

UHS MDCAT PAPER 2023 HELD ON 10TH SEPTEMBER 2023 PAPER ID - "D"

WITH ANSWERS KEY

Page 1&2 (first 16 mcqs are missing for now, we will update this pdf later and add those mcqs as well)

Official Answers key is attached at the end of the PDF

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Q16. Which of the following type of organs are supposed to be functional in ancestral species rather than in present day species:

- A. Vestigial organs
- B. Homologous organs
- C. Analogous organs
- D. Embryonic organs

Q17. Which of the following is the main point of Darwinism?

- A. Over production
- B. Variation
- C. Disuse of organ
- D. Perceived unity of life

Q18. Descending aorta is bifurcated into two vessels which on further division from femoral artery that supply blood to high muscles of legs:

- A. iliac vein
- B. iliac artery
- C. temporal artery
- D. sciatic artery

Q19. The final destination of lymph is:

- A. lymph node
- B. lymphoid organs
- C. lymph capillaries
- D. subclavian vein

Q20. ABO blood group is controlled by more than two alleles in a population. This shows that ABO blood group is an example of:

- A. Polygenic Inheritance
- B. Multiple Alleles
- C. Operons
- D. Allelic interaction

Q21. According to Mendel Law of Segregation, the one individual out of four in F2 generation had phenotype that failed to express in ____ generation.

- A. F1
- B. F2
- C. F3
- D. P1

Q22. Test cross is made to check the genotype of a trait. Which of the following crosses is a test cross?

- A. Unknown x At
- B. Unknown x tt
- C. Unknown x AB
- D. Unknown x TT

Q23. During sliding of actin filaments, ATP is used for?

- A. Cross bridge formation
- B. Cross bridge breaking
- C. Dragging filaments
- D. Shortening of filaments

Q24. The cell membrane of muscle cell is:

- A. Sarcoplasm
- B. Sarcolemma
- C. Sarcomere
- D. Myofibrils

Q25. Irregular striations and involuntary control is related to?

- A. Cardiac muscle cells
- B. Fibroelastic cartilage cell
- C. Skeletal muscle cells
- D. Smooth muscle cells

Q26. Cartilage is a type of which tissue?

- A. Connective tissues
- B. Epithelial tissues
- C. Muscular tissues
- D. Nervous tissues

Q27. Production of Follicle-stimulating hormone (FSH) and Luteinizing Hormone (LH) from the pituitary gland of female is controlled by:

- A. Ovary
- B. Uterus
- C. Stimulated follicles
- D. Hypothalamus

Q28. The term menopause means:

- A. Start of menstruation
- B. Start of ovulation
- C. Stop of ova production
- D. Degeneration of ovaries

Q29. To study sex linkages in *Drosophila*, Morgan mated white eyed males with wild type red eyed females. What will be the phenotype of offspring?

- A. All red eyed males and females
- B. Red eyed females and white eyed males
- C. White eyed females and red eyed males
- D. All white eyed females and males

Q30. Enteron is the characteristic feature of:

- A. Phylum Porifera
- B. Phylum Cnidaria
- C. Phylum Plathelminthes
- D. Phylum Echinodermata

Q31. The body of which is called metamerically segmented?

- A. Cnidarians
- B. Nematodes
- C. Annelids
- D. Sponges

Q32. Excretion in *Planaria* takes place by ?

- A. Malpighian tubules
- B. Protonephridia
- C. Metanephridia
- D. Nephron

Q33. Four chambered heart with right systemic arch only is present in?

- A. Amphibians
- B. Reptiles
- C. Birds
- D. Mammals

Q34. The movement of water to lower solute concentration area through a semipermeable membrane is?

- A. Osmotic Potential
- B. Pressure potential
- C. Soil potential
- D. Solute potential

Q35. The _____ describes how water and dissolved chemicals are carried through the cell wall and intercellular gaps of plants.

- A. Apoplast Theory
- B. Symplast Theory
- C. Vacuolar Theory
- D. Cytoplasmic Theory

Q36. Feeding by living in or on the other organism (host) belonging to different species is called?

- A. Mineral nutrition
- B. Parasitic nutrition
- C. Saprophytic nutrition
- D. Symbiotic nutrition

Q37. What of the following virus contains single stranded DNA?

- A. Adeno virus
- B. Herpes virus
- C. Parvo virus
- D. Pox virus

Q38. Which one of the following is X Linked Dominant disorder?

- A. Haemophilia
- B. Color blindness
- C. Hypophosphatemic rickets
- D. Hypertrichosis

Q39. Only those genes can assort independently whose loci are on:

- A. Same chromatids
- B. Same chromosomes
- C. Non-homologous chromosomes
- D. Homologous chromosomes

Q40. Smooth muscles are found in all mentioned below except

- A. Trachea
- B. Bronchi
- C. Bronchioles
- D. Alveoli

Q41 The method of bringing oxygenated air into contact with a gas exchange surface is called ?

