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 - B

Candidate Roll No.

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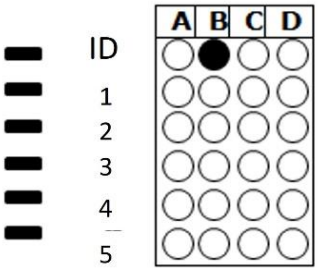
Instructions:

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 'B' then fill the circle corresponding to ID as shown in the diagram below:



BIOLOGY

Q1. 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

Q2. 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

Q3. The major purpose of mastication is to:

a) Make morsel soft
b) Make food moist
c) Increase surface area
d) Improve the taste

Q4. 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

Q5. 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

Q6. In which part of the neuron, Nissl's granules are present?

a) Axoplasm
b) Myelin sheath
c) Dendrite
d) Soma (Cell body)

Q7. 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

Q8. What type of blood cells are primarily and specifically responsible for specific immunity?

a) Erythrocytes
b) Thrombocytes
c) Neutrophils
d) Lymphocytes

Q9. 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

Q10. 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

Q11. 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

Q12. 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

Q13. Which body system is directly responsible for initiating shivering?

a) Respiratory system b) Circulatory system c) Nervous system d) Digestive system

Q14. If enterokinase is absent in small intestine, which digestive enzyme remains inactive?

a) Pepsinogen b) Trypsinogen c) Amylase d) Lipase

Q15. Which of the following neurotransmitters works outside the brain?

a) Dopamine b) Serotonin c) Acetylcholine d) Melatonin

Q16. Fate of ammonia released from amino acid during deamination in liver is:

a) Carbon cycle b) Glycolysis c) Urea cycle d) Kreb's cycle

Q17. Villi contains a lymph capillary called:

a) Microvilli b) Brush border c) Lacteal d) Lymph node

Q18. Translation is:

a) nucleus → mRNA → ribosome
b) nucleus → tRNA → ribosome
c) nucleus → mRNA → ER
d) nucleus → tRNA → ER

Q19. Which nitrogenous waste requires the least amount of water per gram of its excretion?

a) Ammonia b) Urea c) Uric acid d) Creatinine

Q20. 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

Q21. _____ is a repeated protein unit that makes the viral protein coat.

a) Nucleic acid b) Capsomere c) Core d) Envelop

Q22. 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

Q23. This enzyme is used to synthesize cDNA from RNA:

a) Restriction Endonuclease
b) Reverse Transcriptase
c) Ligase
d) Helicase

Q24. Which of the following is ABSENT in Prokaryotic cells:

a) Mitochondria b) Circular DNA c) Ribosomes d) Cell membrane

Q25. In unstimulated stage, a neuron has a membrane potential of:

a) -50mV b) +50mV c) -70mV d) +70mV

Q26. Which of the following diseases is associated with reduced synovial fluid in a joint?

a) Gout b) Arthritis c) Rickets d) Sciatica

Q27. Points on the axon where myelin sheath is not present is called:

a) Nodes of Ranvier b) Schwann cells c) Neuroglia d) Dendron

Q28. _____ can denature enzymes resulting in slow catalysis.

a) Low temperature b) High temperature c) High water content d) Low water content

Q29. Parietal cells of gastric glands are responsible for the secretion of:

a) HCl b) Pepsinogen c) Mucus d) Gastrin

Q30. Pepsinogen is converted into pepsin due to:

a) Low pH b) High pH
c) Optimum temperature d) Freezing temperature

Q31. 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.

Q32. Viruses are classified on the basis of:

a) Color and size only b) Structure and nucleic acid
c) Habitat only d) Temperature tolerance

Q33. 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

Q34. 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

Q35. 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

Q36. Which of the following is responsible for reducing variations in progeny?

a) Meiosis b) Epistasis c) Crossing over d) Gene Linkage

Q37. 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.

Q38. Which blood vessel carries filtered blood away from glomerulus?

a) Renal artery b) Renal vein c) Afferent arteriole d) Efferent arteriole

Q39. Structurally ganglia are clusters of:

a) Complete neurons
b) Cell bodies of neurons
c) Axonal fibers
d) Both axon & dendrites

Q40. 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

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Q41. Which of the following hormones is produced by Corpus Luteum?

a) Leutinizing b) Progesterone c) Testosterone d) Secretin

Q42. 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

Q43. 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

Q44. 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.

