MDCAT CHEMISTRY PRACTICE MCQS

WITH ANSWER KEYS

AIDE MDCAT WORKSHEETS

No.	Unit Name
1.	FUNDAMENTAL CONCEPTS
2.	STATES OF MATTER
3.	ATOMIC STRUCTURE
4.	CHEMICAL BONDING
5.	CHEMICAL ENERGETICS
6.	ELECTROCHEMISTRY
7.	CHEMICAL EQUILIBRIUM
8.	REACTION KINETICS
9.	PERIODS & GROUPS
10.	TRANSITION ELEMENTS | ELEMENTS OF BIOLOGICAL IMPORTANCE
11.	FUNDAMENTALS OF ORGANIC CHEMISTRY | HYDROCARBONS
12.	ALKYL HALIDES | ALCOHOLS AND PHENOLS
13.	ALDEHYDES AND KETONES | CARBOXYLIC ACIDS | AMINO ACIDS
14.	MACROMOLECULES | ENVIRONMENTAL CHEMISTRY

Answer Key Given at Last Page

WORKSHEET NO. 1

AIDE UNIT 1 | FUNDAMENTAL CONCEPTS

1. Mark the correct statement about mole fraction:
   A. It is used for only three components of a solution
   B. It is independent of temperature
   C. Its value is always more than 1
   D. Sum of mole fraction is equal or greater than 1

2. Silicon carbide Si is an important ceramic material. It is produced by allowing SiO_2 to react with carbon at high temperature as shown in the reaction:
   $$SiO_2 + 3C \rightarrow SiC + 2CO$$
   When 0.3kg sand is reacted with excess of carbon. 0.1kg of SiC is produced. What is the percentage yield of SiC?
   A. 35%
   B. 40%
   C. 45%
   D. 50%

3. What is the percentage by (v/v) of ethanol, if $5.0cm^3$ of ethanol is dissolved in $45.0cm^3$ of water:
   A. 8%
   B. 6%
   C. 10%
   D. 4%

4. How many Br atoms are in 3 moles of Br element?
   A. $3 \times 6.02 \times 10^{23}$ atoms
   B. $81 \times 3 \times 10^{-23}$ atoms
   C. $79 \times 3 \times 6 \times 10^{-23}$ atoms
   D. $3 \times 6.02 \times 10^{-23}$ atoms

5. 12 g of magnesium (Mg) reacts with dilute sulphuric acid (H_2SO_4) to produce hydrogen gas. The amount of hydrogen gas produced is:
   A. 4g
   B. 3g
   C. 2g
   D. 1g

6. The element with four isotopes is:
   A. Carbon
   B. Nitrogen
   C. Hydrogen
   D. Sulphur

7. The identity of an element is determined by
   A. Electron number
   B. Proton number
   C. Neutron number
   D. Mass number

8. CO_2 produced during combustion analysis of given organic compound is absorbed in 50% of KOH solution. It is:
   A. Chemical change only
   B. Physical change only
   C. May be A or B
   D. Neither A or B

9. The removal of water by $Mg(ClO_4)_2$ is:
   A. Chemical absorption
   B. Physical absorption
   C. Physical adsorption
   D. None of these

10. The number of moles of CH_4 which contains 6.0g of carbon
    A. 1.0
    B. 0.75
    C. 0.5
    D. 0.25

11. Which of following compounds has the highest percentage of oxygen by weight?
    A. CH_3OH
    B. HCHO
    C. C_2H_5OH
    D. H_2O

12. A container contains 18.0g water then it does not contain
    A. $1N_A$ water molecule
    B. $1N_A$ O-atoms
    C. $2N_A$ H-atoms
    D. $1N_A$ H-atoms

13. Which of the following change with increase in temperature:
    I. Molality   II. Mole fraction
    III. Molarity   IV. (v/v)%
    A. I, II
    B. I, II, III
    C. III, IV
    D. II, III

14. **Molecular mass of water (18g) means:**
    A. Mole
    B. Gram mole
    C. Gram molecule
    D. All of these

15. **The number of isotopes of elements with even mass number and even atomic number are:**
    A. 280
    B. 300
    C. 154
    D. 126

16. **Percentage of oxygen in calcium carbonate is:**
    A. 42%
    B. 48%
    C. 12%
    D. 18%

17. **Which one of the following substance is used as CO_2 absorber in combustion analysis:**
    A. $Mg(ClO_4)_2$
    B. 50%KOH
    C. Conc. H_2SO_4
    D. Dilute H_2SO_4

18. **Which one of the following properties is always in whole number:**
    A. Atomic mass
    B. Atomic radius
    C. Atomic volume
    D. Atomic number

19. **0.25 moles of H_2SO_4 contains "X" moles of oxygen atoms "X" is:**
    A. 0.5
    B. 1.0
    C. 2.0
    D. 4.0

20. **The number of electrons in one mole of H_2 is:**
    A. 6.02×10^{23}
    B. 3.01×10^{23}
    C. 12.04×10^{23}
    D. Indefinite

21. **220g of CO_2 contains molecules**
    A. 3.01×10^{23}
    B. 6.02×10^{23}
    C. 3.01×10^{24}
    D. 6.02×10^{24}

22. **Which of the following elements has minimum number of isotopes**
    A. Ca
    B. Pd
    C. Ne
    D. Cd

23. **Which of the following contains least number of molecules**
    A. 18g of C_2H_6
    B. 18g of CO_2
    C. 18g of SO_2
    D. 18g of N_2O

24. **All are the limitations of chemical equation except**
    A. Conditions of reaction
    B. Rate of reaction
    C. Mechanism of reaction
    D. No side reaction

25. **If we want to make 66g of ammonium sulphate by reaction ammonia with sulphuric acid ,how much ammonia will be needed**
    A. 34g
    B. 38g
    C. 17g
    D. 68g

26. **The percentage of _____ element is not calculated by combustion analysis**
    A. H_2
    B. C & O_2
    C. N_2
    D. O_2

27. **The percentage by mass of O_2 in water is**
    A. 88
    B. 8.89
    C. 88.80
    D. 50

28. **Properties gold (Ar-197) ring weighs 19.7g. The number of atoms it contains**
    A. 6.02×10^{-23}
    B. 3.01×10^{22}
    C. 6.02×10^{23}
    D. 6.02×10^{22}

29. **A small particle of substance is called molecule because**
    A. It has positive charge
    B. It decomposes into ions
    C. It exists independently
    D. It is always monoatomic

30. **The sum of atomic masses of all the elements in formula unit is**
    A. Relative molecular mass
    B. Relative isotopic mass
    C. Relative atomic mass
    D. Relative formula mass

1. Which of the following have least critical temperature
   A. NH_3
   B. H_2O
   C. O_2
   D. CO_2

2. The value of gas constant depends on
   A. Temperature
   B. Volume
   C. Number of moles
   D. Units of volume and pressure

3. At which temperature the Fahrenheit scale and centigrade scale show similar value
   A. 40
   B. -40
   C. 32
   D. -32

4. At what temperature the hydrogen molecules will have same kinetic energy as nitrogen molecule at 280K
   A. 280K
   B. 400K
   C. 40K
   D. 50K

5. Which of the following deviates most from the ideal behavior
   A. HCl
   B. CH_4
   C. He
   D. N_2

6. Oxygen gas contained in a flask at STP was replaced by SO_2 under same conditions. The weight of SO_2 will be
   A. Equal to O_2
   B. Half of O_2
   C. Twice that of O_2
   D. Thrice that of O_2

7. Which of the following have most root mean square velocity at 25°C
   A. CO_2
   B. H_2S
   C. NH_3
   D. SO_2

8. What will be the pressure of one mole of an ideal gas maintained at 300K and 250cm³ of volume
   A. 98.5 atm
   B. 96.7 atm
   C. 95.8 atm
   D. 97.1 atm

9. Equation $V_t = V_0(1+t/273)$ is based on
   A. Fahrenheit scale
   B. Celsius scale
   C. Kelvin scale
   D. None

10. Which gas deviate from ideal behavior at low pressure
    A. H_2
    B. He
    C. Ar
    D. NH_3

11. Which of the following postulate of KMT explains Charles law
    A. Each gas consists of a large number of molecules
    B. The molecules of a gas have no force of attraction
    C. The average kinetic energy of the gas is directly proportional to the absolute temperature
    D. The molecule of a gas are widely spread

12. Which of the following have two type of forces
    A. Diamond
    B. Ice
    C. Silicon oxide
    D. Cu

13. Correct order of boiling points of the given liquids
    A. $H_2O>HF>HCl>NH_3$
    B. $HF>H_2O>HCl>NH_3$
    C. $H_2O>HF>NH_3>HCl$
    D. $HF>H_2O>NH_3>HCl$

14. Which of the following have minimum vapor pressure
    A. Methanal
    B. Ethanol
    C. Propanal
    D. Ethanal

15. In crystal lattice of ice each O atom is attached to _____ H atom
A. 3
B. 4
C. 1
D. 2

16. Which of the following statement about the state of matter is incorrect
A. The most abundant state around us is solid
B. Less abundant state than gas, plasma and solid is liquid
C. Gas and liquid have three types of motion
D. The most abundant gas in universe is helium

17. Force of attraction among the molecules of gasoline are
A. LDF
B. Hydrogen bonding
C. Dipole-dipole forces
D. Debye forces

18. Vapor pressure is not affected by
A. Temperature
B. Amount of liquid
C. Intermolecular forces
D. Nature of liquid

19. Which of the following liquid have greater boiling point
A. Glycerol
B. Phenol
C. Benzene
D. Water

20. Molecular solids have all the following types of bonding except
A. LDF
B. Hydrogen bond
C. Coordinate covalent bond
D. Dipole dipole forces

21. The nature of attractive force in propanone and trichloro methane
A. Dipole-induced dipole forces
B. Dipole dipole forces
C. Ion dipole forces
D. Hydrogen bonding

22. Which of the following has strongest intermolecular forces of interaction?
A. Hydrogen
B. Chlorine
C. Iodine
D. Methane

23. Which has strongest bonding in the solid state
A. HCl
B. Cl_2
C. Xe
D. NaCl

24. When the atom of the third layer are arranged in such a way that they directly lie above the atoms of the first layer then this arrangement is called
A. Hexagonal
B. Cubic
C. Orthorombic
D. Rhombohedral