- A. photorespiration
- B. ventilation
- C. gas transport
- D. respiration

Q42. Number of layers of cell wall in Gram positive bacteria is:

- A. 1
- B. 2
- C. 3
- D. 4

Q43. *Helicobacter pylori* is an example of:

- A. Cocci
- B. Bacilli
- C. Pleomorphic
- D. Spiral

Q44. Bacterial cell have ability to maintain its shape through

- A. Cell wall
- B. Capsule
- C. Cell wall & slime
- D. Slime

Q45. Which of the following is an example of spiral shaped bacteria?

- A. Diplococcus pneumoniae
- B. Hyphomicrobium
- C. Escherichia coli
- D. Pseudomonas

Q46. All the following are disinfectants to control bacterial growth except:

- A. Tincture of Iodine
- B. Potassium Permanganate
- C. Mercuric Chloride
- D. Hydrogen Peroxide

Q47. The function of hyaluronidase enzyme is:

- A. Penetration of the sperm into the ovum
- B. Entrance of the sperm into the vagina
- C. Entrance of the sperm into the fallopian tube
- D. Inactivation of sperms after their failure to fertilize ovum

Q48. In human females, what is the small, pear-shaped, muscular, distensible, sac-like organ where gestation takes place?

- A. Uterus
- B. Kidney
- C. Fallopian tube
- D. Stomach

Q49. The labour pains to expel fetus are due to action of oxytocin on:

- A. Endometrium
- B. Myometrium
- C. Perimetrium
- D. Ovaries

Q50. Virus is what type of agent?

- A. Cellular agent
- B. Infectious agent
- C. Non-infectious agent
- D. Non-protein agent

Q51. The molecules used to control virus during infection of animal cells are:

- A. Interferon
- B. Histone
- C. Antigen
- D. Serum

Q52. The provirus of HIV is structurally and chemically made up of?

- A. ssRN
- B. ssDNA
- C. dsRNA
- D. dsDNA

Q53. Which of the following is used in baking?

- A. Aerobic respiration
- B. Anaerobic respiration
- C. External respiration
- D. Internal respiration

Q54. Which is the major event in electron transport chain?

- A. ATP synthesis
- B. Decarboxylation
- C. Substitution
- D. Isomerisation

Q55. Out of 36 ATPs, how many are produced in electron transport chain?

- A. 28
- B. 30
- C. 32
- D. 34

Q56. The major enzymes involved in transfer of phosphate group from ATP to Glucose is:

- A. Isomerase
- B. Dehydrogenase
- C. Kinase
- D. Decarboxylase

Q57. -----forms almost three-fourth of the body by weight

- A. water
- B. protein
- C. carbohydrates
- D. lipids

Q58. Energy is ----- by the breakdown of complex molecules into simpler ones, such reactions are called catabolic reactions

- A. released
- B. consumed
- C. produced
- D. destroyed

- Q59. Biologically, ----- plays key roles in maintaining the integrity of lipid bilayer membranes.**
- A. hydrophilic exclusion
B. hydrophobic exclusion
C. heat of vaporization
D. specific heat capacity
- Q60. The specific heat of vaporization of water plays an important role in the regulation of heat produced by -----.**
- A. reduction
B. oxidation
C. redox
D. none of above
- Q61. Which type of bond must be broken for water to vaporize?**
- A. nonpolar covalent bonds
B. polar covalent bonds
C. hydrogen bonds
D. covalent bonds
- Q62. Which statement is true about regarding both starch and cellulose?**
- A. They are both polymers of glucose.
B. They are geometric isomers of each other
C. They can both be digested by humans.
D. They are both used for energy storage in plants.
- Q63. Most of the monosaccharides form a ring structure when in solution. For example ribose will form a five cornered ring known as -----**
- A. glucopyranose
B. ribofuranose
C. glyceraldehyde
D. acetaldehyde
- Q64. Number of major layer/layers of cell wall in gram positive bacteria is/are:**
- A. 1
B. 2
C. 3
D. 4
- Q65. Cyclosis and amoeboid movements are due to:**
- A. Microtubule
B. Cilia
C. Microfilaments
D. Intermediate filaments
- Q66. Proteins and lipids are modified into Glycoproteins & Glycolipids by which cell organelle?**
- A. Golgi complex
B. Rough Endoplasmic Reticulum
C. Smooth Endoplasmic Reticulum
D. Ribosomes & chromosomes
- Q67. Which structure of prokaryotic cell will play the role of mitochondrion?**
- A. Spores
B. Cyst
C. Nucleoid
D. Mesosomes
- Q68. Cell wall of prokaryotic cell is composed of:**
- A. Carbohydrates
B. Carbohydrates & Proteins
C. Proteins
D. Proteins & Lipids

CHEMISTRY

- Q69. Which of the following transition metal show 3d⁵ configuration in its +2-oxidation state?**
- A. Cu+2
B. Fe+2
C. Mn+2
D. Zn+2
- Q70. Which of the following reagents can be used to distinguish between 1-Pentyne and 2-Pentyne?**
- A. AgNO₃ + NH₄OH
B. 1 % alkaline dilute KMnO₄
C. Br₂/CCl₄
D. K₂Cr₂O₇ + H₂SO₄

Q71. In SN1 reactions the correct order of reactivity of alkyl halide is?

- A. Primary>secondary>tertiary
- B. Tertiary>secondary>primary
- C. Secondary>primary>tertiary
- D. Primary>tertiary >secondary

Q72. What is the IUPAC name of diisopropyl ketone?

