thymine

Q.159 Which one of the following is an example of co – polymer? (2015)
A) Polyamide
B) Polyvinyl acetate
C) Polystyrene
D) Polyvinyl chloride

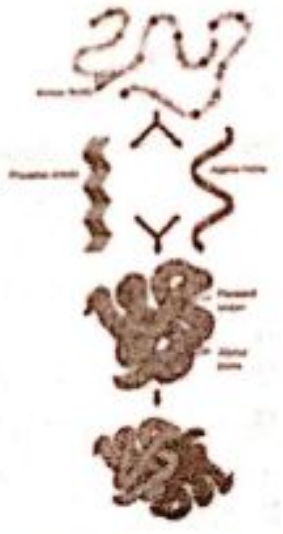
Q.160 The primary structure is primarily maintained by
A) Peptide bond
B) Ionic bond
C) Hydrogen bond
D) Hydrophobic bonds

Q.161 Which of the following statements are true regarding primary structure of proteins
A) Primary structure denote the number of amino acids in a protein
C) Primary structure denote the sequence of amino acids in a protein
B) Primary structure determines the biological activity of a protein
D) all of these

Q.162 Which of the following amino acid is a alpha helix terminator
A) cysteine
B) proline
C) alanine
D) isoleucine

Q.163 The secondary structure is primarily maintained by
A) Van der waals force
B) Ionic bond
C) Hydrogen bond
D) Hydrophobic bonds

Q.164 Which one of the following base is not present in RNA? (2014)
A) Cytosine
B) Thymine
C) Adenine
D) Guanine



Q.165 Which one of the following polymer is called as Nylon 6,6? (2016)
A) Polyester
B) Polyvinyl chloride
C) Polyamide
D) Polyvinyl acetate

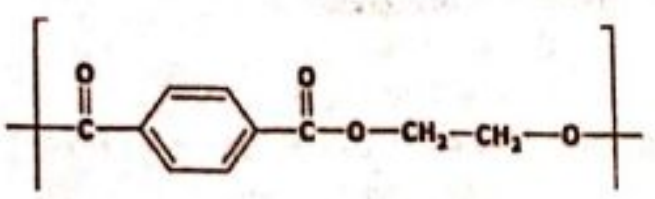
Q.166 Which one of the following is an exact composition of a carbohydrates? (2016)
A) Carbon and Hydrogen
B) Carbon and Oxygen
C) Carbon, Hydrogen and Oxygen
D) Hydrogen and Oxygen

Q.167 Which one of the following nitrogen base is NOT present in DNA? (2016)
A) Adenine
B) Guanine
C) Uracil
D) Cytosine

Q.168 In the woody parts of trees, the %age of cellulose is: (2016)
A) 50%
B) 10%
C) 30%
D) 100%

Q.169 In laboratory experiment an unknown compound was added in test tube containing Iodine, the colour became intense blue. What could be the unknown compound? (2016)
A) Cellulose
B) Raffinose
C) Ribose
D) Starch

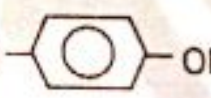
Q.170 (2016)



Indicate the name of above given structure.
A) Nylon 6,6
B) Adipic Acid
C) PVA
D) Polyeste

Q.171 The monomers needed to make Terylene, i.ea polyester are: (2017)

A) HOOC  COOH and HO – (CH_2) – OH

B) HOOC  COOH and HO  OH

C) HOOC –$(CH_2)_2$ COOH and HO – CH_2 – OH

D) HOOC – $(CH_2)_2$ – COOH and HO  OH

Q.172 Which one of the following is the main function of DNA: (2017)
A) Making of Proteins
B) Making of amino
C) Breaking of ribose sugar
D) Carries genetic material

Q.173 Identify the monomers of Polyvinyl chloride: (2017)
A) Vinyl acetate
B) Butyl maleate
C) Styrene
D) Vinyl chloride

Q.174 Among the following, which compound is formed by addition polymerization: (2017)
A) Polystyrene
B) Polyester
C) Nylone
D) Both A & B

Q.175 Phosphoprotein comes under the type of proteins: (2017)
A) Simple protein
B) Conjugated Protein
C) Derived protein
D) Botha B & C

Q.176 Which is the structure of polyvinyl chloride (polychloroethene)? (2018)
A) $[H_2C=CH-Cl]$
B) $-[HCCl-CH-Cl]-$
C) $-[H_2C-CH-Cl]-$
D) $-[CCl_2-CCl_2]$

Q.177 Which one the following compound is additional polymer? (2019)
A) Polyvinyl chloride
B) Nylon
C) Carbohydrate
D) Polyester

Q.178 Based on the Physico-chemical properties, proteins may be classified into the following types: (2020)
A) Simple proteins
B) Compound proteins
C) Derived proteins
D) All of the above

Q.179 **Based on function, thyroxin can be classified as:** (2020)
A) Hormonal protein
B) Structural protein
C) Transport protein
D) Genetic protein

Q.180 **L-Asparaginase enzyme has been used for the treatment of:** (2020)
A) Jaundice
B) Blood cancer
C) Rickets
D) Heat disease

ANSWERS

1.	B	2.	A	3.	A	4.	C	5.	D	6.	A	7.	B	8.	B	9.	D	10.	C
11.	C	12.	D	13.	B	14.	C	15.	B	16.	A	17.	C	18.	C	19.	D	20.	B
21.	C	22.	D	23.	A	24.	D	25.	B	26.	A	27.	B	28.	C	29.	A	30.	C
31.	D	32.	D	33.	B	34.	C	35.	A	36.	B	37.	A	38.	C	39.	A	40.	B
41.	A	42.	A	43.	A	44.	D	45.	A	46.	C	47.	C	48.	B	49.	C	50.	D
51.	C	52.	B	53.	D	54.	A	55.	B	56.	B	57.	A	58.	B	59.	A	60.	D
61.	B	62.	C	63.	B	64.	A	65.	C	66.	B	67.	C	68.	C	69.	B	70.	D
71.	B	72.	A	73.	B	74.	A	75.	C	76.	C	77.	D	78.	C	79.	C	80.	D
81.	C	82.	B	83.	C	84.	D	85.	D	86.	A	87.	D	88.	C	89.	C	90.	D
91.	A	92.	D	93.	C	94.	B	95.	A	96.	C	97.	A	98.	D	99.	C	100.	B
101.	D	102.	D	103.	D	104.	B	105.	A	106.	C	107.	D	108.	C	109.	B	110.	C
111.	D	112.	A	113.	C	114.	D	115.	C	116.	A	117.	D	118.	A	119.	C	120.	A
121.	D	122.	B	123.	A	124.	D	125.	B	126.	C	127.	A	128.	A	129.	D	130.	B
131.	B	132.	C	133.	D	134.	B	135.	A	136.	B	137.	D	138.	C	139.	B	140.	B
141.	B	142.	C	143.	B	144.	A	145.	C	146.	C	147.	D	148.	B	149.	D	150.	C
151.	C	152.	B	153.	C	154.	A	155.	D	156.	D	157.	B	158.	B	159.	A	160.	A
161.	D	162.	B	163.	C	164.	B	165.	C	166.	C	167.	C	168.	D	169.	D	170.	C
171.	A	172.	D	173.	D	174.	A	175.	B	176.	C	177.	A	178.	D	179.	A	180.	B