25. Forces of attraction which may be present between all kinds of atoms and molecules are
A. Intramolecular
B. Intermolecular
C. Van der waal
D. Dipole induced dipole

26. Steam cause more severe burn than the boiling water because it possess
A. Latent heat of fusion
B. Latent heat of vaporization
C. Latent heat of sublimation
D. All of above

27. Water has maximum density at
A. 0°C
B. 4°C
C. 2°C
D. 100°C

28. The boiling point increases down the zero group elements due to
A. Ion dipole forces
B. London forces
C. Hydrogen bonding
D. Dipole dipole forces

29. Dry ice (CO_2) forms
A. Ionic crystals
B. Covalent crystals
C. Metallic
D. Molecular crystals

30. Vapor pressure is not affected by
A. Nature of liquid
B. Intermolecular forces
C. Temperature
D. Amount of liquid

WORKSHEET NO. 3

AIDE UNIT 3| ATOMIC STRUCTURE

1. The value of l=3 stands for sub shell that is
   A. Sharp
   B. Principle
   C. Fundamental
   D. Diffused

2. An atom has 14 proton and 16 neutron is
   A. Boron
   B. Nitrogen
   C. Silicon
   D. Oxygen

3. The neutron particle
   A. Has mass of 0.55 amu
   B. Has equal charge as that of electron
   C. Is present in all atoms
   D. Has more penetrating power than proton

4. Which of the following formula help us to determine number of orbitals in a shell
   A. $2n^2$
   B. n^2
   C. n-l
   D. 2l+1

5. The sum of principle and azimuthal quantum number for a certain orbit is 5. The subshell may be
   A. 3d
   B. 5p
   C. 4d
   D. 3p

6. The quantum number +1/2 and -1/2 for the electron spin represent
   A. Rotation of the electron in clockwise and in anti clockwise direction respectively
   B. Magnetic moment of the electron pointing up and down respectively
   C. Two quantum mechanical spin states which have different shapes
   D. Rotation of the electron in anticlockwise and in clockwise direction respectively

7. According to quantum mechanics, the orientation of orbitals is told by the quantum number
   A. Spin
   B. Azimuthal
   C. Magnetic
   D. Principle

8. The element that has max unpaired electrons in M+3 form
   A. V
   B. Cr
   C. Mn
   D. Fe

9. The correct electronic configuration of Cu is
   A. (Ar)4s1 3d9
   B. (Ar)4s2 3d8
   C. (Ar)3d9 4s2
   D. (Ar)3d10 4s1

10. The atomic number of an element is 14. It belongs to period and group number Of the periodic table respectively
    A. 3,3
    B. 4,3
    C. 7,5
    D. 3,4

11. Sc^{+3} is isoelectronic with
    A. Ne
    B. K
    C. Mg
    D. Ar

12. Which of the following sets of quantum number Represents the highest energy of an electron
    A. n=2 l=2 m=1 s=+1/2
    B. n=3 l=2 m=0 s=+1/2
    C. n=4 l=1 m=0 s=+1/2
    D. None

13. Which of the following has same number Of electron as of alpha particle
    A. Lithium ion
    B. Helium
    C. Nascent hydrogen
    D. Proton

14. p-subshell has 3 space orientations along x, y and z axes. Maximum electron in each is
   A. 10   C. 14
   B. 6   D. 2

15. Which of the following has more electrons than neutrons
   A. F^{-1} C. Mg^{2+}
   B. Al^{+} D. O^{2-}

16. The first ionization energy of alkaline earth metals decreases with increase of atomic number. Which of following factor is responsible for this
   A. Increasing nuclear charge
   B. Increase in shielding effect
   C. Increase atomic mass
   D. Increasing atomic radius

17. If the sub atomic particles move perpendicularly to a magnetic field
   A. Neutron also show deflection like proton
   B. All particle show deflection
   C. p^{+} and e^{-} deflect in same direction but with different angles
   D. Proton and electron deflect in opposite direction

18. Which one of the following has max electron affinity value
   A. O   C. Se
   B. S   D. Te

19. When I=2 the number of possible orbitals in the subshell is
   A. 1   C. 3
   B. 5   D. 7

20. The letters s, p, d and f are used to represent
   A. Orbit   C. Shell
   B. Subshell   D. Orbital

21. The value of magnetic quantum number Is directly determined by the value of
   A. Principle quantum number
   B. Azimuthal
   C. Spin
   D. Both A and B

22. An element having max number of unpaired electrons in d subshell will have the atomic number
   A. 23   C. 25
   B. 24   D. Both B and C

23. The _____ quantum number explains the shape of orbitals
   A. Principle
   B. Azimuthal
   C. Magnetic
   D. Spin

24. A trivalent anion having 10 electrons and 24 nucleon number The number of neutrons are
   A. 10
   B. 14
   C. 17
   D. 24

25. The 1st ionization energy of Na ,Mg, Al, Si are in the order of
   A. Na<Mg<Si<Al
   B. Na<Al<Mg<Si
   C. Na<Mg<Al<Si
   D. Mg<Na<Al<Si

26. Which of the following pair of groups show abnormal trend of ionization energy
   A. IIA IIIA
   B. IIA VA
   C. IIIA VA
   D. IIIA VIA

27. Which of the following pair of groups show abnormal trend of electron affinity
   A. IIA IVA VIA
   B. IIA VA VIIIA
   C. IIIA VA VIIA
   D. IIIA VIA VIIIA

28. An unknown element having electronic configuration [Ne]$3s^2$ $3p^3$ can form
   A. Uninegative ion
   B. Di positive ion
   C. Tri negative ion
   D. Unipositive ion

29. When n=3 all possible values of magnetic quantum n for mbervalence shell
   A. 0 ±1 ±2 3   C. 0 ±1
   B. 0± 1 ±2   D. 0 ±1 ±2 +3

30. An unknown element having electronic configuration 2, 8, 13, 4. The number of unpaired electrons in d orbitals are
   A. 3   C. 4
   B. 5   D.2

1. In H_2O the covalent bonds are formed by
   A. s-sp overlap
   B. s-sp² overlap
   C. s-s overlap
   D. s-sp³ overlap

2. The molecule having highest bond energy is
   A. CO
   B. CN
   C. CC
   D. CF

3. Which one of the following is not trigonal planner molecule
   A. NH_3
   B. $GaCl_3$
   C. SO_3
   D. $InCl_3$

4. Which of the following has zero dipole moment
   A. CO
   B. NH_3
   C. $SnCl_2$
   D. $BeCl_2$

5. The bond angle in hydronium ion is
   A. 109.5
   B. 120
   C. 104.5
   D. 107.5

6. Covalent compounds are
   A. Directional and rigid
   B. Non directional and rigid
   C. Directional and non rigid
   D. Non directional and non rigid

7. The structure of H_2Se is similar to that of
   A. H_3O^+
   B. $BeCl_2$
   C. CH_2^{-2}
   D. NH_2^-

8. Bond energy is increased by increasing all of the following except
   A. % of s character
   B. Bond polarity
   C. Difference of E.N value
   D. Bond length

9. Select correct statement
   A. When a covalent bond is formed, transfer of electron takes place
   B. Pure H_2O does not contain large no of ions
   C. HF is less polar than HCl
   D. A bond is formed when attractive forces dominate repulsive forces

10. When a bromine atom becomes an ion
    A. It loses an electron
    B. It gains two electrons
    C. It gains one electron
    D. It loses two electrons

11. Which of the following pairs resembles in shape
    A. CS_2 and H_2S
    B. BF_3 and NH_3
    C. CO_2 and SO_2
    D. $InCl_3$ and SO_3

12. Which of the following molecules contain both ionic and covalent bond
    A. $BeCl_2$
    B. $SiCl_4$
    C. CO_2
    D. NaOH

13. _____ has sp hybridization in any carbon atom
    A. $CH_3-CH_2-CH_3$
    B. CH_3-CN
    C. CH_3NH_2
    D. $CH_2=CH_2$

14. A hybrid orbital is formed by the intermixing of the two or more orbitals of different shape and energy and can form _____ bond
    A. Sigma bond
    B. Pi bond
    C. Both A and B
    D. None

15. The carbon number 3 in the structure $CH_2=CH-CH_2-CH=CH_2$ show type of bonding
    A. sp
    B. sp2
    C. dsp2
    D. sp3

16. %age of coordinate covalent bond in NH_4^+ is
    A. 75%
    B. 25%
    C. 66%
    D. 33%

17. Which of the following molecule is polar in nature
    A. CCl_4
    B. CS_2
    C. CH_4
    D. CO

18. Which of the following has lowest 1st ionization energy
    A. Mg
    B. O
    C. S
    D. Al

19. The Lewis dot and cross formula for O_2 shows
    A. A double ionic bond
    B. A triple covalent bond
    C. A single ionic bond
    D. A double covalent bond

20. In the given structure $NaBH_4$ the coordinate covalent bond is present in between
    A. BH_3 and Na
    B. BH_3 and H^+
    C. No coordinate covalent bond in present
    D. BH_3 and H^-

21. Which of the following have all types of bonds
    A. $NaBH_4$
    B. NH_4Cl
    C. $NaNO_3$
    D. Both a and b

22. Which one is AB_4 type molecule
    A. SO_3
    B. $SnCl_2$
    C. BF_3
    D. H_2Se

23. According to VSPER theory, which is angular in its structure
    A. $HgCl_2$
    B. $BeCl_2$
    C. $SnCl_2$
    D. $SrCl_2$

24. Benzene contain delocalized pi electronic cloud
    A. sp^2 sp^2 overlapping
    B. sp^2 s overlapping
    C. sp overlapping
    D. p_z p_z overlapping

25. Among following molecules, which has different number Of pi electrons than others
    A. SO_2
    B. $C_6H_5NH_2$
    C. C_6H_5OH
    D. CH_3CN

26. Chloroform and acetone are miscible with each other because of
    A. Dipole forces
    B. H bonding
    C. Debye forces
    D. LDF

27. H bonding is not present in molecules of
    A. CH_3OCH_3
    B. CH_3OH
    C. CH_3COOH
    D. $CH_3CH_2NH_2$

28. How many electrons are shared between two nitrogen atoms in N_2
    A. 2
    B. 3
    C. 6
    D. 4

29. Ionic bond with greater ionic character is mostly formed between elements of
    A. IA and IIA
    B. IA and VIA
    C. IA and VIIA
    D. IIA and VIIA