- A. 1,3-Diisopropylpropan-2-one
- B. 2,4-Dimethylpentan-3-one
- C. 2,4-Dimethylpentan-2-one
- D. 1,3-Dimethylpropan-2-one

Q73. The appearance of a silver mirror in Tollens' test indicates the presence of which of the following?

- A. A ketone
- B. An aldehyde
- C. An acid
- D. An alcohol

Q74. Competitive inhibitors stop an enzyme from working by:

- A. Changing the shape of the enzyme
- B. Merging with the substrate instead
- C. Blocking the active site of the enzyme
- D. Combining with the product of the reaction

Q75. If phenol is treated with 3 moles of conc. HNO₃ in the presence of H₂SO₄ what will be the product?

- A. o-nitro phenol
- B. p-nitro phenol
- C. o-nitro phenol and p-nitro phenol
- D. picric acid

Q76. When 6d orbital is filled, the entering electron goes into?

- A. 7f
- B. 7d
- C. 7p
- D. 7s

Q77. Which element has the ground state electronic configuration of 1s², 2s², 2p⁶, 3s², 3p⁶?

- A. Ar
- B. Cl
- C. Na
- D. S

Q78. What is the proton (atomic number) of an element that has four unpaired electrons in its ground state?

- A. 6
- B. 14
- C. 22
- D. 26

Q79. Which one of the following gases has the lowest density under room conditions?

- A. Neon
- B. Nitrogen
- C. Oxygen
- D. Fluorine

Q80. The process of heat flow between hotter and colder gases remains continued until all the molecules have equal

- A. Average translational kinetic energy
- B. Average rotational kinetic energy
- C. Average translational potential energy
- D. Average vibrational kinetic energy

Q81. What is the ultimate fate of reversible reaction?

- A. Completion of reaction
- B. Complete consumption of reactants
- C. Complete consumption of products
- D. A state when there is no net concentration change

Q82. In reversible reaction, when product is removed, the equilibrium shift towards the:

- A. Reactant side
- B. Product side
- C. Both side one by one
- D. No effect)

Q83. The rate of reaction between two specific time intervals is called?

- A. Instantaneous rate of reaction
- B. Rate of reaction
- C. Average rate of reaction
- D. Initial rate

Q84. How will be the rate of reaction, if the slope of the curve is greater near the start of the reaction?

- A. Constant
- B. Equilibrium
- C. Greater
- D. Lesser

Q85. What is the reason of energy changes in chemical reactions?

- A. Bond formation
- B. Bond breakage
- C. Bond formation and breakage
- D. Ionic bonds

Q86. What is the unit of heat capacity?

- A. JK-1
- B. kJmol-1
- C. kJ/K
- D. kJ.mol

Q87. The addition reaction of 2-butene with HBr produces?

- A. 1-bromobutane
- B. 2-bromobutane
- C. 1,3-dibromobutane
- D. 2,3-dibromobutane

Q88. Under suitable conditions alkanes cannot undergoreactions?

- A. Substitution
- B. Combustion
- C. Hydrogenation
- D. Addition

Q89. A compound of phosphorus oxide has 43.6% of Oxygen. Its empirical formula is?

- A. P₂O₅
- B. P₂O₃
- C. P₅O₂
- D. PO₂

Q90. Which element is used as standard to determine atomic mass of an element?

- A. H
- B. C
- C. P
- D. Cl

Q91. The average weight of atoms of an element compared to the weight of one atom of ----- is called atomic weight.

- A. Carbon
- B. Helium
- C. Hydrogen
- D. Nitrogen

Q92. Which of the following electronic configuration is correct for ²⁴Cr?

- A. 1s², 2s², 2p⁶, 3s², 3p⁶, 4s¹, 3d⁵
- B. 1s², 2s², 2p⁶, 3s², 3p⁶, 4s², 3d⁴
- C. 1s², 2s², 2p⁶, 3s², 3p⁶, 3d⁶
- D. 1s², 2s², 2p⁶, 3s², 3p⁶, 4f⁶

Q93. The same moles of H₂, N₂ and O₂ are present in 0.1 cc volume at STP. Which one has greatest number of molecules:

- A. N₂
- B. H₂
- C. O₂
- D. Number of molecules are equal

Q94. Which is not a property of liquid?

- A. Osmotic pressure
- B. Freezing point
- C. Diffusion
- D. Melting

Q95. Which type of forces exist between iodine molecules?

- A. Dipole-dipole forces
- B. Dipole-induced dipole forces
- C. Instantaneous dipole-induced dipole forces
- D. Non-polar forces

Q96. In anisotropic crystals which property do not change with the change in direction of crystalline structure?

- A. Electrical conductance
- B. Thermal conductance
- C. Molar mass
- D. Refractive index

Q97. In metals, why electric conductivity decreases with the increase of temperature?

- A. Because electron movement decrease with the increase of temperature
- B. Because metal ions oscillations hinder electron movement
- C. Because electron direction changes at high temperature
- D. Because they pass heat current through collision of electrons

Q98. Why fluorine has less electron affinity as compared to bromine?

