# University of Health Sciences, Lahore.

## MDCAT-2026

### For F.Sc. and Non-F.Sc. Students

**Total MCQs: 180**
**Maximum Marks: 180**

**Time Allowed: 3Hrs**

**Paper ID - D**

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Candidate Roll No.

_____
Candidate Name

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Candidate Signature

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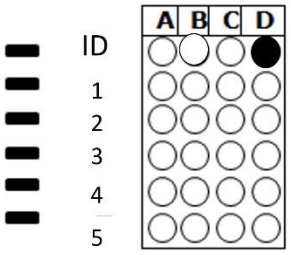
**Instructions:**

i. Read the instructions on the MCQ Response Form carefully.
ii. Choose the **Single Best Answer** for each question.
iii. Candidates are strictly prohibited from giving any identification mark except Roll. No. & Signature in the specified columns only.
iv. RETURN the first page of your question paper to the invigilator-this is mandatory

## COMPULSORY QUESTION FOR IDENTIFICATION

1. **Each paper has a specific ID.**
2. **You have to fill the circle on your response form corresponding to the ID of your paper. This is a compulsory requirement.**

**FOR EXAMPLE if the ID of your Question paper is 'D' then fill the circle corresponding to ID as shown in the diagram below:**



**Q1. A hemophilic father can pass the genes of hemophilia to his:**
a) Sons only
b) Daughters only
c) Both sons and daughters equally
d) Both sons and daughters in 2:1 ratio respectively

**Q2. This enzyme is used to synthesize cDNA from RNA:**
a) Restriction Endonuclease
b) Reverse Transcriptase
c) Ligase
d) Helicase

**Q3. Which of the following is ABSENT in Prokaryotic cells:**
a) Mitochondria
b) Circular DNA
c) Ribosomes
d) Cell membrane

**Q4. In unstimulated stage, a neuron has a membrane potential of:**
a) -50mV
b) +50mV
c) -70mV
d) +70mV

**Q5. Which of the following diseases is associated with reduced synovial fluid in a joint?**
a) Gout
b) Arthritis
c) Rickets
d) Sciatica

**Q6. Points on the axon where myelin sheath is not present is called:**
a) Nodes of Ranvier
b) Schwann cells
c) Neuroglia
d) Dendron

**Q7. _____can denature enzymes resulting in slow catalysis.**
a) Low temperature
b) High temperature
c) High water content
d) Low water content

**Q8. Parietal cells of gastric glands are responsible for the secretion of:**
a) HCl
b) Pepsinogen
c) Mucus
d) Gastrin

**Q9. Pepsinogen is converted into pepsin due to:**
a) Low pH
b) High pH
c) Optimum temperature
d) Freezing temperature

**Q10. During active transport across the cell membrane, a cell requires a continuous supply of ATP to move substances against the concentration gradient. The organelle responsible for producing this energy is:**
a) Nucleus.
b) Mitochondria.
c) Golgi apparatus.
d) Endoplasmic reticulum.

**Q11. Viruses are classified on the basis of:**
a) Color and size only
b) Structure and nucleic acid
c) Habitat only
d) Temperature tolerance

**Q12. If two genes are said to be linked, what is meant by the term 'linked'?**
a) Two genes are both at the same loci on a chromosome
b) Two genes both occupy the same chromosome
c) They are both alleles of the same gene
d) The phenotypes of the genes are both influenced by the gender of their owner

**Q13. Which statement correctly compares ribosomes in prokaryotic and eukaryotic cells?**
a) Both have 80S ribosomes
b) Prokaryotes have 80S, eukaryotes have 70S
c) Prokaryotes have 70S, eukaryotes have 80S
d) Both lack ribosomes

**Q14. Which of the following best describes the correct function of peritubular capillaries?**
a) Oxygen uptake from the kidney cells
b) Supply of carbon dioxide to the kidney cells
c) Reabsorption of urea
d) Reabsorption of useful constituents

**Q15. Which of the following is responsible for reducing variations in progeny?**
a) Meiosis
b) Epistasis
c) Crossing over
d) Gene Linkage

**Q16. Nerve impulses are transmitted in reflex action in the following direction:**
a) From CNS to Effectors and from CNS to the Receptors.
b) From Effectors to CNS and from CNS to the Receptors.
c) From Receptors to the CNS and from CNS to the Effectors.
d) From CNS to Receptors and from Effectors to CNS.