Q45. Which chamber of the heart has the thickest muscular tissues?

a) Right atrium b) Right ventricle c) Left atrium d) Left ventricle

Q46. 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

Q47. Testosterone in males is produced by:

a) Interstitial cells of Leydig
b) Sertoli Cells
c) Spermatogonia
d) Primary spermatocytes

Q48. 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

Q49. In human reproduction, a sudden rise in LH causes:

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

Q50. 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

Q51. 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

Q52. Bile salts are helpful in the digestion of:

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

Q53. Exocrine tissue of the pancreas produces an enzyme for carbohydrate digestion known as:

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

Q54. 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

Q55. Chordae tendineae are:

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

Q56. 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

Q57. 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

Q58. 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

Q59. 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′

Q60. 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

Q61. 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

Q62. 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

Q63. Which part of the brain controls heart rate and breathing?

a) Cerebellum
b) Hypothalamus
c) Medulla oblongata
d) Cerebrum

Q64. 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

Q65. 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%

Q66. In human respiratory system, bronchioles have:

a) Cartilage rings
b) Cartilage plates
c) Circular smooth muscles
d) Longitudinal smooth muscles

Q67. 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

Q68. 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

Q69. 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

Q70. 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

Q71. 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

Q72. HIV stands for:

a) Human Immunodeficiency Virus
b) Human Internal Virus
c) High Impact Virus
d) Human Immunogenic Vaccine

Q73. The part of digestive system which is NOT directly involved in digestion is:

a) Mouth
b) Oesophagus
c) Stomach
d) Small intestine

Q74. Pacinian corpuscles are present in the:

a) Retina
b) Lungs
c) Liver
d) Skin

Q75. The receptors for hearing and equilibrium are the example of:

a) Mechanoreceptors
b) Thermoreceptors
c) Nociceptors
d) Photoreceptors

Q76. Receptors that detect smell of food are:

a) Chemoreceptors
b) Mechanoreceptors
c) Nociceptors
d) Photoreceptors

Q77. The most abundant voluntary muscles in human body are:

a) Cardiac
b) Skeletal
c) Smooth
d) Smooth & Cardiac

Q78. mRNA forms _____ % of the total RNA in the cell

a) 3-4%
b) 4-5%
c) 5-6%
d) 6-7%

Q79. The inner layer of stomach whose glands secrete digestive enzymes, HCl and mucus is known as:

a) submucosa
b) mucosa
c) muscularis
d) serosa

Q80. 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

Q81. 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

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CHEMISTRY

Q82. If actual yield and theoretical yield are 20g and 25g respectively, what will be the % yield?

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

Q83. 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

Q84. 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

Q85. 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

Q86. Grignard's reagent is treated with methanal to produce:

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

Q87. Probability of finding an electron is maximum in:

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

Q88. All alkynes give ketones on hydration EXCEPT:

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

Q89. Benzene is stable because of:

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

Q90. The value of lattice energy across the period in the periodic table:

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

Q91. Primary alcohol can be converted into carboxylic acid by:

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

Q92. 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

Q93. 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

Q94. 9.03×10^{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

Q95. 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

Q96. 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

Q97. The maximum number of electrons a subshell with azimuthal quantum number (ℓ) can accommodate is calculated by:

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

Q98. In galvanic cell oxidation occurs on:

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

Q99. The oxidation number of Cl in $HClO_3$ is:

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

Q100. What will be the mass of 0.5 moles of $CaCO_3$?

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

Q101. 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.

Q102. Which type of isomerism is exhibited by 2-Butene?

a) Tautomerism b) Geometric isomerism
c) Functional group isomerism d) Metamerism

Q103. 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.

Q104. 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

Q105. The solubility of AgBr is 7.1×10^{-7} M. This dissolved AgBr produces equal moles of Ag^+ and Br^-, then the solubility product of this equilibrium reaction would be:

a) 5.041×10^{-13} b) $4.941 \times 10^{+13}$ c) 7.1×10^{-7} d) 14.082×10^{-14}

Q106. What is the solvent in an aqueous solution of methanol?

a) HCl b) Water c) Methanol d) NaOH

Q107. Which one of the following is the best example of an amorphous solid?

a) Diamond b) Glass c) Sodium chloride d) Potassium Bromide

Q108. The starting material for the preparation of PVC is:

a) Ethylene b) Acetylene c) Vinyl alcohol d) Methylene

Q109. Acetic acid is converted into acetyl chloride using which reagent?

a) thionyl chloride b) chlorine
c) sodium chloride d) phosphorous trioxide

Q110. 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) $CH_3CH_2CH_2CH(OH)CH_2(OH)$

Q111. At a constant temperature and pressure, a 2.0 L container holds 0.5 moles of Nitrogen gas (N_2). 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

Q112. 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

Q113. How many unpaired electrons are there in Fe^{++} (Z=26)?

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

Q114. 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

Q115. 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

Q116. 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

Q117. 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

Q118. The reaction between ethyl chloride and dry silver oxide on heating yields:

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

Q119. Phenol gives which colored precipitate with aqueous Br_2?