30. During formation of hydronium ion from water and hydrogen ion there is no change of hybridization (sp3) but bond angle is changed from 104.5 in water to almost _____ in hydronium ion
    A. 104.5
    B. 109.5
    C. 120
    D. 113

1. **Which of the following is exothermic?**
   A. $2H_2O \Rightarrow H_2O_2$
   B. $N_2 + O_2 \Rightarrow 2NO$
   C. $N_2 + 3H_2 \Rightarrow 2NH_3$
   D. $Na \Rightarrow Na^+ + 1e^-$

2. **Which of the following will form oxidative layer on burning?**
   A. Na_2CO_3
   B. B_2O_3
   C. CO_2
   D. SO_2

3. **The enthalpy change for the reaction $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$**
   A. Formation of CO_2
   B. Fusion of CH_4
   C. Combustion of CH_4
   D. Vaporization of CH_4

4. **$NaOH + HCl \rightarrow NaCl + H_2O$. Enthalpy change in the reaction is called**
   A. Enthalpy of reaction
   B. Enthalpy of formation
   C. Enthalpy of neutralization
   D. Enthalpy of combustion

5. **Change in Enthalpy of ΔH a system can be calculated by following relationship**
   A. $\Delta H = \Delta E - PV$
   B. $\Delta H = \Delta E + q$
   C. $\Delta H = \Delta E - q$
   D. $\Delta H = \Delta E + P\Delta V$

6. **Born Haber cycle is example of**
   A. Gibbs' free energy
   B. Law of conservation of mass
   C. Hess's Law
   D. Distribution law

7. **Using the information given in the table below, calculate lattice energy of potassium bromide.**

Reactions	ΔH/kJmol^{-1}
$K_{(s)} + 1/2Br_2 \rightarrow K^+Br^-$	-392
$K_{(s)} \rightarrow K_{(g)}$	+90
$K_{(g)} \rightarrow K^+_{(g)} + e^-$	+420
$1/2Br_{2(s)} \rightarrow Br_{(g)}$	+122
$Br + e^- \rightarrow Br^-_{(g)}$	-342

   A. -672 kJmol^{-1}
   B. -112 kJmol^{-1}
   C. $+672$ kJmol^{-1}
   D. $+112$ kJmol^{-1}

8. **Enthalpy is internal energy accompanying work done of gas. It is**
   A. $\Delta H = q_p$ C. $\Delta E = q_p$
   B. $\Delta H = q_v$ D. $\Delta E = q_v$

9. **For an endothermic reaction, enthalpy of reactants**
   A. Is smaller than that of the products
   B. Is greater than that of the products.
   C. Is equal to that of the products.
   D. Must be greater or smaller than that of the products.

10. **Which of the following is true for enthalpy of atomization?**
    A. $H_{2(g)} \rightarrow 2H_{(g)}$
    B. Always exothermic
    C. Always endothermic
    D. $\frac{1}{2} H_{2(g)} \rightarrow 2H_{(g)}$

11. **Four metals A, B, C and D are having standard electrode potentials as -3.05, -1.66, -0.4 and 0.8 V respectively. Which one will be the best reducing agent:**
    A. A   C. C
    B. B   D. D

12. **Which can replace hydrogen form dilute acids?**
    A. Au   C. Zn
    B. Pt   D. None of these

13. **Halogens are placed at lower level of electrochemical series, this indicates that**
    A. Halogens are good reducing
    B. Halogens are good oxidizing agent but bad reducing agents
    C. Halogens are good oxidizing agent as well as good reducing agents
    D. All above

14. **Which of the following is true regarding Fuel cell?**
    - A. Catalyst used to carry out reaction is carbon
    - B. Reaction at anode $O_{2(g)} + 2H_2O_{(l)} \rightarrow 4e^- + 4OH^-_{(aq)}$
    - C. $H_{2(g)} + 2OH^-_{(aq)} \rightarrow 2H_2O_{(l)} + 2e^-$ At cathode.
    - D. All are correct.

15. **Which of the following has highest reduction potential:**
    - A. $Ca^{+2} + 2e^- \rightarrow Ca$
    - B. $2H^+ + 2e^- \rightarrow H_2$
    - C. $Cu^+ + e^- \rightarrow Cu$
    - D. $Cu^{2+} + 2e^- \rightarrow Cu$

16. **Choose correct expression of Daniel cell**
    - A. $Zn_{(s)} / Zn^{+2}_{(aq)}$ 1M $|| Cu^{+2}_{(aq)}$ 1M $/ Cu_{(s)}$
    - B. $Zn_{(g)} / Zn^{+2}_{(l)}$ 1M $|| Cu^{+2}_{(aq)}$ 1M $/ Cu^{+1}_{(s)}$
    - C. $Zn^{+2}_{(s)} / Zn^{+2}_{(s)}$ 1M $|| Cu_{(s)}$ 1M $/ Cu^{+2}_{(aq)}$
    - D. $Zn_{(s)} / Zn^{+2}_{(aq)}$ 1M $|| Cu^{+2}_{(s)}$ 1M $/ Cu^{+2}_{(aq)}$

17. **Find the highest oxidation number of Mn.**
    - A. MnO_2
    - B. Mn_2O_7
    - C. K_2MnO_4
    - D. Mn^{+2}

18. **Select oxidation reaction of Daniel cell.**
    - A. $Zn_{(s)} \rightarrow Zn^{+2}_{(aq)} + 2e^-$
    - B. $Zn_{(aq)} + 2e^- \rightarrow Zn^{+2}_{(s)}$
    - C. $Cu^{+2}_{(aq)} + 2e^- \rightarrow Cu_{(s)}$
    - D. $Cu^{+2}_{(s)} \rightarrow Cu_{(aq)} + 2e^-$

19. **Stronger than oxidizing agent, greater is the:**
    - A. Oxidation potential
    - B. Reduction potential
    - C. Redox potential
    - D. E.M.F of cell

20. **Oxidation number Of 'O' in H_2O_2 is**
    - A. +1
    - B. -1
    - C. +2
    - D. -2

21. **pH of 10^{-3} moledm^{-3} of HCl.**
    - A. 2
    - B. 3
    - C. 4
    - D. 5

22. **Correct relationship b/w K_C and K_P is**
    - A. $K_P = K_C (RT)^{-\Delta n}$
    - B. $K_P = K_C (RT)^{\Delta n}$
    - C. $K_C = K_P (RT)^{-\Delta n}$
    - D. $K_C = K_P (RT)^{\Delta n}$

23. **Which one is best buffer**
    - A. Which has 4-5 pH
    - B. Which has 11-12 pH
    - C. Which has equal concentration of acid and base?
    - D. Which has equal concentration of salt and acid?

24. **pH of 10^{-4} moledm^{-3} of $Ba(OH)_2$**
    - A. 10.3
    - B. 9.3
    - C. 4
    - D. 10

25. **An excess of aqueous silver nitrate is added to aqueous barium chloride and precipitate is removed by filtration. What are the main ions in the filtrate?**
    - A. Ag^+ and NO_3^- only
    - B. Ag^+ and Ba^{+2} and NO_3^-
    - C. Ba^{2+} and NO_3^- only
    - D. Ba^{2+} and NO_3^- and Cl

26. **pH of Blood is:**
    - A. 7
    - B. 7.35
    - C. 7.5
    - D. 7.9

27. **At equilibrium K_C for $PCl_5 \rightleftharpoons PCl_3 + Cl_2$**
    - A. $K_C = [PCl_5]/ [PCl_3][Cl_2]$
    - B. $K_C = [PCl_5]/[2Cl]^2[PCl_3]$
    - C. $K_C = [PCl_3][Cl_2]/ [PCl_5]$
    - D. $K_C = [2Cl]^{-2}[PCl_3]/ [PCl_5]$

28. **If $K_C > Q_C$ then reaction will**
    - A. Move to forward direction
    - B. Move to backward direction
    - C. Don't move in any direction (at equilibrium)
    - D. None of the above

29. **K_a is related to K_b as**
    - A. $K_a \, \alpha \, 1/pK_b$
    - B. $K_a \, \alpha \, K_b$
    - C. $pK_a \, \alpha \, 1/K_b$
    - D. $K_a \, \alpha \, 1/K_b$

30. **Common ion effect suppresses the ionization of**
    - A. NaCl
    - B. Strong electrolytes
    - C. KCl
    - D. Weak electrolytes

1. 18 g glucose is dissolved in 90 g of water. The relative lowering of vapor pressure is equal to
   A. 1/5   C. 1/51
   B. 5.1   D. 6

2. Calculate the molarity of a solution containing 20.7 g of K_2CO_3 dissolved in 500 cm^3 of the given solution.
   A. 0.2 mole dm^{-3}
   B. 0.3 mole dm^{-3}
   C. 0.4 mole dm^{-3}
   D. 0.5 mole dm^{-3}

3. Number of mole present in 0.6 gram of silica is (Atomic mass Si = 28, O = 16)
   A. 0.01 mole   C. 0.064 mole
   B. 0.044 mole   D. 0.054 mole

4. A solution has 92 g ethanol, 96 g methanol and 90 g water. Mole fraction of water in the solution is
   A. 0.1   C. 0.4
   B. 0.2   D. 0.5

5. A solution of glucose is 10%. The volume in which 1g mole of it will be dissolved is
   A. 1 dm^3 C. 200 dm^3
   B. 1.8 dm^3 D. 180 dm^3

6. When liquid solute is dissolved in liquid solvent, then the best unit of concentration is?
   A. % w/w   C. % v/v
   B. % w/v   D. % v/w

7. How many grams of NaOH are present in 250 cm^3 of its 0.2M solution
   A. 4g   C. 10g
   B. 0.4g   D. 2g

8. When we dissolve 15.8g of $KMnO_4$ in 1000 g of H_2O. The solution is?
   A. 0.1M   C. 0.2M
   B. 0.1m   D. 0.2m

9. 250 cm^3 of 0.2 molar potassium sulphate solution is mixed with 250 cm^3 of 0.2 molar KCl solution. The molar concentration of K^+ ions is:
   A. 0.2 molar
   B. 0.25 molar
   C. 0.3 molar
   D. 0.35

10. Calculate the molarity of glucose solution when 9g of it are dissolved in 250 cm^3 of solution.
    A. 0.05 moles dm^{-3}
    B. 0.2 moles dm^{-3}
    C. 0.3 moles dm^{-3}
    D. 0.34 moles dm^{-3}