**Q17. Which blood vessel carries filtered blood away from glomerulus?**
a) Renal artery
b) Renal vein
c) Afferent arteriole
d) Efferent arteriole

**Q18. Structurally ganglia are clusters of:**
a) Complete neurons
b) Cell bodies of neurons
c) Axonal fibers
d) Both axon & dendrites

**Q19. Upon arrival of nerve impulse, which of the following allows calcium ions to enter the cytosol?**
a) Sarcolemma
b) Sarcomere
c) Sarcoplasmic reticulum
d) Myofilaments

**Q20. Which of the following hormones is produced by Corpus Luteum?**
a) Leutinizing
b) Progesterone
c) Testosterone
d) Secretin

**Q21. In a kidney tubule, which substances are filtered out of the blood in the glomerulus?**
a) Glucose, protein, salts and water
b) Glucose, protein, urea and water
c) Glucose, salts, urea and water
d) Protein, salts, urea and water

**Q22. During an immune response, what type of cells are PRIMARILY involved in the production of antibodies?**
a) T lymphocytes
b) B lymphocytes
c) Macrophages
d) Platelets

**Q23. A patient develops a swollen area where lymph is actively being screened for pathogens and immune cells are rapidly multiplying. The lymphatic structure that is involved in this process is:**
a) spleen.
b) lymph nodes.
c) lymphatic ducts.
d) lymphatic capillaries.

**Q24. Which chamber of the heart has the thickest muscular tissues?**
a) Right atrium
b) Right ventricle
c) Left atrium
d) Left ventricle

**Q25. A person is diagnosed with colon disease. Absorption of which of the following may be affected?**
a) Glucose
b) Water
c) Fats
d) Amino acids

**Q26. Testosterone in males is produced by:**
a) Interstitial cells of Leydig
b) Sertoli Cells
c) Spermatogonia
d) Primary spermatocytes

**Q27. Which of the following is a function of lymphatic system?**

a) Absorption of glucose from intestine
b) Blood clotting after an injury
c) Filtering out and destroying germs and toxins
d) Temperature regulation

**Q28. In human reproduction, a sudden rise in LH causes:**

a) Menstrual flow
b) Ovulation
c) Fertilization to form zygote
d) Implantation of embryo

**Q29. Main products of Krebs cycle reactions are:**

a) Glucose and Oxygen
b) NADH and $FADH_2$
c) ATP and glyceraldehyde 3-phosphate (G3P)
d) Pyruvate and Acetyl Co-A

**Q30. During heart surgery, a surgeon fixes a valve that stops blood from flowing backward into the right ventricle. Based on the given situation, the valve that was repaired is:**

a) Mitral valve
b) Aortic semilunar valve
c) Tricuspid valve
d) Pulmonary semilunar valve

**Q31. Bile salts are helpful in the digestion of:**

a) Amino acids
b) Fatty acids
c) Nucleic acids
d) Carbohydrates

**Q32. Exocrine tissue of the pancreas produces an enzyme for carbohydrate digestion known as:**

a) Lipase
b) Trypsin
c) Enterokinase
d) Amylase

**Q33. Endocrine cells of duodenum are stimulated by _____to release hormone secretin.**

a) Acetylcholine
b) Acidic chyme
c) Bile salts
d) Sodium bicarbonate in bile juice

**Q34. Chordae tendineae are:**

a) Blood vessels
b) Fibrous cords
c) Cardiac muscles
d) Epithelial tissue

**Q35. The cross between two heterozygous round-seeded plants having Rr X Rr would result in _____ during segregation of the alleles in next generation.**

a) 100 % round seeds
b) 50% round seeds and 50% wrinkled seeds
c) 75% round seeds and 25% wrinkled seeds
d) 100% wrinkled seeds

**Q36. Which of the following provides passage of transportation of protein from nucleus to other organelles?**

a) Endoplasmic Reticulum
b) Mitochondria
c) Golgi complex
d) Nuclear membrane

**Q37. The ability of the immune system to mount a larger and more rapid response to an antigen that has already been encountered before is termed as:**

a) Primary Immune response
b) Immunological Memory
c) Short-term Memory
d) Long-term Memory

**Q38. Let X, Y and Z be three amino acids which are encoded by UCA=X, ACU=Y and GUC=Z. What will be the sequence of nucleotide in DNA coding/sense strand that comprises information for following polypeptide:**

**Polypeptide= Y-X-Y-Y-X-Z-Z-X-Z-Y**

a) 5′-ACUUCAACUACUUCAGUCGUCUCAGUCACU-3′
b) 5′-ACTTCAACTACTTCAGTCGTCTCAGTCACT-3′
c) 3′-TGAAGTTGATGAAGTCAGCAGAGTCAGTGA-5′
d) 3′-UGAAGUUGAUGAAGUCAGCAGAGUCAGUGA-5′

**Q39. All of the following ideas were proposed by Lamarck, EXCEPT:**
a) Use and disuse of organs
b) Acquired characters are inherited by the offspring
c) Organs not used will become vestigial
d) Over production leads to evolution