- A. Electronegativity
- B. Thick small electronic cloud
- C. Seven electrons in outermost shell
- D. Higher ionization energy

Q99. Which oxyacid of halogen is strong oxidizing agent?

- A. HClO_4
- B. HClO_3
- C. HClO
- D. HClO_2

Q100. Alkylbenzene is formed when benzene is treated with an alkyl halide in the presence of anhydrous aluminum chloride. Identify the type of reaction.

- A. Halogenation
- B. Friedel-Crafts acylation reaction
- C. Friedel-Crafts alkylation reaction
- D. Sulphonation

Q101. The increasing stability order of the following compounds (1) $\text{CH}_3\text{CH}_2\text{CH}_2^+$ (2) $(\text{CH}_3)_3\text{C}^+$ (3) $\text{CH}_3\text{CH}_2\text{CH}^+\text{CH}_3$ are ?

- A. $1 > 2 > 3$
- B. $3 > 2 > 1$
- C. $2 > 3 > 1$
- D. $3 > 1 > 2$

Q102. When 2-bromopropane reacts with Sodium ethoxide, the major product is/are.....?

- A. Propane
- B. Propene
- C. Ethyl isopropyl ether
- D. All are formed

Q103. Propanone can be prepared from propyne by:

- A. Passing a mixture of propyne and steam over a catalyst, magnesium at 420°C
- B. Passing a mixture of propyne and ethanol over a catalyst, zinc chromate
- C. Boiling propyne with water in the presence of HgSO_4 and H_2SO_4
- D. Treating propyne with iodine and NaOH

Q104. If carboxylic acid and ketone groups $C=O$ are present in a chain then final name will be given as

- A. oxo, oic acid
- B. one, oic acid

- C. Both 1 and 2
- D. None of these

Q105. Acetic acid is weak acid than sulphuric acid because of which of the following reasons?

- A. It decomposes on increasing temperature
- B. It has less degree of ionisation

- C. It has $-COOH$ group
- D. It has more inductive effect

Q106. Mr. Khan mix acetic acid with thionyl chloride. Which product is obtained?

- A. $CH_3COCl + SO_2 + HCl$
- B. $CH_3Cl + CH_3COCl$

- C. $CH_3COOCH_3 + SO_2$
- D. $CH_3Cl + SO_2 + HCl$

Q107. After the digestion & before absorption the product of the protein is:

- A. Amino Acid and small polypeptide
- B. Only Amino Acid

- C. Only small polypeptide
- D. Only ammonia

Q108. Dehydration of alcohol gives which of the following product in the presence of H_2SO_4 at 140° ?

- A. Acetaldehyde
- B. Diethyl ether

- C. Ethyl acetate
- D. Ethyl chloride

Q109. Complete oxidation of alcohol gives which of the following?

- A. Aldehyde
- B. Alkane

- C. Carboxylic acid
- D. Ketone

Q110. One can estimate the direction in which equilibrium will shift with the help of:

- A. Le chaltier's principle
- B. Law of mass action

- C. Mess's law
- D. Law of heat of formation

Q111. The bond energy of hydrogen in H_2 molecule is:

- A. 242 KJ/mol
- B. 431KJ/mol

- C. 436 KJ/mol
- D. 346KJ/mol

Q112. What are vinyl alcohol and acetaldehyde?

- A. Position isomers
- B. Chain isomers

- C. Metamers
- D. Tautomers

Q113. Oxidation number of free magnesium is?

- A. 0
- B. +1

- C. +2
- D. +3

Q114. Select the metal which is extracted from bauxite?

- A. Al
- B. Ca

- C. Mg
- D. Cu

Q115. Which of the following has the highest atomic radius in its period?

- A. Alkaline earth metals
- B. Alkali metals
- C. Chalcogens
- D. Halogens

Q116. The electronic configurations of some elements are given below. Recognize the element that belongs to group IIIA

- A. $1s^2 2s^2 2p^3$
- B. $1s^2 2s^2 2p^4$
- C. $1s^2 2s^2 2p^1$
- D. $1s^2 2s^2 2p^2$

Q117. All alkali metals react with chlorine gas to form white metal chlorides salt. The metal chlorides salt formed is:

- A. Insoluble
- B. Soluble in water to give neutral solution of ph 7
- C. Soluble in water to give acidic solution of ph 1
- D. Soluble in water to give alkaline solution of ph 14

Q118. Which one of them is amphoteric in nature?

- A. Lithium oxide
- B. Beryllium oxide
- C. Calcium oxide
- D. Potassium oxide

Q119. Which of the following is correct electronic configuration of iron (II) ion (atomic no. of Fe is =26)?

- A. $[\text{Ar}] 4s^0, 3d^6$
- B. $[\text{Ar}] 4s^2, 3d^6$
- C. $[\text{Ar}] 4s^2, 3d^4$
- D. $[\text{Ar}] 4s^2, 3d^5$

Q120. Which of the functional group are present in ethyl acetate?

- A. Aldehyde group
- B. Carboxyl group
- C. Ester group
- D. Ether group

Q121. What is the molecular formula of pyridine molecule?

- A. C_6H_5N
- B. C_5H_5N
- C. C_5H_5NH
- D. C_6H_6N

Q122. Identify which method is used to prepare Alkynes?