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

Q120. Pfund Series of spectral lines are produced forming the spectrum of hydrogen atom when electron jumps down to _____ orbit.

a) 2nd b) 3rd c) 4th d) 5th

Q121. The electronic configuration of H^- is:

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

Q122. Carboxylic acid can be formed by reaction of Grignard reagent with:

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

Q123. 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

Q124. 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

Q125. 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.

Q126. 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 %

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PHYSICS

Q127. 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

Q128. 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

Q129. 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

Q130. 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

Q131. 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

Q132. 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

Q133. 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

Q134. The volume flow rate is equal to:

a) mv b) Av c) Aρ d) vρ

Q135. 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

Q136. In an isothermal process internal energy of the system:

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

Q137. 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

Q138. 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

Q139. The quantity that remains constant in an ideal transformer is:

a) Voltage b) Current c) Power d) Heat

Q140. 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) $\Delta W = \Delta U + \Delta Q$

Q141. A bullet fired from gun pierces a target due to:

a) Mechanical energy b) Heat energy c) Kinetic energy d) Potential energy

Q142. 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

Q143. 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.

Q144. 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

Q145. 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

Q146. 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.

Q147. For a projectile, the angle of projection for maximum horizontal range is:

a) 22.5^o b) 30^o c) 45^o d) 60^o

Q148. 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.

Q149. 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

Q150. 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

Q151. The process of conversion of alternating current into direct current is known as:

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

Q152. 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.

Q153. The distance traveled by a wave in unit time is termed as:

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

Q154. 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

Q155. 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

Q156. The quantity measured in J/mol.K is

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

Q157. 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

Q158. Time rate of change of momentum of a body equals the:

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

Q159. 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

Q160. 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.

Q161. 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

Q162. 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

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ENGLISH

Q163. 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.

Q164. 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.

Q165. “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.

Q166. 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

Q167. He was known for resolving <u>contentious</u> matters. The underlined word in the context means:

a) Disputed
b) Secretive
c) Unethical
d) Private

Q168. The director _____ movie was a blockbuster earned heaps of money.

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

Q169. 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

Q170. 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

Q171. 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."

LOGICAL REASONING

Q172. 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

Q173. What number comes next in the following series: 48 45 40 33 24

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

Q174. 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.

Q175. 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

Q176. What percentage of 90 minutes is 54 seconds?

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

Q177. 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.

Q178. 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.

Q179. Find the odd one out.

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

Q180. Find the odd one out.

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

SOLVED PAPER UHS MDCAT-2026 (Paper ID-B) — Answer Key with Reasons

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Q#	Ans	Reason
BIOLOGY (Q1 – Q81)		
1	**a**	Peristalsis in the gut wall is produced by involuntary smooth muscles.
2	**c**	Watson–Crick B-DNA has 10 base pairs per 3.4 nm turn.
3	**c**	Chewing breaks food into small pieces, increasing surface area for enzymes.
4	**d**	FSH stimulates growth and development of primary ovarian follicles.
5	**b**	Sensory neurons carry impulses towards CNS through a single long dendron.
6	**d**	Nissl's granules (rough ER clusters) lie in the cell body/soma.
7	**c**	Cerebellum coordinates muscular activity, smooth motion and body posture/balance.
8	**d**	Lymphocytes (B & T cells) provide specific immunity.
9	**b**	Competitive inhibitor competes for active site; excess substrate out-competes it.
10	**b**	Sperm is haploid (n = 8), so somatic cell is diploid 2n = 16.
11	**b**	Golgi apparatus modifies, packages and dispatches cell products.
12	**c**	Better-adapted organisms survive and reproduce more — natural selection.
13	**c**	Hypothalamus (nervous system) triggers shivering when body cools.
14	**b**	Enterokinase activates trypsinogen into trypsin.
15	**c**	Acetylcholine acts at neuromuscular junctions and autonomic ganglia (PNS).
16	**c**	Liver converts toxic ammonia into urea through the ornithine/urea cycle.
17	**c**	Lacteal is the central lymph capillary of a villus that absorbs fats.
18	**a**	mRNA carries code from nucleus to ribosome, where it is translated.
19	**c**	Uric acid is nearly insoluble, so it is excreted with least water.
20	**d**	Most kidney stones are calcium oxalate/phosphate from high blood calcium.
21	**b**	Capsomeres are protein subunits that make up the capsid.
22	**b**	Father gives his X (carrying gene) only to daughters; sons get his Y.
23	**b**	Reverse transcriptase makes complementary DNA from an RNA template.
24	**a**	Prokaryotes lack membrane-bound organelles such as mitochondria.
25	**c**	Resting membrane potential of a neuron is about −70 mV.
26	**b**	Arthritis involves joint inflammation with reduced synovial fluid.
27	**a**	Gaps in myelin sheath along the axon are nodes of Ranvier.
28	**b**	High temperature breaks bonds of enzyme and denatures it.
29	**a**	Parietal (oxyntic) cells secrete HCl; chief cells secrete pepsinogen.
30	**a**	HCl (low pH) converts inactive pepsinogen into active pepsin.
31	**b**	Mitochondria produce ATP by aerobic respiration (powerhouse of cell).
32	**b**	Viruses are classified by structure, capsid symmetry and type of nucleic acid.
33	**b**	Linked genes lie on the same chromosome and tend to be inherited together.
34	**c**	Prokaryotic ribosomes are 70S; eukaryotic cytoplasmic ribosomes are 80S.
35	**d**	Peritubular capillaries take back reabsorbed useful substances into blood.
36	**d**	Linked genes are inherited together, reducing new combinations/variation.
37	**c**	Reflex arc: receptor → sensory neuron → CNS → motor neuron → effector.
38	**d**	Efferent arteriole carries blood out of the glomerulus.
39	**b**	Ganglia are clusters of neuron cell bodies outside the CNS.