**Q40. In an experiment, increasing substrate concentration increases the rate of reaction until it reaches a steady state. At this stage, which of the following changes would most effectively increase the rate of reaction?**
a) Increasing substrate concentration
b) Decreasing temperature
c) Increasing enzyme concentration
d) Adding a non-competitive inhibitor

**Q41. Which of the following bonding or interaction is responsible for quaternary protein folding?**
a) 1,4 Glycosidic Bond
b) Hydrophobic interaction
c) Ester Bond
d) 1, 6 Glycosidic Bond

**Q42. Which part of the brain controls heart rate and breathing?**
a) Cerebellum
b) Hypothalamus
c) Medulla oblongata
d) Cerebrum

**Q43. When the muscle is at rest, _____is disposed in such a way that it covers the sites on the _____chain where the head of ____becomes attached**.
a) tropomyosin : actin : myosin
b) myosin : actin : tropomyosin
c) actin : tropomyosin : myosin
d) actin : myosin : tropomyosin

**Q44. If green is a dominant and yellow is a recessive trait then what would be the ratio of homozygotes in F2 generation?**
a) 0%
b) 25%
c) 50%
d) 75%

**Q45. In human respiratory system, bronchioles have:**
a) Cartilage rings
b) Cartilage plates
c) Circular smooth muscles
d) Longitudinal smooth muscles

**Q46. Which of the following cartilage is most commonly found in the ribs, nose, and trachea?**
a) Hyaline Cartilage
b) Elastic Cartilage
c) Fibrocartilage
d) Osteoblast

**Q47. If the corpus luteum degenerates prematurely, the most likely outcome is:**
a) Enhanced ovulation and fertilization
b) Increased LH secretin and extra egg release
c) Increased estrogen secretion
d) Implantation failure and end of pregnancy

**Q48. Which one of the following veins connects the small intestines to the liver?**
a) Renal vein
b) Hepatic portal vein
c) Iliac vein
d) Hepatic vein

**Q49. The segregation of alleles occurs during the process of _____ in eukaryotic organisms.**
a) Mitosis
b) Binary fission
c) Meiosis
d) DNA replication before cell division

**Q50. Over time, many dihybrid cross experiments of autosomally-linked genes in sweet pea plants (*Lathyrus odoratus*) have been carried out by reputed scientists. Which of the following best explains the presence of some non-parental phenotypes in the offspring of such crosses?**
a) Crossing over has occurred, leading to the production of recombinant plants
b) The scientists made errors such as not cleaning the small paint brush that they used to transfer pollen grains between plants
c) Independent assortment had occurred, so unusual phenotypes are to be expected
d) Only plants of one gender exhibit parental phenotypes due to linkage

**Q51. HIV stands for:**
a) Human Immunodeficiency Virus
b) Human Internal Virus
c) High Impact Virus
d) Human Immunogenic Vaccine

**Q52. The part of digestive system which is NOT directly involved in digestion is:**
a) Mouth
b) Oesophagus
c) Stomach
d) Small intestine

**Q53. Pacinian corpuscles are present in the:**
a) Retina
b) Lungs
c) Liver
d) Skin

**Q54. The receptors for hearing and equilibrium are the example of:**
a) Mechanoreceptors
b) Thermoreceptors
c) Nociceptors
d) Photoreceptors

**Q55. Receptors that detect smell of food are**:
a) Chemoreceptors
b) Mechanoreceptors
c) Nociceptors
d) Photoreceptors

**Q56. The most abundant voluntary muscles in human body are:**
a) Cardiac
b) Skeletal
c) Smooth
d) Smooth & Cardiac

**Q57. mRNA forms _____ % of the total RNA in the cell**
a) 3-4%
b) 4-5%
c) 5-6%
d) 6-7%

**Q58. The inner layer of stomach whose glands secrete digestive enzymes, HCl and mucus is known as:**
a) submucosa
b) mucosa
c) muscularis
d) serosa

**Q59. According to Lamarck, the characteristics which are developed during the lifetime of an individual due to use and disuse of organs are called as:**
a) prominent characters
b) biological characters
c) acquired characters
d) physical characters

**Q60. The collagen fibers of bone are hardened by deposition of:**
a) Calcium and oxalates
b) Calcium and phosphates
c) Magnesium and nitrates
d) Iron and glycogen

**Q61. The type of muscles responsible for the movement of food through lumen of intestine are:**
a) Smooth muscles
b) Cardiac muscles
c) Skeletal muscles
d) Skeletal & cardiac muscles

**Q62. According to Watson and Crick's model, each complete turn of the DNA double helix, consists of:**
a) 6 base pairs
b) 8 base pairs
c) 10 base pairs
d) 12 base pairs