- A. Dehalogenation of Vicinal Dihalides in the presence of methanol.
- B. Dehydration of Alcohols in the presence of Al_2O_3 at 340-450-degree centigrade.
- C. Dehalogenation of Vicinal Dihalides in the presence of strong base.
- D. Electrolysis of di carboxylic acid salts.

PHYSICS

Q123. The following formula can be used to determine the resistance of a length of conductor. $R = \rho l/A$. In the formula, the symbol ρ stands for the:

- A. Cross-sectional area of the conductor in m^2
- B. Product of the length of the conductor in meters
- C. Resistivity of the material in units of ohm-meters
- D. Resistance of the conductor in units of ohms per meter

Q124.The resistance of the wire varies inversely as:

- A. Area of cross section
- B. Length

- C. Resistivity
- D. Temperature

Q125.A capacitor of capacitance 'C' has a charge 'Q' and stored energy is 'W'. If the charge is increased to '2Q'. The stored energy will be:

- A. 2W
- B. 4W

- C. W/4
- D. W/2

Q126.To store the electric charge the ultra-capacitors use _____ effect.

- A. Single layer
- B. Double layer

- C. Triple layer
- D. Quadruple layer

Q127.What is the potential difference between two points in an electric field if it takes 600 J of energy to move a charge of 2 C between these two points?

- A. 1200 J
- B. 800 J

- C. 300 J
- D. 0 J

Q128.A charged particle moves in a uniform electric field between two oppositely charged parallel metal plates. To calculate the force acting on the particle due to the electric field, which quantity is not required?

- A. Particle charge
- B. Particle speed

- C. Plate separation
- D. Potential difference between the plates

Q129.Gauss law cannot be used to find which of the following quantity?

- A. Electric field intensity
- B. Electric flux density

- C. Charge
- D. Permittivity

Q130.Electric field intensity inside a hollow charged sphere is:

- A. Maximum
- B. Zero

- C. Negative
- D. Positive

Q131.As per Coulomb's law, the force of attraction or repulsion between two-point charges is directly proportional to the:

- A. Sum of the magnitude of charges
- B. Square of the distance between them

- C. Product of the magnitude of charges
- D. Cube of the distance

Q132.For an ideal gas equation $PV = nRT$, the dimensions of Real Gas Constant R are:

- A. $[M^1 L^2 T^{-2} K^{-1}]$
- B. $[M^1 L^{-3} T^{-1} K^{-1}]$

- C. $[M^1 L^{-2} T^{-1} K^{-1}]$
- D. $[M^1 L^{-3} T^{-2} K^{-1}]$

Q133. A distant star is receding from the Earth with a speed of 1.40×10^7 m/s. It emits light of frequency 4.57×10^{14} Hz. The speed of light is 3.0×10^8 m/s. The Doppler effect formula can be used with light waves.

What will be the frequency of this light when detected on Earth?

- A. 2.04×10^{13} Hz
- B. 4.37×10^{14} Hz
- C. 4.57×10^{14} Hz
- D. 4.79×10^{14} Hz

Q134. The speed of sound in an ideal gas depends upon:

- A. Temperature and amplitude
- B. Frequency and fog
- C. Temperature and density
- D. Density and amplitude

Q135. If transverse waves are passing through medium, then particle of medium:

- A. Remain stationary
- B. Move away
- C. Move toward
- D. Move in Simple Harmonic Motion

Q136. When a wave goes from one medium to another, there is a no change in the:

- A. Frequency
- B. Amplitude
- C. Wavelength
- D. Velocity

Q137. Wave trough refers to the:

- A. Wave length
- B. Wave speed
- C. Highest point of the wave
- D. Lowest point of the wave

Q138. First law of thermodynamics concerns with the conservation of

- A. Heat
- B. Work
- C. Momentum
- D. Energy

Q139. An ideal gas has molar specific heat C_p at constant pressure. When the temperature of n moles is increased by ΔT the increase in the internal energy is:

- A. $nC_p \Delta T$
- B. $n(C_p + R) \Delta T$
- C. $n(C_p - R) \Delta T$
- D. $n(2C_p + R) \Delta T$

Q140. The ohmmeter of a portable digital multi meter need:

- A. Internal battery
- B. Wet cell
- C. Voltmeter
- D. Ammeter

Q141. A wire of uniform area of cross-section 'A', length 'L', and resistance 'R' is cut into two equal parts. What will happen to the resistivity of each part?

- A. It will be doubled
- B. It will be one fourth
- C. It will be halved
- D. It will remain the same

Q142. If 0.5 T field is applied over an area of 2-meter square which lies at an angle of 60 degree with the field, then the resulting flux will be:

- A. 0.5 T
- B. 0.5 Wb
- C. 0.25 Wb
- D. 0.25 T

Q143. The magnitude of magnetic force will be maximum on current carrying conductor in uniform magnetic field if conductor is placed?

- A. Parallel to magnetic field
- B. At 45 degree in magnetic field
- C. Perpendicular to magnetic field
- D. Antiparallel in magnetic field

Q144. In principle, the transformer consists of two coils of copper, electrically insulated from each other, wound on the same?