11. Spontaneous reactions are those which
    A. Continue to occur once started
    B. May be endothermic
    C. May be exothermic
    D. All of these

12. Lattice energy is helpful in determining
    A. Bonding
    B. Structure
    C. Properties
    D. All

13. The lattice energy in the following reaction is: $Na^+ + Cl^- \rightarrow Na^+Cl^-$
    A. -406kJ/mole
    B. +787kJ/mol
    C. +406kJ/mol
    D. -787kJ/mol

14. Which of the following is always endothermic
    A. Standard heat of formation
    B. Standard heat of neutralization
    C. Standard heat of combustion
    D. Standard heat of atomization

15. Which of the following is correctly associated with the definition of the standard enthalpy of carbon monoxide formation
    A. $C + CO_2 \rightarrow 2CO$
    B. $C + O_2 \rightarrow CO$
    C. $C + O \rightarrow CO$
    D. $C + 1/2O_2 \rightarrow CO$

16. Which of the following processes is endothermic
    A. Condensation of the steam
    B. The freezing of water
    C. Respiration
    D. Electrolysis of water

17. Which of the following represents the change corresponding to the change of enthalpy of chlorine
    A. $Cl_2 \rightarrow 2Cl$
    B. $Cl_2 \rightarrow 2Cl^-$
    C. $Cl_2 \rightarrow Cl$
    D. $1/2Cl_2 \rightarrow Cl$

18. Which of the following is involved in determining the enthalpy change in a chemical reaction
    A. The number Of stages involved in a chemical reaction
    B. The activation energy of the reaction
    C. The intermediates in the overall chemical reaction
    D. The initial and final states of the reacting system

19. If a gas at constant temperature and pressure expands, then its
    A. Internal energy decreases
    B. Entropy increases then decreases
    C. Internal energy increases
    D. Internal energy remains constant

20. Which equation defines the lattice energy of the ionic compound XY?
    A. $X(s)+Y(s) \rightarrow XY(g)$
    B. $X(g)+Y(g) \rightarrow XY(g)$
    C. $X+(s) +Y-(s) \rightarrow XY(s)$
    D. $X+(g)+ Y-(g) \rightarrow XY(s)$

21. The change in heat energy of a chemical reaction at constant temperature and pressure is known as
    A. Free energy   C. Bond energy
    B. Internal energy   D. Enthalpy change

22. The change in heat energy of a chemical reaction at constant temperature and volume is known as
    A. Free energy
    B. Internal energy
    C. Bond energy
    D. Enthalpy change

23. To determine the enthalpy of reaction directly _____ is used
    A. Glass calorimeter
    B. Bomb calorimeter
    C. Hess's law
    D. Both a and b

24. The internal energy change of the system is a
    A. Work function   C. State function
    B. Path function   D. None

25. The enthalpy change of the system is a
    A. Work function   C. State function
    B. Path function   D. All

26. Which one of the following statement is correct
    A. Work is a state function
    B. Change in state does not depend upon initial and final state
    C. Work appears at the boundary of the system
    D. Heat is a state function

27. In endothermic reactions the product are generally related to
    A. Less stable
    B. H is positive
    C. Have weaker bonds
    D. All

28. In exothermic reactions the product are generally related to
    A. More stable
    B. H is negative
    C. Have stronger bonds
    D. All

29. All of the following are incorrect except
    A. $H_{vaporization} < H_{sublimation} < H_{fusion}$
    B. $H_{fusion} < H_{sublimation} < H_{vaporization}$
    C. $H_{sublimation} < H_{fusion} < H_{vaporization}$
    D. $H_{fusion} < H_{vaporization} < H_{sublimation}$

30. The amount of heat require to raise the temperature of a body through 1°C per gram is called
    A. Molar heat
    B. Internal energy
    C. Thermal capacity
    D. Specific heat

1. A type of reaction in which order of reaction is independent of reactant concentration is called
   A. 1st order
   B. 2nd order
   C. 3rd order
   D. Zero order

2. The rate law for this reaction

   ester + H$^+$ → acid + alcohol

   is $\frac{dx}{dt}$ =k(ester)^1(H$^+$)^0. What will be the reaction rate when concentration of ester is doubled?
   A. 3 times
   B. 4 times
   C. 5 times
   D. 2 times

3. One of the following is not a physical method for determining of rate of reaction
   A. Spectrometry
   B. Refractometery
   C. Electrical conductivity
   D. Titration

4. The unit of the rate constant is same as that of the rate of reaction in _____ order reaction
   A. 1st
   B. 2nd
   C. 3rd
   D. Zero

5. If the reaction P + Q → R + S is described as being of zero order with respect to P, it means that
   A. P is catalyst in this reaction
   B. No P molecule possesses sufficient energy to react
   C. Concentration of P does not change during the reaction
   D. The rate of reaction is independent of P

6. Which one does not influence the rate of reaction
   A. Nature of reactant
   B. Concentration of reactant
   C. Temperature
   D. Molecularity

7. During ignition of petrol in internal combustion engine ,the negative catalyst used is
   A. CO
   B. N$_2$O$_5$
   C. Arsenic
   D. Tetraethyl lead

8. Carbohydrates are synthesized in plants by photosynthesis. The order of reaction followed is
   A. 1st
   B. 2nd
   C. 3rd
   D. Zero

9. According to the collision theory of reaction rates, an increase of the temperature at which the reaction occurs will in turn increase the rate of reaction. This is due to
   A. Greater velocity of reacting molecules
   B. Greater number Of molecules
   C. Greater potential energy of reacting molecules
   D. Greater number Of molecules have the activation energy

10. Among the following hydroxides, which has lowest Ksp value:
    A. Mg(OH)$_2$
    B. Ba(OH)$_2$
    C. Ca(OH)$_2$
    D. Be(OH)$_2$

11. Which combination produces buffer solution at pH < 7 by partial neutralization with aqueous NaOH
    A. 0.01M HI
    B. 0.01M HCl
    C. 0.01M CH$_3$COOH
    D. 0.01M H$_2$SO$_4$

12. By increasing temperature of water its pH will
    A. Increase and water will be more acidic
    B. Decrease and water will be more acidic
    C. Decrease and water will remain neutral
    D. No effect of temperature on ph

13. In _____ case increase in temperature and decrease in pressure favours the forward reaction
    A. PCl$_5$ ⇌ PCl$_3$ + Cl$_2$
    B. N$_2$ + 3H$_2$ ⇌ 2NH$_3$

C. $2SO_2 + O_2 \leftrightarrows 2SO_3$
D. $N_2 + O_2 \leftrightarrows 2NO$

14. Which is correct relationship
A. $Kp=Kc(p)^{\Delta n}$
C. $Kc=Kp(RT)^n$
B. $Kp=Kc(RT)^{-\Delta n}$
D. $Kp=Kc(RT)^{\Delta n}$

15. Calculate the value of Kc for ammonia synthesis when the equilibrium concentration of nitrogen, hydrogen and ammonia are 2M, 2M, 4M at 400°C
A. $1 \, mol^{-2} \, dm^6$
C. $1/64 \, mol^{-2} \, dm^6$
B. $0.1 \, mol^{-2} \, dm^6$
D. $16 \, mol^{.2} \, dm^6$

16. Strength of an acid is directly proportional to all except
A. Dissociation constant of acid
B. Percentage ionization of acid
C. pH of the acid
D. pOH of the acid

17. 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 of pK_b value stronger is the base

18. The equilibrium constant of the following equilibrium changes with $N_2O_4 \leftrightarrows 2NO_2$
A. Catalyst
C. Pressure
B. Temperature
D. Conc of N_2O_4

19. Which of the following change will decrease the amount of the steam?
$$2H_2O_{(g)} \leftrightarrows 2H_{2(g)} + O_{2(g)}$$
A. Addition Pt catalyst
B. Increase the pressure at constant temperature
C. Addition of more O_2
D. Increasing the temperature at constant pressure

20. Equimolar aqueous solution would have the same hydrogen ion concentration as of hydrochloric acid
A. H_2SO_4
C. HNO_3
B. $NaOH$
D. H_3PO_4

21. The pH of 0.001M H₂X which is only 50% dissociated is
A. 2.7
C. 3
B. 1.7
D. 2

22. For which system the equilibrium constant Kc has units (concentration)$^{+2}$
A. $2HF \leftrightarrows H_2 + F_2$
C. $2NH_3 \leftrightarrows N_2 + 3H_2$
B. $2NO_2 \leftrightarrows N_2O_4$
D. $PCl_5 \leftrightarrows PCl_3 + Cl_2$

23. Calculate the ph of a buffer solution 0.1M CH₃COOH and 0.01M CH₃COONa if pKa is 4.74
A. 4.74
C. 2.74
B. 3.74
D. 5.74

24. For which equilibrium reaction Kp>Kc
A. $H_2 + F_2 \leftrightarrows 2HF$
C. $N_2O_4 \leftrightarrows 2NO$
B. $N_2 + 3H_2 \leftrightarrows 2NH_3$
D. $PCl_3 + Cl_2 \leftrightarrows PCl_5$

25. Which is true about the following equilibrium
$$HNO_3 + 2H_2SO_4 \leftrightarrows 2HSO_4^{-2} + NO_2^+ + H_2O$$
A. H_2SO_4 is base
B. H_2SO_4 is dehydrating agent
C. Addition of water reduces(NO_2^+)
D. Both B and C

26. In zero order reaction the rate is in dependant of
A. Temperature of reaction
B. Concentration of reactants
C. Intensity of light
D. Surface area of reactant

27. For a reaction $2X+Y \rightarrow M+N$, The rate law is Rate = $k(X)^2(Y)$. If concentration of (Y) is constant and (X) is triple, the change in rate of reaction will be
A. 3 times
C. 6 times
B. 9 times
D. 27 times

28. The unit of rate constant for 2nd order reaction is
A. $moldm^{-3}sec^{-1}$
C. $mol^{-1}dm^{-3}s^{-1}$
B. $mol^{-1}dm^{+3}sec^{-1}$
D. $mol^{-2}dm^6s^{-1}$

29. 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}

30. The specific rate for a reaction is 1.0×10^{-4} $moldm^{-3}s^{-1}$ the order of reaction is
A. Zero
C. First
B. Second
D. Third

WORKSHEET NO. 8

AIDE UNIT 8| REACTION KINETICS

1. Hydrogenation of vegetable oil is accelerated by Ni catalyst, catalytic activity of Ni is increased by a promoter or activator which is
   A. Cu, Ta
   B. Hg, Zn
   C. Na, Hg
   D. Cu, Te