**Q63. The major purpose of mastication is to:**
a) Make morsel soft
b) Make food moist
c) Increase surface area
d) Improve the taste

**Q64. Which of the following hormones stimulates the development of primary follicles in the ovary?**
a) Estrogen
b) Progesterone
c) Luteinizing hormone
d) Follicle stimulating hormone

**Q65. What unique characteristic is typically found in sensory neurons of spinal nerves?**
a) A single axon
b) A single dendron
c) Multiple dendrites
d) Multiple nodes of Ranvier

**Q66. In which part of the neuron, Nissl's granules are present?**
a) Axoplasm
b) Myelin sheath
c) Dendrite
d) Soma (Cell body)

**Q67. Functions of cerebellum include:**
a) To act as relay station
b) Conversion of short-term memories into long term memories
c) To guide smooth and accurate motions and maintain body position
d) To act as link between nervous and chemical coordination

**Q68. What type of blood cells are primarily and specifically responsible for specific immunity?**
a) Erythrocytes
b) Thrombocytes
c) Neutrophils
d) Lymphocytes

**Q69. Which type of enzyme inhibition can be overcome by increasing substrate concentration?**
a) Non-competitive inhibition
b) Competitive inhibition
c) Irreversible inhibition
d) Allosteric inhibition

**Q70. What would be the number of chromosomes in an animal cell whose sperm has 8 chromosomes?**
a) 4 chromosomes
b) 16 chromosomes
c) 24 chromosomes
d) 32 chromosomes

**Q71. Which of the following best describes the Golgi apparatus?**
a) Site of energy production
b) Packing and modification center of the cell
c) Storage of genetic material
d) Site of protein synthesis

**Q72. The offsprings of better-adapted individuals are expected to make up a larger proportion of the next generation. The most likely explanation is:**
a) Mutation
b) Inheritance of Acquired characters
c) Natural selection
d) Genetic drift

**Q73. Which body system is directly responsible for initiating shivering?**
a) Respiratory system
b) Circulatory system
c) Nervous system
d) Digestive system

**Q74. If enterokinase is absent in small intestine, which digestive enzyme remains inactive?**
a) Pepsinogen
b) Trypsinogen
c) Amylase
d) Lipase

**Q75. Which of the following neurotransmitters works outside the brain?**
a) Dopamine
b) Serotonin
c) Acetylcholine
d) Melatonin

**Q76. Fate of ammonia released from amino acid during deamination in liver is:**
a) Carbon cycle
b) Glycolysis
c) Urea cycle
d) Kreb's cycle

**Q77. Villi contains a lymph capillary called:**
a) Microvilli
b) Brush border
c) Lacteal
d) Lymph node

**Q78. Translation is:**
a) nucleus →mRNA → ribosome
b) nucleus →tRNA → ribosome
c) nucleus →mRNA → ER
d) nucleus →tRNA → ER

**Q79. Which nitrogenous waste requires the least amount of water per gram of its excretion?**
a) Ammonia
b) Urea
c) Uric acid
d) Creatinine

**Q80. Kidney stones are mainly formed due to:**
a) Lower filtration of blood at Bowman's Capsule
b) Protein breakdown in stomach
c) Excessive glucose levels in blood
d) High level of circulating calcium in blood

**Q81. _____ is a repeated protein unit that makes the viral protein coat.**
a) Nucleic acid
b) Capsomere
c) Core
d) Envelop

**Q82. Which type of isomerism is exhibited by 2-Butene?**
a) Tautomerism
b) Geometric isomerism
c) Functional group isomerism
d) Metamerism

**Q83. Nylon-6,6 is made from two monomers each of which contains:**
a) 6 carbon atoms.
b) 6 amino groups.
c) 6 nitrogen atoms.
d) 6 carboxylic acid groups.

**Q84. A student observes that solid substance "X" does not conduct electricity but conducts when melted, while substance "Y" does not conduct electricity in any state. What is the most appropriate classification of "X" and "Y"?**
a) X is a molecular crystal, Y is an ionic crystal
b) X is an ionic crystal; Y is a molecular crystal
c) Both X and Y are ionic crystals
d) Both X and Y are molecular crystals

**Q85. The solubility of AgBr is 7.1 X $10^{-7}$ M. This dissolved AgBr produces equal moles of $Ag^{+}$ and $Br^{-}$, then the solubility product of this equilibrium reaction would be**:
a) 5.041 X $10^{-13}$
b) 4.941 X $10^{+13}$
c) 7.1 X $10^{-7}$
d) 14.082 X $10^{-14}$