- A. Iron core.
- B. Copper core.
- C. Gold core
- D. Steel core.

Q145. In Compton effect, the incident photon when compared to the scattered photon is of:

- A. Greater energy
- B. Greater frequency
- C. Greater energy and momentum
- D. Equal energy

Q146. Which of the following is the longest wavelength of radiation for the Paschen series?

- A. 187000000 m
- B. 187000000/ m
- C. 0.00000187 m
- D. 0.00000187 / m

Q147. Which of the following is the correct definition of variable velocity?

- A. Unequal distances are covered in equal intervals of time
- B. Equal displacements are made in unequal intervals of time
- C. Unequal displacements are made in equal intervals of time
- D. Equal displacements are made in equal intervals of time

Q148. Which of the following the fractional change in resistance per kelvin?

- A. Conductivity
- B. Resistivity
- C. Temperature coefficient of resistivity
- D. Temperature coefficient of resistance

Q149. According to maximum power transfer theorem, which of the following is the max power delivered by the battery to the output?

- A. $E^2/4r$
- B. $E^2/2r$
- C. $E^2/5r$
- D. $E^2/3r$

Q150. Velocity selector will select only those charge particles whose velocity is given by:

- A. $V = E/B$
- B. $V = B/E$
- C. $V = E \times B$
- D. $V = 0$

Q151. The induced emf produced in the coil is sometimes called as?

- A. Self-inductance
- B. Back emf
- C. Motional emf
- D. Mutual inductance

Q152. The quantity $\Delta\phi/\Delta t$ has the same units as that of?

- A. Current
- B. Magnetic induction
- C. Charge
- D. Emf

Q153. Working principal of magnetic levitation train is according to?

- A. Faraday law
- B. Max planks law
- C. Ohm law
- D. Lenz law

Q154. The expression for the emf produced by A. C. generator is?

- A. $N\omega AB \sin\theta$
- B. $N\omega AB \cos\theta$
- C. $N\omega AB$
- D. $ILB \cos\theta$

Q155. For the positive half cycle i.e., $0 \rightarrow T/2$, the diode D:

- A. Is reverse biased
- B. Is forward biased
- C. Behaves as open
- D. Shows maximum resistance

Q156. The process of ejection of loosely bound electrons from a certain photo sensitive surface by absorption of photon is called:

- A. Compton effect
- B. Photoelectric effect
- C. Pair production
- D. Black body radiation

Q157. In Compton effect, a photon of a certain wavelength collides with a stationary electron. The wavelength of the emitted photon is:

- A. Longer
- B. Shorter
- C. Same
- D. Infinite

158. The Balmer series of hydrogen is important because it:

- A. Is the only one for which the quantum theory can be used
- B. Is the only series that occurs for hydrogen
- C. Is in the visible region
- D. Involves the lowest possible quantum number n

Q159. The SI unit of equivalent dose is:

- A. Gray
- B. Mass
- C. Rad
- D. Sievert

Q160. The decay rate of radioactive substance is:

- A. Constant with time
- B. Varies inversely with time
- C. Decreases exponentially with time
- D. Decreases linearly with time

Q161. The relation between gray and rad is given as: $1 \text{ Gy} = \underline{\hspace{1cm}} \text{ rad}$

- A. 0.01
- B. 0.001
- C. 10
- D. 100

Q162. The velocity-time plot for a moving particle shows a straight line. This means:

- A. The particle has a constant acceleration
- B. The particle has never turned around
- C. The particle has zero displacement
- D. The data is insufficient

Q163. A man is in a car that is moving with the velocity of 36km/hr. His speed with respect to the car is:

- A. 10m/s
- B. 36m/s
- C. Zero
- D. Infinite

Q164. On which car there is resultant force?

- A. Car moving on a straight horizontal road
- B. Car moving at constant speed around a bend
- C. Car moving uphill at a constant velocity
- D. Car that is stationary

Q165. If two equal masses are in motion with same individual speeds, we can conclude that

- A. Their momentums are same
- B. Their momentums can be different from each other
- C. Their kinetic energies are different from each other
- D. Their total energies are same

Q166. The work done by a variable force can be found by dividing the:

- A. Force into small intervals
- B. The displacement into small intervals
- C. Both force and displacement into small intervals
- D. By taking displacements at different angles

Q167. Two bodies with kinetic energies in the ratio of 4: 1 are moving with equal linear momentum. The ratio of their masses is:

- A. 1 : 2
- B. 1 : 1
- C. 4 : 1
- D. 1 : 4

Q168. A fisherman lifts a fish of mass 250 g from rest through a vertical height of 1.8 m. The fish gains a speed of 1.1 m/s. What is the energy gained by the fish?

- A. 0.15 J
- B. 4.3 J
- C. 4.4 J
- D. 4.6 J

Q169. One radian is analogous to:

- A. $57^{\circ}3'$
- B. $57^{\circ}3''$
- C. $57^{\circ}18'$
- D. $57^{\circ}18''$

Q170. In the displacement-time graph, if the slope is constant then the velocity is

- A. Variable
- B. Constant
- C. May be variable or constant
- D. Infinite

Q171. An 8.0-kg box slides along a horizontal frictionless floor at 3 m/s and collides with a relatively massless spring that compresses 12 cm before the box comes to a rest. Calculate the retarding force of the spring.