2. The addition of common ion to a solution of less soluble electrolyte
   A. Increase its ionization
   B. Dissolves the precipitates
   C. Increase reaction rate
   D. Suppresses its ionization

3. Which of the following is an example of homogenous catalysts
   A. Formation of SO_3 in contact process
   B. Formation of NH_3 in Haber's process
   C. Formation of ghee from edible oil
   D. Hydrolysis of ester

4. In which of the following techniques, rate of reaction is directly proportional to the small volume of change of reacting substance
   A. Spectrometry
   B. Optical rotation method
   C. Conductivity method
   D. Dilatometric method

5. An excess of $AgNO_3$ is added to $BaCl_2$ and precipitate is removed by filtration, what are main ions in filtrate
   A. Ag^+ and NO_3^{-1}
   B. Ba^{2+} and NO_3^{-1}
   C. Ba^{2+}, Cl^- and NO_3^{-1}
   D. Ag^+, Ba^{2+} and NO_3^{-1}

6. In the equilibrium expression for the reaction of $BaSO_4 \leftrightharpoons Ba^{2+} + SO_4^{-2}$, Ksp is equal to
   A. $(Ba^{2+})(SO_4^{-2})/(BaSO_4)$
   B. $(Ba^{2+})/(BaSO_4)$
   C. $(Ba^{2+})(SO_4^{-2})$
   D. None

7. The pKb value for aqueous ammonia at 25°C is 5.2. What is the value of pKa for ammonia ion at this temperature
   A. -5.2
   B. 8.9
   C. 9.8
   D. 8.8

8. The initial concentration and order of reaction is given, the half life period can be determined by which of the following relationship
   A. $N = 1 + \log(t1/t2)/\log(a1/a2)$
   B. $N = 1 + \log(t1/t2)/\log(a2/a1)$
   C. Both are correct
   D. None

9. For the reaction $W + 2X \leftrightharpoons 2Y + 3Z$. The unit of Kc is
   A. $moldm^{-3}$
   B. $mol^{-1}dm^3$
   C. $mol^{-2}dm^6$
   D. mol^2dm^{-6}

10. For a sparingly soluble substance A_xB_y, the solubility product is
    A. $(A^{+y})(B^{-x})$
    B. $(A^{+y})^y(B^{-x})^x$
    C. $(A^{+y})^x(B^{-x})^y$
    D. None

11. The reaction is found to be 2nd order with respect to If concentration of B is doubled, keeping all other substance constant. The rate of reaction will be:
    $$A + 2B \rightarrow C$$
    A. Be doubled
    B. Increase three times
    C. Increase nine times
    D. Increase 4 times

12. The role of catalyst in a reversible reaction is to
    A. Alter the Kc of reaction
    B. Increase the rate of forward reaction only
    C. Decrease the rate of backward reaction
    D. To achieve equilibrium quickly

13. Reaction which is favored in forward direction by increasing pressure is
    A. $N_2 + O_2 \leftrightharpoons 2NO$
    B. $PCl_5 \leftrightharpoons PCl_3 + Cl_2$
    C. $2SO_3 \leftrightharpoons 2SO_2 + O_2$
    D. $N_2 + 3H_2 \leftrightharpoons 2NH_3$

14. Calculate silver ion concentration, if Ksp of silver chloride is 4×10^{-8}
A. 2×10^{-8}
B. 4×10^{-4}
C. 1×10^{-4}
D. 2×10^{-4}

15. Which of the following has lowest pH
A. 1M NaOH
B. Distilled water
C. 1M NH$_4$OH
D. Water saturated with Cl_2 gas

16. The unit of rate of reaction is
A. moldm^3
B. moldm^{-3}
C. sec^{-1}
D. moldm^{-3}sec^{-1}

17. The solubility of AB$_3$ is X moldm^{-3}, its solubility product is
A. $27X^3$
B. $27X^4$
C. $36X^5$
D. $108X^5$

18. The conjugate acid of NH$_2^{-1}$ is
A. NH$_4^+$ C. NH^{-2}
B. NH$_2$ D. NH$_3$

19. The pH of a buffer solution containing equal concentration of weak monobasic acid and its salt is 5.0. Its pKa will be
A. 7 C. 8.5
B. 9 D. 5

20. The pH of basic buffer increases by adding more salt in it because
A. Dissociation of acid increases
B. Added salt produces more OH$^-$ ions
C. Added salt increases pKa of acid
D. Dissociation of acid decreases

21. The pH of 0.5M H$_2$SO$_4$ is
A. 0.1 C. 0.5
B. 1.0 D. 0.0

22. Half life of zero order reaction is
A. Independent of initial concentration
B. Depend on initial concentration
C. Inversely proportional to initial concentration
D. Directly proportional to initial concentration

**23.** The specific rate constant of any order reaction depends upon
A. Concentration
B. Pressure
C. Volume
D. Temperature

24. For a reaction, A $\rightarrow$ B, the rate of reaction doubles when the concentration of A is increased twice. The order of the reaction is
A. Zero
B. 2nd
C. 3rd
D. 1st

25. Which one is basic buffer solution
A. H$_2$CO$_3$ + NaHCO$_3$
B. CH$_3$COOH + CH$_3$COONa
C. C$_6$H$_5$COONa + C$_6$H$_5$COOH
D. NH$_4$Cl + NH$_4$OH

26. Which of the following has highest pH
A. NaHCO$_3$
B. NH$_4$Cl
C. NaNO$_3$
D. CH$_3$COOH

27. Which of the following relationship is incorrect
A. (H+)(OH-) = Kw
B. pH + pOH = 14
C. Ka x kb = Kw
D. pKa – pKb = pKw

28. If the rate of decay of radioactive isotopes decreases from 200 counts per minutes to 25 counts per minute after 24 hours. What is the half life?
A. 4 hours
B. 6 hours
C. 12 hours
D. 8 hours

29. The Arrhenius equation accounts for the rate of a chemical reaction in terms of the
A. Concentration of reactants
B. Physical states of the reactants
C. Order of reaction
D. Activation energy

30. Deactivation of a catalyst by small amount of impurity is called
A. Inhibitor
B. Rusting of catalyst
C. Autocatalyst
D. Poisoning of catalyst

1. Maximum ionization energy in 3rd period is possessed by
   A. Mg
   B. S
   C. P
   D. Ne

2. Formation of bi negative ion from atom is
   A. Exothermic
   B. Endothermic
   C. Enthalpy change zero
   D. Both a and b

3. The pair of valence electrons that doesn't take part in chemical combination is called
   A. Bond pair
   B. Inert pair
   C. Delocalized electron pair
   D. All of these

4. The number of electron pairs between carbon and oxygen in carbon monoxide
   A. 1
   B. 2
   C. 3
   D. 4

5. Which metal of group II A of the periodic table will form the least ionic
   A. Be
   B. Ca
   C. Mg
   D. S

6. MgO has a very high melting point due to
   A. Low hydration energy
   B. High lattice energy
   C. Low lattice energy
   D. None of the above

7. The only halogen acid that can react with silicon dioxide which is resistant towards all other acids:
   A. HF
   B. HI
   C. HCl
   D. HBr

8. Oxygen is liberated in the following equation, due to

$$2F_2(g) + 2H_2O(l) \rightarrow O_2(g) + 4F^{-1} + 4H^{+1}(aq)$$
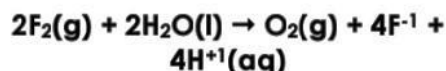
   A. Oxidation of F_2
   B. Reduction of water
   C. Oxidation of water
   D. None of these

9. In a group II A from top to bottom as the atomic number increases, there is regular decrease in:
   A. Ionic size
   B. Atomic size
   C. Ionization potential
   D. None of these

10. The reactivity of group II A elements with water_____ down the group:
    A. Decreases
    B. Increases
    C. Unpredictable
    D. Remains constant

11. Metallic luster is shown by which of the following halogen?
    A. Fluorine
    B. Iodine
    C. Chlorine
    D. Astatine

12. Dissosiation energy of halogen is of following order
    A. $F_2 > Cl_2 > Br_2 > I_2$
    B. $Cl_2 > Br_2 > I_2 > F_2$
    C. $Cl_2 > Br_2 > F_2 > I_2$
    D. $I_2 > F_2 > Cl_2 > Br_2$

13. Which halogen has greater tendency to attract electrons
    A. Cl
    B. F
    C. I
    D. Br

14. Which of the following is strongest oxidizing agent
    A. $HClO_4$ C. $HClO_2$
    B. $HClO_3$ D. $HClO$

15. Bleaching powder oxidizes ammonia to
    A. NO
    B. NO_2
    C. N_2
    D. N_2O

16. Alkali and alkaline earth metals are
    A. Oxidizing agent
    B. Reducing agent
    C. Acidic
    D. Amphoteric

17. The first ionization energy of helium is highest of all the elements because of
    A. Very small radius
    B. Stable s orbital
    C. High effective nuclear charge
    D. All of these

18. Which of the following is the application of argon
    A. In electric bulbs
    B. In fluorescent tubes
    C. In radio tubes
    D. All of these

19. Statement, that is most likely to be true about the elements in group II A of the periodic table, is
    A. They occur in uncombined form nature
    B. They show same oxidation number
    C. They form oxides of similar formulae
    D. They become less metallic as the relative proton number increases

20. The van dar waal's forces in halogens decreases in the order
    A. $F_2 > Cl_2 > Br_2 > I_2$
    B. $I_2 > F_2 > Br_2 > Cl_2$
    C. $I_2 > Br_2 > Cl_2 > F_2$
    D. $Cl_2 > I_2 > Br_2 > F_2$

21. Which of the following is the weakest halogen acid?
    A. HI
    B. HCl
    C. HBr
    D. HF

22. Mark the correct statement:
    A. The ionization energy of calcium is lower than that of barium
    B. The ionization energy of calcium is higher than that of beryllium
    C. The ionization energy of calcium is lower than that of magnesium
    D. The ionization energy of calcium is higher than that of strontium

23. Which of the following elements has highest density at 20 °C?
    A. Be
    B. Ca
    C. Sr
    D. Ba

24. Fluorine shows all of the following properties except:
    A. Fluorine atom is smaller in size than fluoride ion
    B. It follows octet rule
    C. Among halogens, it is the only element reacts with noble gases
    D. F_2 has greater bond energy than Cl_2