**Q86. What is the solvent in an aqueous solution of methanol?**
a) HCl
b) Water
c) Methanol
d) NaOH

**Q87. Which one of the following is the best example of an amorphous solid?**
a) Diamond
b) Glass
c) Sodium chloride
d) Potassium Bromide

**Q88. The starting material for the preparation of PVC is:**
a) Ethylene
b) Acetylene
c) Vinyl alcohol
d) Methylene

**Q89. Acetic acid is converted into acetyl chloride using which reagent?**
a) thionyl chloride
b) chlorine
c) sodium chloride
d) phosphorous trioxide

**Q90. Which of the following product will be formed when 2-oxo-pentanal is treated with $NaBH_4$?**
a) $CH_3CH(OH)CH_2CH_2OH$
b) $CH_2CH_2CH_2CH_2CH_2OH$
c) $CH_3CH(OH)CHCH(OH)CH_3$
d) $CH_3CH_2CH_2CH(OH)CH_2(OH)$

**Q91. At a constant temperature and pressure, a 2.0 L container holds 0.5 moles of Nitrogen gas (N2). If an additional 1.0 mole of Nitrogen is pumped into the container without changing the temperature or pressure, what will be the new volume of the container?**

a) 3.0 L
b) 4.0 L
c) 6.0 L
d) 8.0 L

**Q92. The value of ideal gas constant in $dm^3.torr.\ K^{-1}.mol^{-1}$ is:**

a) 0.0821
b) 1.98722
c) 8.3143
d) 62.364

**Q93. How many unpaired electrons are there in $Fe^{++}$(Z=26)?**

a) 6
b) 4
c) 3
d) 2

**Q94. An element X having atomic number "Z=27" belongs to which block of periodic table?**

a) s-block
b) p-block
c) d-block
d) f-block

**Q95. A thermodynamic system goes through a cyclic process which absorbs 1200 J heat and ejects 700 J heat. Which statement correctly describes this?**

a) The ΔE of a system increases by 500 J
b) The ΔE of a system decreases by 500 J
c) The system performs network of 500 J
d) The surroundings perform network of 500 J

**Q96. Which of the following elements from Period 3 of Periodic table, has the largest ionic radius when forms a stable ion?**

a) Sodium
b) Silicon
c) Phosphorous
d) Chlorine

**Q97. Which type of interaction is primarily responsible for holding molecules together in noble gases?**

a) Covalent bond
b) Electrostatic forces of attraction
c) Hydrogen bonding
d) London dispersion forces

**Q98. The reaction between ethyl chloride and dry silver oxide on heating yields:**

a) dimethyl ether.
b) diethyl ether
c) ethanoic acid.
d) ethanal.

**Q99. Phenol gives which colored precipitate with aqueous $Br_2$?**

a) red ppt
b) white ppt
c) blue ppt
d) orange ppt

**Q100. Pfund Series of spectral lines are produced forming the spectrum of hydrogen atom when electron jumps down to_____ orbit.**

a) $2^{nd}$
b) $3^{rd}$
c) $4^{th}$
d) $5^{th}$

**Q101. The electronic configuration of $H^-$ is:**

a) $1s^0$
b) $1s^1$
c) $1s^2$
d) $1s^2,2s^1$

**Q102. Carboxylic acid can be formed by reaction of Grignard reagent with:**

a) Carbonate
b) Carbon dioxide
c) Aldehyde
d) Carbon mono oxide

**Q103. An electron having following set of values lies in:**
**n = 4, l= 0, m = 0 & s = -1/2**

a) 4s
b) 4p
c) 5s
d) 5p

**Q104. At which condition real gases show ideal behavior?**

a) 100°C and 10 atm
b) 1000°C and 20 atm
c) 1000°C and 1 atm
d) 10°C and 100 atm

**Q105. Which of the following statements describes a crystalline solid?**

a) Particles are randomly arranged with no repeating pattern.
b) Particles are arranged in a long-range, repeating 3D pattern.
c) It softens gradually over a range of temperatures.
d) It has no definite shape or melting point.

**Q106. The actual amount of CaO obtained on thermal decomposition of 25g of $CaCO_3$ is 12g. What is the approximate percentage yield? (Molar mass of $CaCO_3$ = 100, Molar mass of CaO = 56)**