- A. 3 N
- B. 30 N
- C. 300 N
- D. 3000 N

Q172. The circular line has a fix distance from _____?

- A. Any point
- B. A fix point
- C. A point on a circle
- D. A point from outside

Q173. If a particle is moving with uniform circular motion, then:

- A. Velocity and acceleration are antiparallel
- B. Velocity and acceleration are parallel
- C. Velocity and acceleration are perpendiculars
- D. Zero acceleration

Q174. One degree is equal to:

- A. $\pi/90$ radians.
- B. $\pi/180$ radians.
- C. $\pi/270$ radians.
- D. $\pi/360$ radians.

Q175. An observer standing near the sea shore observes 54 waves per minute. If the wavelength of the water wave is 10m then the velocity of water wave is:

- A. 540 m/s
- B. 9 m/s
- C. 5.4 m/s
- D. none

Q176. If the length of second pendulum becomes four times, then its time period will become:

- A. Four times
- B. Two times
- C. Half
- D. One fourth

ENGLISH

Q177. Choose the sentence that is grammatically correct:

- A. He weighed himself two maunds.
- B. He weighed two maunds.
- C. He weighed themselves two maunds.
- D. He weighed itself two maunds.

Q178. Choose the correct option.

We felt as if the ground was _____ beneath our feet.

- A. digging
- B. sinking
- C. slipping
- D. bursting

Q179. A few years ago, it _____ that human beings do not belong to this earth.

- A. found
- B. was found
- C. were found
- D. had found

Q180. A shoal of fish _____ killed by the fishermen.

- A. has been
- B. have
- C. had
- D. has

Q181. At last the fly was _____. The most appropriate word to be filled in is:

- A. Trapped by the spider
- B. Entertained by the spider
- C. Invited by the spider
- D. Spared by the spider.

Q182. Choose the similar meaning of the bracketed word. (Providentially), his mind was not injured.

- A. Slowly
- B. Steadily
- C. Really
- D. Luckily

Q183. A carpenter carves _____ on cab doors. Choose the right word to fill in the blank.

- A. Arabesque
- B. Ornate
- C. Decked
- D. Floral

Q184. _____ methods don't work. Choose the correct option:

- A. This
- B. These
- C. The
- D. That

Q185. We just _____ a game of tennis.

- A. has
- B. had
- C. have
- D. have had

Q186. The pen is expensive; still I _____ it.

- A. bought
- B. will buy
- C. have bought
- D. buyed

Q187. Punctuate the given sentence correctly.

My father is Chairman of the Committee on Internal Relations he also heads the Discipline Committee.

- A. My father is Chairman of the Committee on Internal Relations. He also heads the Discipline Committee.
- B. My father is Chairman of the Committee on Internal Relations - he also heads the Discipline Committee.
- C. My father is Chairman of the Committee on Internal Relations: he also heads the Discipline Committee.
- D. My father is Chairman of the Committee on Internal Relations, but he also heads the Discipline Committee.

Q188. Which of the following sentences is correct?

- A. I want to live near my parents live.
- B. I want to live where my parents live.
- C. I want to live where, my parents live.
- D. I want to live where: my parents live.

Q189. Choose the sentence that is grammatically correct:

- A. He weighed himself two maunds.
- B. He weighed two maunds.
- C. He weighed themselves two maunds.
- D. He weighed itself two maunds.

Q190. Choose the correct option.

We felt as if the ground was _____ beneath our feet.

- A. digging
- B. sinking
- C. slipping
- D. bursting

Q191. Right after the Civil War, many distraught soldiers made their way West to find fame and fortune. Some could not go home because there were no homes to go to. The war had devastated them. One young man, Will Goodlad, made his fortune in the hills of Colorado. He found gold in a little river near Grand Junction. His fortune was short lived, however. In 1875, he declared bankruptcy and returned to the land of his birth- the Piedmont of South Carolina. For which side did Will fight during the War?

- A. East
- B. West
- C. North
- D. South

Q192. _____ so many people been out of work as today. Which part is the most appropriate to be filled in the blank?

- A. More than ever before
- B. Never before have
- C. In the past, there never have
- D. Formerly, there never were

193. Spot the error out of the bracketed words. We try to speak (with) (one another) (but) (convey) nothing.

- A. with
- B. one another
- C. but
- D. convey

194. In winter, the days and nights is cold. Choose the part of the sentence that carries error:

- A. In winter
- B. The days
- C. And nights
- D. Is cold

LOGICAL REASONING

Q195. All children are silly people. Some silly people are rich people. All rich people are big shots. Which of the following conclusions are NECESSARILY TRUE?

CONCLUSIONS:

- I. Some silly people are children.
- II. Some rich people are children.
- III. Some silly people are big shots.

- A. I and III
- B. II
- C. II and III
- D. I and II

Q196. Read the following and choose the correct answer: "X, Y and Z are three whole numbers less than 31 but greater than 23. X is a prime number. Y is the largest odd number smaller than 35. Z is the smallest even number?"