25. What is true about bond energy of halogens?
    A. $F_2 > Cl_2$
    B. $Cl_2 > F_2$
    C. $F_2 = Cl_2$
    D. None of these

26. Which halogen will react spontaneously with gold Au° to produce Au^{3+}?
    A. Br_2
    B. F_2
    C. Cl_2
    D. I_2

27. Oxidizing power of halogens depends on the following factors except:
    A. Energy of dissociation
    B. Density
    C. Hydration energy of ion
    D. Electron affinity

28. Halogens in the form of their halides show which trend for melting point?
    A. HF>HI>HBr>HCl
    B. HI>HBr>HCl>HF
    C. HI>HF>HBr>HCl
    D. HI>HF>HCl>HBr

29. One of the following alkali metals is the most reactive which is that:
    A. Cs
    B. K
    C. Na
    D. Li

30. Which of the following is amphoteric?
    A. $Ba(OH)_2$
    B. $Be(OH)_2$
    C. $Ca(OH)_2$
    D. $Sr(OH)_2$

1. The least paramagnetism is shown by
   A. V^{3+}
   B. Cu^{2+}
   C. Cr^{3+}
   D. Mn^{2+}

2. Geometry present in $[Cu(NH_3)_4]^{3+}$
   A. Tetrahedral
   B. Square planar
   C. Octahedral
   D. Trigonal bipyramidal

3. Geometry present in $[Co(NH_3)_4(NO)_2]^{3+}$
   A. Tetrahedral
   B. Square planer
   C. Octahedral
   D. Trigonal bipyramid

4. On which is non typical transition elements
   A. Cr
   B. Mn
   C. Zn
   D. Fe

5. The hybridization of Ni in $[Ni(CN)_4]^{-2}$ ion is
   A. sp3
   B. dsp3
   C. d2sp3
   D. dsp2

6. Which is the electronic configuration Cr (Z=24)
   A. $[Ar]3d^4\ 4s^2$
   B. $[Ar]3d^5\ 4s^1$
   C. $[Ar]3d^5\ 4s^2$
   D. $[Ar]2d^4\ 3s^2$

7. The strength of binding energy of transition elements depend upon
   A. Number of e- pair
   B. Number of unpaired e-
   C. Number of neutrons
   D. Number of protons

8. No of e- pairs accepted by the central atom in a transition metal complex is called
   A. Co ordination sphere
   B. Co ordination complex
   C. Co ordination number
   D. Chelate

9. Which of the following d block elements can show highest oxidation number in its compound
   A. Cr
   B. Cu
   C. Mn
   D. Ni

10. Which of the following transition metals in its ground state have unpaired electron in an s orbitals
    A. Cr
    B. Co
    C. Fe
    D. Mn

11. Which atom has 3 unpaired electrons?
    A. Al
    B. Sc
    C. Sr
    D. Co

12. What is the electronic configuration of Cr^{3+} represent (Z=24)
    A. $[Ar]3d^1\ 4s^2$
    B. $[Ar]3d^2\ 4s^2$
    C. $[Ar]3d^3\ 4s^0$
    D. $[Ar]3d^4\ 4s^0$

13. What is the hybridization of the shape is trigonal bipyramidal
    A. sp3
    B. dsp2
    C. dsp3
    D. d2sp3

14. Which is not a bidentate ligand
    A. $C_2O_4^{-2}$
    B. CO_3^{-2}
    C. SO_4^{-2}
    D. All are bidentate

15. Total number of d block elements
    A. 10
    B. 14
    C. 40
    D. 30

16. The bond energy of N_2 is
    A. 149 kJ/mol
    B. 349 kJ/mol
    C. 941 kJ/mol
    D. 121 kJ/mol

17. The Haber's process for the manufacture of ammonia is usually carried out at 450-500°C. If a temperature of 250°C is applied instead of 450-500°C then
    A. Ammonia would not be formed at all
    B. Percentage of ammonia in equilibrium mixture would be too low
    C. Catalyst would not be of any use at 250°C
    D. Rate of formation of ammonia would be too low

18. Which one of the substance doesn't cause acid rain
    A. Sulphur trioxide
    B. Nitrogen dioxide
    C. Sulphur dioxide
    D. Carbon monoxide

19. The oxidation state of Sulphur in oleum is
    A. -2
    B. +4
    C. +6
    D. +2

20. Acid rain is not responsible for
    A. Decrease in pH of the natural rain
    B. Damages the building
    C. Leaching metal like Al, Hg and Pb from soil
    D. Increasing the percentage of CO_2 in the air

21. The pH of unpolluted rain water is
    A. 6.5
    B. 6.0
    C. 5
    D. 5.6

22. In the preparation of H_2SO_4 on large scale
    A. SO_2 is dissolved in conc. H_2SO_4
    B. SO_2 dissolved in H_2O
    C. SO_3 is dissolved in conc. H_2SO_4
    D. SO_3 is dissolved in H_2O

23. In the reaction $N_2 + 3H_2 \leftrightarrows 2NH_3$ increases in hydrogen concentration at equilibrium
    A. Favours the dissociation of ammonia
    B. Doesnot affect the reaction
    C. Increase the equilibrium constant
    D. Favours the formation of ammonia

24. Which three elements are needed for the healthy growth of plants
    A. N,S,P
    B. N,Ca,P
    C. N,P,K
    D. N,K,C

25. The nitrogen present in some fertilizer help plant to
    A. Fight against disease
    B. Produce fat
    C. Undergo photosynthesis
    D. Produce proteins

26. Zinc and cadmium do not exhibit variable oxidation state because
    A. They have only electrons in the outermost shell
    B. They possess high ionization energy
    C. Their d orbitals are incompletely filled
    D. Their d orbitals are completely filled

27. Which fertilizer is not fit for paddy rice
    A. KNO_3
    B. $(NH_4)_3PO_4$
    C. NH_4NO_3
    D. $(NH_4)_2HPO_4$

28. Which fertilizer has greater percentage of nitrogen
    A. Urea
    B. Ammonia
    C. Ammonium nitrate
    D. Potassium nitrate

29. Ammonia can be dried by
    A. Conc. H_2SO_4
    B. CaO
    C. P_4O_{10}
    D. HCl

30. Which of the following act as efficient catalyst
    A. Alkaline earth metal
    B. Alkali metals
    C. Transition metals
    D. Halogens

1. Which of the following does not help to distinguish between alkane and alkene
   A. Alkaline $KMnO_4$
   B. Bromine water
   C. Chlorine water
   D. Fehling reagent

2. Benzene usually undergo
   A. Nucleophilic addition reaction
   B. Electrophilic substitution reaction
   C. Nucleophilic substitution reaction
   D. Electrophilic addition reaction

3. Aldehydes usually undergo
   A. Nucleophilic addition reaction
   B. Electrophilic substitution reaction
   C. Nucleophilic substitution reaction
   D. Electrophilic addition reaction

4. Number of pi electrons in nitrile group
   A. 1
   B. 2
   C. 3
   D. 4

5. Imino group among following is
   A. -SH
   B. -CN
   C. $>C=NH_2$
   D. $>C=NH$

6. How many chain isomers are possible for nonane
   A. 35
   B. 27
   C. 18
   D. 9

7. Ethene on reaction with hot alkaline potassium permanganate gives
   A. 2 mol of acetic acid
   B. 2 mol of acetone
   C. 2 mol of formaldehyde
   D. 2 mol of formic acid

8. Acidic strength order will be
   A. Alkene>alkane>alkyne
   B. Alkane>alkene>alkyne
   C. Alkyne>alkene>alkane
   D. Alkene>alkyne>alkane

9. In 1,3-butadiene the number Of sigma electrons are
   A. 22
   B. 16
   C. 9
   D. 18

10. Which of the following is a nucleophile
    A. Cl^+
    B. SO_3
    C. BF_3
    D. NH_3

11. Which of the following is an electrophile
    A. ROH
    B. NH_4^+
    C. H_2O
    D. $AlCl_4^+$

12. CO_2 is an
    A. Electrophile
    B. Nucleophile
    C. Free radical
    D. None

13. Which of the following is an electrophile
    A. Ether
    B. Aldehyde
    C. Alcohols
    D. None

14. Meta directing group are generally electron withdrawing and
    A. Neutral groups
    B. Deactivating group
    C. Free radicals
    D. Activating group

15. Halogens are ortho-para directing group and are generally electron donating and
    A. Neutral groups
    B. Deactivating group
    C. Free radicals
    D. Activating group

16. Strength of an acid is directly proportional to all except
    A. Dissociation constant of acid
    B. Percentage ionization of acid
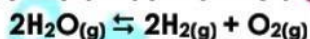   C. pH of the acid
    D. pOH of the acid

17. 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 of pKb value stronger is the base

18. The equilibrium constant of the following equilibrium changes with $N_2O_4 \rightleftharpoons 2NO_2$
- A. Catalyst
- B. Temperature
- C. Pressure
- D. Conc. of N_2O_4

19. Which of the following change will decrease the amount of the steam?
$$2H_2O_{(g)} \rightleftharpoons 2H_{2(g)} + O_{2(g)}$$
- A. Addition Pt catalyst
- B. Increase the pressure at constant temperature
- C. Addition of more O_2
- D. Increasing the temperature at constant pressure

20. Equimolar aqueous solution would have the same hydrogen ion concentration as of hydrochloric acid
- A. H_2SO_4
- B. NaOH
- C. HNO_3
- D. H_3PO_4

21. The pH of 0.001M H_2X which is only 50% dissociated is
- A. 2.7
- B. 1.7
- C. 3
- D. 2

22. For which system the equilibrium constant Kc has units (concentration)$^{+2}$
- A. $2HF \rightleftharpoons H_2 + F_2$
- B. $2NO_2 \rightleftharpoons N_2O_4$
- C. $2NH_3 \rightleftharpoons N_2 + 3H_2$
- D. $PCl_5 \rightleftharpoons PCl_3 + Cl_2$

23. Calculate the pH of a buffer solution 0.1M CH_3COOH and 0.01M CH_3COONa if pKa is 4.74
- A. 4.74
- B. 3.74
- C. 2.74
- D. 5.74