**$CaCO_3 \rightarrow CaO + CO_2$**

a) 50 %
b) 60 %
c) 86 %
d) 90 %

**Q107. If actual yield and theoretical yield are 20g and 25g respectively, what will be the % yield?**

a) 60%
b) 70%
c) 80%
d) 85%

**Q108. The new volume when pressure is halved while temperature and number of moles are doubled will be:**

a) Doubled
b) Quadrupled
c) Sextupled
d) Octupled

**Q109. Rate of reaction in $E_1$ depends on the:**

a) R-X only
b) Base only
c) Nucleophile only
d) Both base and R-X

**Q110. For 3rd order reaction rate=k[A][B] ² when concentration of both reactant is doubled the new rate becomes:**

a) halved
b) doubled
c) quadrupled
d) octupled

**Q111. Grignard's reagent is treated with methanal to produce**:

a) Phenol
b) Primary alcohol
c) Propanoic acid
d) Ketone

**Q112. Probability of finding an electron is maximum in:**

a) Orbit
b) Orbital
c) Degenerate orbit
d) Nodes

**Q113. All alkynes give ketones on hydration EXCEPT:**

a) Acetylene
b) Propyne
c) Butyne
d) Pentyne

**Q114. Benzene is stable because of:**

a) containing single bond
b) presence of delocalization of $\pi$ electron
c) containing $sp^3$ hybridized carbon
d) isolated double bonds

**Q115. The value of lattice energy across the period in the periodic table:**

a) Increases
b) Decreases
c) Remains same
d) Changes randomly

**Q116. Primary alcohol can be converted into carboxylic acid by:**

a) $CH_3COOH/P_2O_5$
b) $NH_3$
c) $CH_3OH$
d) $H_2SO_4/K_2Cr_2O_7$

**Q117. Select the true statement for a transition element.**

a) All are hard and weak metals with low melting point
b) All are hard and strong metals with high melting point
c) All are soft and strong metals with high melting point
d) All are soft and weak metals with low melting point

**Q118. Which of the following tests is used for distinguishing methyl ketones from other ketones?**

a) Silver mirror test
b) Silver nitrate test
c) Iodoform test
d) Lucas test

**Q119. $9.03 \times 10^{23}$ molecules of an ideal gas at STP will have volume of:**

a) 11.2 $dm^3$
b) 22.4 $dm^3$
c) 33.6 $dm^3$
d) 44.8$dm^3$

**Q120. Rate = $k[A]^0[B]$**
**If we double the concentration of A and B, the rate of reaction becomes**:

a) remains the same
b) gets doubled
c) gets tripled
d) gets halved

**Q121. The oxidation number of both nitrogen atoms in $NH_4NO_3$ is/are:**

a) +4 and -4
b) -3 and +5
c) -4 and +6
d) -4 and +5

**Q122. The maximum number of electrons a subshell with azimuthal quantum number ($\ell$) can accommodate is calculated by:**

a) $\ell$ +1
b) $2\ell$ +1
c) $2(2\ell$ +1)
d) $2\ell$ +2

**Q123. In galvanic cell oxidation occurs on:**

a) Cathode
b) Anode
c) Salt bridge
d) Electrolyte

**Q124. The oxidation number of Cl in $HClO_3$ is:**

a) 1-
b) 5-
c) 1+
d) 5+

**Q125. What will be the mass of 0.5 moles of $CaCO_3$?**

a) 50 g
b) 55 g
c) 45 g
d) 60 g

**Q126. Sara dissolved 5 g each of crushed and large sized crystal of copper sulphate in two separate test tubes containing 10 mL water. After 5 minutes of stirring, she observed that the test tube containing crushed copper sulphate had dissolved in water while the test tube containing the large sized crystal still showed undissolved form. The reason for FASTER dissolution is that the crushed copper sulphate:**

a) are more in density.
b) have greater surface area.
c) are low in density
d) have smaller surface area.

**Q127. For a projectile, the angle of projection for maximum horizontal range is:**

a) 22.5°
b) 30°
c) 45°
d) 60°

**Q128. The speed of sound is faster on a rainy day because:**

a) mass of moist air is more than the dry air.
b) density of moist air is less than the dry air.
c) temperature of the medium remains the same.
d) medium of propagation of sound remains the same.

**Q129. Two opposite point charges, each of magnitude Q are separated by a distance s. The electric potential at a point mid-way between them is:**

a) q
b) -kq/s
c) infinity
d) zero

**Q130. A fan rotates uniformly at the rate of 2 rev/s. Its angular velocity in SI units will be:**

a) 2π rev/s
b) 4π rev/min
c) π/2 rad/s
d) 4π rad/s

**Q131. The process of conversion of alternating current into direct current is known as:**

a) modulation.
b) polarisation.
c) rectification.
d) quantisation.

**Q132. If the speed of a standing wave in a string is 2 m/s and its wavelength is 0.25 m, then the frequency of the standing wave will be:**

a) 0.125 Hz.
b) 2.0 Hz.
c) 4.0 Hz.
d) 8.0 Hz.