- A. X is 31, Y is 29 and Z is 24.
- B. X is 29, Y is 29 and Z is 24.
- C. X is 23, Y is 29 and Z is 24.
- D. X is 27, Y is 31 and Z is 26.

Q197. Observe the pattern and select the next term in the sequence: SSSSS, SSRSS, SRQRS, RQPQR

- A. RQOQR
- B. QRORQ
- C. RQPOPQR
- D. QPOPQ

Q198. Read the following statement, assuming everything in it to be true. Then decide which of the given suggested courses of action logically follow and are worth pursuing.

Statement: Your toddler drops and breaks a glass by genuine accident.

Courses of Action:

- I. Yell at them to be more careful with things made out of glass.
II. Punish them to make sure they remember to be extra careful next time.

- A. I
B. II

- C. Both I and II
D. Neither I nor II

Q199. Read the following statements and identify the best cause and effect relation.

I. State P started providing multiple rehabilitation schemes, like free education, job search help and help groups for addicts, etc. over the past year.

II. Crimes rates for state P have steadily decreased over the past year.

- A. II is the cause and I is its effect
B. I is the cause and II is its effect

- C. I and II are effects of some common cause
D. I and II are both effects of independent causes

Q200. Read the passage and the following statements below. Then choose the correct option, basing your answer only on the information provided.

Pakistan is rich in wildlife and culture. It is home to many sorts of wildlife, from the Ibex to the Indus River Dolphin; and people from most countries in the world have made their home here.

STATEMENTS:

I. Pakistan is a rich country.

II. People from all nationalities of the world live in Pakistan.

III. Pakistan is home to at least one dolphin species.

- A. Only III is correct
B. Only I and II are correct

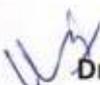
- C. Only I and III are correct
D. Only II and III are correct

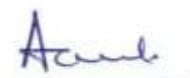
Rough Work

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Key of Paper ID_D		
Question Numbers	Correct Answer	Remarks
1	Deleted	Full credit to all the students
2	C	
3	B	
4	C	
5	C	
6	A	
7	A	
8	D	
9	B	
10	D	
11	A	
12	D	
13	C	
14	B	
15	B	
16	A	
17	A	
18	B	
19	D	
20	B	
21	A	
22	B	
23	B	
24	B	
25	A	
26	A	
27	D	
28	C	
29	A	
30	B	
31	C	
32	B	
33	C	
34	A	
35	A	
36	B	

Page 1


Dr Uruj Zehra


Dr. Asad Zaheer

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Question Numbers	Correct Answer	Remarks
37	C	
38	C	
39	C	
40	D	
41	B	
42	A	
43	C	
44	A	
45	B	
46	A	
47	A	
48	A	
49	B	
50	B	
51	A	
52	D	
53	B	
54	A	
55	C	
56	C	
57	A	
58	A	
59	B	
60	B	
61	C	
62	A	
63	B	
64	Deleted	Full credit to all the students
65	C	
66	A	
67	D	
68	B	
69	C	
70	A	
71	B	
72	B	
73	B	
74	C	

ID: D
 Page 2

Uz

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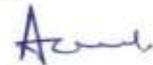
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Question Numbers	Correct Answer	Remarks
75	D	
76	C	
77	A	
78	D	
79	A	
80	A	
81	D	
82	B	
83	C	
84	C	
85	C	
86	C	
87	B	
88	D	
89	B	
90	B	
91	A	
92	A	
93	D	
94	D	
95	C	
96	C	
97	B	
98	B	
99	C	
100	C	
101	C	
102	B	
103	C	
104	A	
105	B	
106	A	
107	A	
108	B	
109	C	
110	A	
111	C	
112	D	

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Page 3



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Question Numbers	Correct Answer	Remarks
113	A	
114	A	
115	B	
116	C	
117	B	
118	B	
119	A	
120	C	
121	B	
122	D	
123	C	
124	A	
125	A	
126	B	
127	C	
128	B	
129	D	
130	B	
131	C	
132	A	
133	B	
134	C	
135	D	
136	A	
137	D	
138	D	
139	C	
140	A	
141	D	
142	B	
143	C	
144	A	
145	C	
146	C	
147	C	
148	D	
149	A	
150	A	

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Page 4

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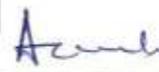
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Question Numbers	Correct Answer	Remarks
151	B	
152	D	
153	D	
154	A	
155	B	
156	B	
157	A	
158	C	
159	D	
160	C	
161	D	
162	A	
163	C	
164	B	
165	B	
166	B	
167	D	
168	D	
169	C	
170	B	
171	C	
172	B	
173	C	
174	B	
175	B	
176	Deleted	Full credit to all the students
177	B	
178	C	
179	B	
180	A	
181	A	
182	D	
183	A	
184	B	
185	B	
186	B	
187	A	
188	B	

ID-D
 Page 5


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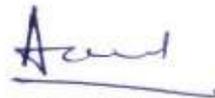
Question Numbers	Correct Answer	Remarks
189	Deleted	Full credit to all the students
190	Deleted	Full credit to all the students
191	D	
192	B	
193	A	
194	D	
195	A	
196	B	
197	D	
198	D	
199	B	
200	A	

ID-D
Page 6

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