24. For which equilibrium reaction Kp>Kc
- A. $H_2 + F_2 \rightleftharpoons 2HF$
- B. $N_2 + 3H_2 \rightleftharpoons 2NH_3$
- C. $N_2O_4 \rightleftharpoons 2NO$
- D. $PCl_3 + Cl_2 \rightleftharpoons PCl_5$

25. Which is true about the following equilibrium $HNO_3 + 2H_2SO_4 \rightleftharpoons 2HSO_4^- + NO_2^+ + H_2O$
- A. H_2SO_4 is base
- B. H_2SO_4 is dehydrating agent
- C. Addition of water reduces(NO_2^+)
- D. Both B and C

26. In zero order reaction the rate is in dependant of
- A. Temperature of reaction
- B. Concentration of reactants
- C. Intensity of light
- D. Surface area of reactant

27. For a reaction $2X+Y \rightarrow M+N$, The rate law is Rate = $k(X)^2(Y)$. If concentration of (Y) is constant and (X) is triple, the change in rate of reaction will be
- A. 3 times
- B. 9 times
- C. 6 times
- D. 27 times

28. The unit of rate constant for 2nd order reaction is
- A. $moldm^{-3}sec^{-1}$
- B. $mol^{-1}dm^{+3}sec^{-1}$
- C. $mol^{-1}dm^{-3}s^{-1}$
- D. $mol^{-2}dm^6s^{-1}$

29. 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}

30. The specific rate for a reaction is 1.0×10^{-4} $moldm^{-3}s^{-1}$ the order of reaction is
- A. Zero
- B. Second
- C. First
- D. Third

WORKSHEET NO. 12

AIDE UNIT 12 | ALKYL HALIDES | ALCOHOLS AND PHENOLS

1. Alkyl halides show elimination reactions. Which is the incorrect statement about E1 elimination mechanism:
   A. It is two step reaction
   B. Rate determining step is first order kinetics
   C. It depends on the strength of attacking nucleophile
   D. E1 elimination involves dehydro-halogenation

2. Teflon is used as a non-stick coating for cooking pans. It is a polymer of:
   A. Ethylene
   B. Styrene
   C. Tetrafluoroethylene
   D. Chlorofluoromethane

3. Which of the following alkyl halides show pure SN1 mechanism reaction:
   A. CH_3CH_2Cl
   B. $(CH_3)_3CCl$
   C. CH_3Cl
   D. $(CH_3)_2CHCl$

4. Alkyl halides show SN1 mechanism reaction. This mechanism has all of the following characteristics features except:
   A. Rate of reaction is favoured by non-polar solvent
   B. It shows 50% inversion and 50% retention of product
   C. It is unimolecular and first order reaction
   D. It is two step mechanism reaction

5. Which of the following compounds is not used as a refrigerant :
   A. CCl_4
   B. $CHCl_3$
   C. CH_2Cl_2
   D. CF_2Cl_2

6. Which compound is most reactive
   A. $(CH_3)_3CCl$
   B. $(CH_3)_2CHCl$
   C. CH_3CH_2Cl
   D. All have same reactivity

7. Most stable carbonium ion is:
   A. $(CH_3)_3CCH_2+$
   B. $(CH_3)_3C+$
   C. CH_3+
   D. $(CH_3)_2CH+$

8. Order of SN1 reaction is
   A. 3
   B. 2
   C. 1.5
   D. 1

9. Which one used in containers and pipe work for reactive and corrosive chemicals.
   A. Silicon polymers
   B. Teflon
   C. Steel
   D. None of these

10. If an electrophile is the attacking then which one is more reactive?
    A. HI   C. HBr
    B. HCl   D. HF

11. Which statement is incorrect about nucleophilic substitution reaction
    A. Incoming nucleophile must be stronger than the leaving one
    B. Leaving nucleophile must be stronger than incoming nucleophile
    C. Tertiary alkyl halides generally give SN1 reactions
    D. SN2 is a single step mechanism

12. Tertiary alkyl halide give
    A. SN2 and E1 reaction
    B. SN2 and E2 reaction
    C. SN1 and E1 reaction
    D. None of these

13. Primary Alkyl halides give
    A. E1 and SN1 reactions
    B. SN2 and E1 reactions
    C. E2 and SN2 reactions
    D. Either E1 or E2 reactions

14. SN1 reactions are favoured in which solvent?
    A. Non-polar
    B. Polar
    C. Slightly polar
    D. All solvent

15. **Which of the following is correct about SN2 reactions:**
    A. Breakage of C-X and formation C-Nu bonds are simultaneous
    B. Inversion of the configuration of the alkyl halide molecules
    C. 2nd order kinetics
    D. All of these

16. **During oxidation of 2° Alcohols _____ is produced**
    A. Aldehydes
    B. Alkene
    C. Alkyne
    D. Ketones

17. **During oxidation of 1° Alcohols _____ is produced**
    A. Aldehydes
    B. Alkene
    C. Alkyne
    D. Ketones

18. **Oxidation of which alcohol is not possible**
    A. Primary
    B. Secondary
    C. Tertiary
    D. None

19. **Phenol on nitration with conc. nitric acid produces**
    A. 2-nitrophenol
    B. 2,4-di-nitrophenol
    C. 1,3,5-tri-nitrophenol
    D. 2,4,6-tri-nitrophenol

20. **A compound X decolorizes bromine water and produces white ppt. The compound X is**
    A. Alkane
    B. Toluene
    C. Benzene
    D. Phenol

21. **Iodoform test can be used for distinction between**
    A. 2-propanol and 2-butanol
    B. 1-butanol and 3-pentanol
    C. Ethanol and 2-hexanol
    D. 1-propanol and 2-propanol

22. **Dehydration products of secondary alcohol are**
    A. Ketones
    B. Alkynes
    C. Aldehydes
    D. Alkenes

23. **Dehydration products of primary alcohol are**
    A. Ketones   C. Aldehydes
    B. Alkynes   D. Alkenes

24. **Which one of the following is coplanar molecule**
    A. Acetone   C. Methanol
    B. Ethanal   D. Methanal

25. **Phenol is more acidic than -----and less acidic than------**
    A. Acetic acid and water
    B. Water and ethyl alcohol
    C. Acetic acid and methanol
    D. Ethyl alcohol and acetic acid

26. **Which pairing of alcohol and its class is incorrect**
    A. 2-methylpropan-2-ol, = 3° Alcohol
    B. Propan-2-ol = 2° Alcohol
    C. Neo hexyl alcohol = 1° Alcohol
    D. 3,3-dimethyl-2-butanol = 3° Alcohol

27. **Which of the following is incorrect**
    A. Ethanol gives positive iodoform test while methanol does not
    B. Acetophenone gives positive iodoform while benzophenone does not
    C. Ethanal gives iodoform test while methanal does not
    D. 1-propanol give positive iodoform while 2-pentanol does not

28. **Which of the following is incorrect**
    A. Fermentation is used to produce alcohol
    B. Phenol is disinfectant
    C. Boiling point of methanol is higher than methanal
    D. Water is more acidic than methanol

29. **During esterification of ethyl alcohol, which bond undergoes heterolytic cleavage**
    A. C-C   C. C-H
    B. C-O   D. O-H

30. **During esterification of carboxylic acid, which bond undergoes heterolytic cleavage**
    A. C-C   C. C-H
    B. C-O   D. O-H

WORKSHEET NO. 13

AIDE UNIT 13 | ALDEHYDES AND KETONES | CARBOXYLIC ACIDS | AMINO ACIDS

1. To produce butanone, which of the following should be reacted with acidified potassium dichromate
   - A. $CH_3CH(CH_3)CHO$
   - B. $(CH_3)_2CHCHO$
   - C. $CH_3CH_2CH(CH_3)CHO$
   - D. $CH_3CH_2CH(OH)CH_3$

2. All of the following produce a silver mirror with Tollen's reagent except
   - A. CH_3CH_2CHO
   - B. $HCHO$
   - C. $CH_3CH_2CH(CH_3)CHO$
   - D. $CH_3CH_2COCH_3$

3. All of the following produce a silver mirror with Tollen's reagent except
   - A. $HCOOH$
   - B. C_2H_2
   - C. $CH_3CH_2CH(CH_3)CHO$
   - D. CH_3COOH

4. When all the aldehydes react with Tollen's reagent ,which is true
   - A. An alcohol is produced
   - B. Silver ions are produced
   - C. A red ppt. is formed
   - D. Aldehyde reduces silver ion

5. When all the aldehydes react with Tollen's reagent _____ of aldehyde take place
   - A. Hydration   C. Dehydration
   - B. Reduction   D. Oxidation

6. Which of the following give the fastest reaction with Tollen's reagent
   - A. Propionaldehyde
   - B. Acetaldehyde
   - C. Acetone
   - D. Formaldehyde

7. Iodoform is
   - A. CHI C. CH_3I
   - B. CH_2I_2 D. CHI_3

8. When aldehyde reacts with Fehling's solution, a brick red ppt. of _____ is formed along with acetate
   - A. Ag_2O
   - B. CuO
   - C. CuO_2
   - D. Cu_2O

9. When aldehyde reacts with Benedict's solution, a brick red ppt. of _____ is formed along with acetate
   - A. Silver oxide
   - B. Cupric oxide
   - C. Cupric dioxide
   - D. Cuprous oxide

10. The reduction of ketone produces
    - A. Tertiary alcohol
    - B. Carboxylic acid
    - C. Primary alcohols
    - D. Secondary Alcohol

11. Flavour of isobutyl formate is
    - A. Jasmine
    - B. Raspberry
    - C. Pineapple
    - D. Apricot

12. $CH_3CH_2CH_2COOCH_2CH_3$ has flavour
    - A. Jasmine
    - B. Raspberry
    - C. Pineapple
    - D. Apricot

13. The -OH group in the carboxylic acid is _____ active in the reactions than the -OH group of alcohols
    - A. Less
    - B. More
    - C. Moderate
    - D. No relation

14. Carbonyl group is _____ due to which it increases the polarity of -OH group in carboxylic group
    - A. Electron donating
    - B. Electron withdrawing
    - C. Polar
    - D. Both A and C

15. Carboxylic acid in benzene exists as
    - A. Dimer
    - B. Monomer
    - C. Polymer
    - D. Molecule

16. Which of the following is the strongest acid
    - A. 1,4-dihydroxy benene
    - B. Tri flouro acetic acid
    - C. Nitric acid
    - D. Methanol