**Q133. The distance traveled by a wave in unit time is termed as:**

a) Wavelength
b) Amplitude
c) Displacement
d) Wave speed

**Q134. The frequency of a wave having wavelength 0.5m while passing a point with speed of 4 m/s is:**

a) 2 Hz
b) 4 Hz
c) 6 Hz
d) 8 Hz

**Q135. If particles of a slinky spring are moving perpendicularly to the propagation of the waves, then waves in the slinky spring will be:**

a) matter waves
b) electromagnetic waves
c) transverse waves
d) longitudinal waves

**Q136. The quantity measured in J/mol.K is**

a) Specific heat
b) Thermal conductivity
c) Molar specific heat
d) Latent heat

**Q137. When a car is moving with constant acceleration, the shape of velocity time graph is:**

a) Parabola
b) Incline curve
c) Straight line
d) Decline curve

**Q138. Time rate of change of momentum of a body equals the:**

a) Impulse
b) Force
c) Torque
d) Velocity

**Q139. In a displacement-time graph, the slope of the tangent drawn at a specific point on the curve indicates the object's**

a) Average velocity over entire graph
b) Instantaneous velocity at that point
c) Instantaneous velocity at the starting point
d) Instantaneous velocity at the final point

**Q140. Which of the following statements explains by Lenz's law of electromagnetic induction?**

a) The production of induced e.m.f.
b) The magnitude of induced e.m.f.
c) The direction of induced e.m.f.
d) The strength of induced e.m.f.

**Q141. When a particle executes simple harmonic motion, the quantity $4\pi^2f^2$ is equal to** :

a) gl
b) g/l
c) l/g
d) √g/l

**Q142. At a certain time, 50% of a radioactive sample remains undecayed. After 10 seconds, only 12.5% of the sample remains. The half-life of the substance is:**

a) 2.5 s
b) 3.3 s
c) 5 s
d) 10 s

**Q143. A conducting coil with its plane perpendicular to a uniform magnetic field is moved at constant speed in the field region, the induced emf in the coil is:**

a) zero
b) constant
c) increasing
d) decreasing

**Q144. The work done between two points per unit positive charge against the electric field due to a source charge is called as:**

a) Electric Power
b) Electric Potential difference
c) Electric flux
d) Electric field Intensity

**Q145. In the atomic spectrum of neon each line represents:**

a) A different atom
b) A different element
c) A photon with specific energy
d) An atom splitting

**Q146. In a spray bottle, pressing the nozzle causes fast air flow, which:**

a) creates high pressure to lift the liquid
b) creates low pressure to lift the liquid
c) increases pressure at the tube opening
d) reduces liquids surface tension

**Q147. A force of 10 N acts on a body of mass 2 kg. The acceleration produced is:**

a) 5 $m/s^2$
b) 10 $m/s^2$
c) 20 $m/s^2$
d) 0.2 $m/s^2$

**Q148. Two identical masses are placed at heights h and 2h, the ratio of gravitational potential energies will be:**

a) 1:2
b) 2:1
c) equal
d) dependent on mass

**Q149. The scalar product of two parallel vectors is equal to:**

a) Zero
b) Square of the magnitude
c) Product of their magnitude
d) Sum of their magnitude

**Q150. The volume flow rate is equal to:**

a) mv
b) Av
c) Aρ
d) vρ

**Q151. In which process the work is done on the cost of internal energy?**

a) Isochoric process
b) Isobaric process
c) Isothermal process
d) Adiabatic process

**Q152. In an isothermal process internal energy of the system:**

a) Decreases
b) Increases
c) Remain the same
d) Becomes zero

**Q153. A gas expands adiabatically and does 10 J of work then the change in internal energy is:**

a) 10J
b) -10J
c) 20J
d) 0J

**Q154. The equation of continuity Av = constant. The constant shows:**

a) volume of fluid
b) mass the of fluid
c) density the of fluid
d) volume flow rate

**Q155. The quantity that remains constant in an ideal transformer is:**
a) Voltage
b) Current
c) Power
d) Heat

**Q156. First law of thermodynamics states that:**
a) $\Delta Q = \Delta U + \Delta W$
b) $\Delta Q = \Delta U - \Delta W$
c) $\Delta U = \Delta Q + \Delta W$
d) $\Delta W = \Delta U + \Delta Q$

**Q157. A bullet fired from gun pierces a target due to:**
a) Mechanical energy
b) Heat energy
c) Kinetic energy
d) Potential energy

**Q158. If 10 waves pass through a denser medium in 1 second with a speed of 10 m/sec, then the wavelength of the wave will be:**
a) 0.1 m
b) 1 m
c) 10 m
d) 100 m

**Q159. The place where compressions of a sound wave combine with the rarefactions of another sound wave and cancel each other is called a:**
a) dead beat.
b) null point.
c) zero point.
d) node point.

**Q160. What is the reason for the steady current flow in a circuit?**
a) Presence of very large resistance
b) Presence of a constant voltage source in circuit
c) presence of switch in circuit
d) Presence of ammeter in circuit

**Q161. Cobalt-60, a radioisotope, is used in hospitals:**
a) for X-rays image
b) to damage the cancer cells
c) to damage the healthy cells
d) for surgical equipment sterilization

**Q162. What is meant by random nature of radioactive decay of a substance?**
a) We cannot control the decay rate.
b) Probability of decay of every unstable nucleus is constant.
c) We can locate every next decaying nuclei.
d) We can speed up the decay process.

**Q163. He was known for resolving <u>contentious</u> matters. The underlined word in the context means:**
a) Disputed
b) Secretive
c) Unethical
d) Private

**Q164. Identify which type of an adverb is used in the following sentence?**
**"The cat chased the rat everywhere".**
a) adverb of time
b) adverb of manner
c) adverb of frequency
d) adverb of place

**Q165. Which of the following sentences is correctly punctuated?**
a) I love Pakistan!
b) Wow. That's amazing
c) Lets eat. Grandma.
d) He's not coming, is he

**Q166. The captain stood at the head of the table during the meeting. What does "head" most likely mean?**
a) A body part
b) A leader or position of authority
c) The front part of something
d) A senior person

**Q167. What is the correct direct speech form of the sentence: He claimed that he could speak French fluently.**
a) He claimed, "I can speak French fluently."
b) He claimed, "I am speaking French fluently."
c) He claimed, "I speak French fluently."
d) He claimed, "I was speaking French fluently."

**Q168. The student said, "I am taking extra classes so that I can improve my grades before the finals." The most appropriate indirect form of the given sentence is:**

a) The student said that he was taking extra classes so that he can improve his grades before the finals.
b) The student said that he had taken extra classes so that he can improve his grades before the finals.
c) The student said that he had been taking extra classes so that he could improve his grades before the finals.
d) The student said that he was taking extra classes so that he could improve his grades before the finals.

**Q169. What does the sentence "She broke down in front of the audience" imply?**

a) She sang a song.
b) She collapsed emotionally.
c) She left the stage.
d) She performed well.

**Q170. "Mistakes could have been avoided if the instructions had been followed carefully by the workers". The most appropriate active voice of the given sentence is:**

a) The workers could avoid mistakes if they followed the instructions carefully.
b) The workers could have avoided mistakes if they followed the instructions carefully.
c) The workers could have avoided mistakes if they had followed the instructions carefully.
d) The workers avoid mistakes if they follow the instructions carefully.

**Q171. The director _____movie was a blockbuster earned heaps of money.**

a) who's
b) whom
c) whose
d) which

**Q172. What percentage of 90 minutes is 54 seconds?**

a) One percent
b) Six Percent
c) Three percent
d) Ten percent

**Q173. Five boxes - Red, Green, Blue, Yellow, and Black- are stacked one over another with 1 at the bottom and 5 at the top. These boxes are arranged using the following rules:**

1. **Red is above Green**
2. **Yellow is immediately above Black**
3. **Black is not at the bottom**

**If Blue Box is at 4 position, which box is at the position 2?**

a) Red
b) Green
c) Yellow
d) Black

**Q174. What number comes next in the following series:**

**48 45 40 33 24**

a) 11
b) 8
c) 13
d) 1

**Q175. Quantity A: The price of a television when it is on sale at 25% off.**
**Quantity B: The price of that television when its one sale at $25 off.**

a) Quantity A is greater.
b) Quantity B is greater.
c) Quantities A and B are equal.
d) It is impossible to determine which quantity is greater.

**Q176. Find the odd one out.**

a) D : G
b) U : W
c) H : J
d) Q : S

**Q177. X's son is cousin of Y's son. If Y has no brother what is X to Y?**

a) Cousin
b) Nephew
c) Uncle
d) Sister

**Q178. Find the odd one out.**

a) 6 : 35
b) 2 : 15
c) 4 : 25
d) 7 : 45

**Q179. During a chemistry practical class, teacher was briefly out of the class, and the lab safety instructions were ignored. During that time, a student mixed unknown chemicals left from a previous experiment. A strong smell fills the room, and one student starts coughing.**
**To avoid future accidents, from the given options, the most sustainable course of action is to :**

a) cancel all chemistry practicals.
b) rusticate the student involved.
c) strengthen lab safety instructions.
d) penalise the teacher for being absent.

**Q180. A belief is regarded as "true and reasonable", when it is:**

a) Commonly accepted.
b) Matches your feelings.
c) Based on evidence and logic.
d) Found in old texts.

**ROUGH WORK**