17. Compounds that can be used to prepare acid halide
    A. AlCl₃
    B. FeBr
    C. PCl₃
    D. HF
18. Which of the following has highest pKa value
    A. Iodo acetic acid
    B. Chloro acetic acid
    C. Bromo acetic acid
    D. Flouro acetic acid
19. Which of the following has lowest ka value
    A. Flouro acetic acid
    B. Acetic acid
    C. Di flouro acetic acid
    D. Tri flouro acetic acid
20. Reduction of acetic acid in presence of Hydrogen iodide and phosphorous yields
    A. Methane
    B. Ethane
    C. Ethanol
    D. Methanol
21. All of the following are optically active alpha-amino acids Except:
    A. Aspartic acid
    B. Alanine
    C. Glycine
    D. Valine
22. Mark the incorrect statement about alpha-amino acids:
    A. They all have chiral carbon except glycine
    B. They are all L-amino acids
    C. 10 amino acids are called non-essential or dispensable
    D. Polypeptide act as acid only
23. All of the following are essential (indispensable) amino acids except:
    A. Valine
    B. Lysine
    C. Alanine
    D. Methionine
24. Amino acids have all of the following properties except:
    A. They are colourless, crystalline solids
    B. They have low melting points

C. They are soluble in water
D. They behave like salts rather than simple amides and carboxylic acid

25. When an alkali is added to alpha-amino acids, _____ releases the proton. Therefore, the acidic character is due to:
    A. -NH₂
    B. -NH₃⁺
    C. -COO⁻¹
    D. -COOH
26. When an acid is added to alpha-amino acids, _____ accepts the proton. Therefore, the basic character is due to:
    A. -NH₂
    B. -NH₃⁺
    C. -COO⁻¹
    A. -COOH
27. The organic compounds containing both the amino and carboxyl group are called:
    A. Carboxylic acids
    B. Mineral acids
    C. Amino acids
    D. Polybasic acids
28. All alpha amino acids exist largely in proteins in the form of a dipolar structure called:
    A. Zwitter ion
    B. Carbo-cation
    C. Anion
    D. Carbo-anion
29. 2-Amino-3-methylbutanoic acid is the IUPAC name for:
    A. Glycine
    B. Alanine
    C. Valine
    D. Proline
30. The amino acid which contains both primary and secondary amino groups is:
    A. Lysine
    B. Alanine
    C. Proline
    D. Histidine

1. **Which of the following is a synthetic polymer:**
    A. Animal fat
    B. Starch
    C. Polyester
    D. Cellulose

2. **All of the following are addition polymers except:**
    A. Polyvinyl chloride
    B. Polyethylene
    C. Polyvinyl acetate
    D. Polyester

3. **Mark the incorrect statement about deoxyribonucleic acid (DNA):**
    A. It is hereditary material
    B. It is double stranded molecule
    C. It is present in the nucleus and cytoplasm of a cell
    D. It has the property of self-replication

4. **Polystyrene is an addition polymer obtained by polymerization of styrene in the presence of catalyst. Which of the following is not a use of it:**
    A. It is used as an adhesive material
    B. It is used for making cosmetic bottles
    C. It is used for packing material
    D. It is used for making food containers

5. **All of the following have peptide linkage except:**
    A. Nylon-6,6
    B. Protein
    C. Terylene
    D. Nylon-6,10

6. **A polymer that is classified as addition polymer is:**
    A. Polystyrene
    B. Polyester
    C. Nylon-6,6
    D. Epoxy resins

7. **Organic polymers are classified as biopolymers and synthetic polymers which one of the following is a biopolymer?**
    A. Epoxy resin
    B. Polyester
    C. Glycogen
    D. Nylon-6,6

8. **The polymer 1 has the same linkage as 2. It is therefore likely to be 3 by heating with aqueous acids and alkalis. Which set of words correctly completes the sentence above?**
    A. Nylon protein unaffected
    B. PVC fats unaffected
    C. Starch esters unaffected
    D. Terylene fats hydrolyzed

9. **Zigzag and regular coiling of polypeptide linkage forms:**
    A. Primary protein
    B. Tertiary protein
    C. Secondary protein
    D. None of these

10. **Mark the incorrect statement about uses of nylon-6,6:**
    A. It has excellent abrasion resistance
    B. It is used in parachutes
    C. It also provides a very good resistance to photo degradation
    D. It is used in pipes making

11. **Adipic acid and hexamethylene diamine, both of them have _____ carbon atoms:**
    A. Eight
    B. Seven
    C. Six
    D. Four

12. **All of the following are the uses of polyester (terylene or Dacron) fiber and fabrics except:**
    A. It has ideal use for garments and jackets
    B. It is used for winter suiting by blending it with wool
    C. It is used for summer suiting by blending it with cotton
    D. It is used for synthetic veins

13. **When hexanedioic acid is heated with hexamethylene diamine, the polymer formed is:**
    A. Addition polymer
    B. Polystyrene
    C. Nylon-6,6
    D. Ester

14. **Ethene on polymerization, gives the product polyethene, this type of polymerization is called as:**
    A. Addition
    B. Condensation
    C. Substitution
    D. Pyrolysis

15. The condensation polymer used for making water tanks is:
    A. Polyamide
    B. Nylon-6,6
    C. Polyester
    D. Polystyrene

16. All of the following properties shown by nitrogen and other elements of group V-A are correct except:

	N_2	Others
A.	Gas	Solid
B.	Diatomic	Tetratomic
C.	No allotrope	Have allotrope
D.	Low I.E	High I.E

17. Which one is incorrect about $H_2S_2O_7$:
    A. It is obtained by dissolution of SO_3 in water
    B. It is obtained by dissolution of SO_3 in conc. H_2SO_4
    C. It is called oleum acid
    D. It contain one O-O bond in its molecule

18. Which pair of oxides of non-metals is major cause of acid rain:
    A. CO, NO_2
    B. SO_2, NO_2
    C. CO_2, SO_2
    D. NO_2, O_2

19. All of the following elements are macronutrients except:
    A. N
    B. S
    C. Ca
    D. Mn

20. Sulphuric acid is commercially prepared by contact process. All of the following purification units with their functions are correctly matched except:
    A. Dust remover: Dust particles are removed from gases by steam wash
    B. Scrubbers: Soluble impurities are removed by water
    C. Conc. H_2SO_4 : As drying agent to remove moisture
    D. Arsenic purifier: $Fe(OH)_3$ is to remove a SO_3 as impurity

21. Substance used to remove arsenic oxide
    A. $Fe(OH)_2$
    B. $Fe(OH)_3$
    C. V_2O_5
    D. FeS_2

22. Acid rain may cause
    A. Rusting easier
    B. Stone cancer in Taj Mahal
    C. Non-fertility of soil
    D. All of these

23. Smog is essentially caused by the presence of
    A. O_2 and N_2
    B. O_2 and O_3
    C. O_3 and N_2
    D. NO_x and SO_z

24. The maximum introduction of SO_2 in atmosphere is caused by
    A. Decomposition of organic compound
    B. Combustion of fuel
    C. Volcanic eruption
    D. Industrial smoke

25. Which of the following cause H_2SO_4 precipitation upon reacting with H_2O
    A. The reaction does not go to completion
    B. The reaction is highly exothermic
    C. The reaction is quite slow
    D. SO_3 is a reducing agent

26. Which of the following fertilizer can make the soil acidic
    A. $Ca(NO_3)_2$
    B. KNO_3
    C. $NaNO_3$
    D. NH_4NO_3

27. Which of the following fertilizer contains maximum percentage of plant nutrients?
    A. $(NH_4)_2HPO_4$
    B. $(NH_2)_2CO$
    C. $(NH_4)_2SO_4$
    D. NH_4NO_3

28. Nitrogen helps in
    A. Normal growth of plant
    B. Nucleic acid synthesis
    C. Protein Synthesis
    D. All of the above

29. In contact process during manufacturing of sulphuric acid, a strong beam of light is thrown against the gases in order to check that the gases are absolutely free from
    A. Dust particles
    B. Arsenic oxide
    C. Sulphur oxide
    D. Both A and B

30. What are the favourable conditions for production of NH_3
    A. Low temperature
    B. High pressure
    C. High conc. Of NH_3 and H_2
    D. All of these

ANSWER KEY Chemistry

Worksheet Number → / Q. Number ↓	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	B	C	C	D	C	C	A	D	C	D	C	C	D	C
2	B	D	C	D	B	B	D	D	B	B	B	C	D	D
3	C	B	D	B	C	A	D	D	B	D	A	B	D	C
4	A	A	B	D	C	D	D	D	C	C	D	A	D	A
5	D	A	A	A	D	B	D	B	A	D	D	C	D	C
6	D	C	B	A	C	C	D	C	B	B	A	C	D	A
7	B	B	C	D	A	D	D	D	A	B	D	B	D	C
8	A	A	D	D	A	A	D	B	B	C	C	D	D	A
9	B	B	D	C	A	B	D	D	C	C	D	B	D	C
10	C	D	D	C	C	B	D	C	B	A	D	D	D	C
11	D	C	D	D	A	D	D	D	D	D	B	B	B	C
12	D	B	A	D	C	D	C	D	C	C	A	C	C	D
13	C	C	D	D	B	D	A	D	B	C	C	C	A	C
14	D	B	D	A	A	D	D	D	D	D	B	B	D	A
15	C	B	D	D	C	D	A	A	C	D	B	D	A	C
16	B	D	B	B	A	D	C	D	B	C	D	D	B	D
17	B	A	D	D	B	D	D	B	D	D	D	A	A	A
18	D	B	B	D	A	D	B	C	D	D	B	C	A	B
19	B	A	B	D	B	D	D	D	B	C	D	D	B	D
20	C	C	B	B	B	D	C	B	C	D	C	D	B	D
21	C	D	B	D	B	D	C	B	D	D	C	B	C	B
22	C	C	B	D	B	B	B	A	D	C	C	D	D	D
23	C	D	B	C	D	C	B	D	D	D	B	D	C	D
24	D	B	C	D	A	C	C	D	D	C	C	C	B	C
25	C	C	B	D	C	C	B	D	B	D	D	C	D	B
26	C	D	D	B	B	A	B	A	C	D	B	D	A	D
27	B	B	B	A	C	B	B	D	B	C	B	D	C	A
28	D	C	C	C	A	B	B	D	C	B	B	D	A	D
29	C	D	B	C	D	D	D	D	A	C	D	D	C	D
30	D	D	D	B	D	D	A	D	B	C	A	B	A	D