Q#	Ans	Reason
40	**c**	Impulse makes sarcoplasmic reticulum release stored Ca^{2+} into cytosol.
41	**b**	Corpus luteum secretes progesterone (and some estrogen).
42	**c**	Glomerular filtrate has glucose, salts, urea and water; proteins too large.
43	**b**	B lymphocytes become plasma cells that produce antibodies.
44	**b**	Lymph nodes filter lymph and are sites of lymphocyte proliferation.
45	**d**	Left ventricle pumps blood to whole body, so has thickest wall.
46	**b**	Colon (large intestine) mainly absorbs water and salts.
47	**a**	Interstitial cells of Leydig in testes secrete testosterone.
48	**c**	Lymphatic system filters and destroys germs/toxins in lymph nodes.
49	**b**	LH surge at mid-cycle triggers ovulation.
50	**b**	Krebs cycle mainly yields reduced coenzymes NADH and $FADH_2$ (plus CO_2).
51	**d**	Pulmonary semilunar valve stops backflow from pulmonary trunk into right ventricle.
52	**b**	Bile salts emulsify fats (fatty acids/lipids) for digestion.
53	**d**	Pancreatic amylase digests starch.
54	**b**	Acidic chyme entering duodenum stimulates secretin release.
55	**b**	Chordae tendineae are fibrous cords anchoring AV valve cusps.
56	**c**	Rr × Rr gives 3 round : 1 wrinkled (75% : 25%).
57	**a**	ER forms channels for transport of proteins within the cell.
58	**b**	Memory cells give a faster, stronger secondary response — immunological memory.
59	**b**	Coding strand = mRNA sequence with T in place of U, written 5′→3′.
60	**d**	Over-production/struggle for existence is Darwin's idea, not Lamarck's.
61	**c**	At saturation all enzymes are busy; only more enzyme raises the rate.
62	**b**	Subunits in quaternary structure held by hydrophobic interactions (and others).
63	**c**	Medulla oblongata has cardiac and respiratory centres.
64	**a**	At rest tropomyosin covers binding sites on actin for myosin heads.
65	**c**	F2 = 1GG : 2Gg : 1gg; homozygotes (GG + gg) = 50%.
66	**c**	Bronchioles lack cartilage; their walls have circular smooth muscle.
67	**a**	Hyaline cartilage is found in ribs (costal), nose and trachea.
68	**d**	Without corpus luteum, progesterone falls and endometrium cannot hold the embryo.
69	**b**	Hepatic portal vein carries absorbed food from intestine to liver.
70	**c**	Alleles separate when homologous chromosomes separate in meiosis.
71	**a**	Crossing over between linked genes produces recombinant (non-parental) types.
72	**a**	HIV = Human Immunodeficiency Virus.
73	**b**	Oesophagus only conducts food by peristalsis; no digestion occurs.
74	**d**	Pacinian corpuscles are pressure receptors in the deep skin (dermis).
75	**a**	Hair cells of ear respond to mechanical vibration/movement.
76	**a**	Olfactory receptors respond to chemicals — chemoreceptors.
77	**b**	Skeletal muscles are voluntary and most abundant in the body.
78	**a**	mRNA forms about 3–4% of total cellular RNA.
79	**b**	Mucosa is the innermost layer containing gastric glands.
80	**c**	Lamarck called these acquired characters.
81	**b**	Bone matrix is hardened by calcium phosphate (hydroxyapatite) salts.
CHEMISTRY (Q82 – Q126)		
82	**c**	% yield = 20/25 × 100 = 80%.
83	**d**	$V \propto nT/P = (2 \times 2)/(½) = 8$ times — octupled.

Q#	Ans	Reason
84	**a**	E_1 is unimolecular; rate = k[R-X] only.
85	**d**	New rate = $2 \times 2^2 = 8$ times — octupled.
86	**b**	RMgX + HCHO then hydrolysis gives primary alcohol.
87	**b**	An orbital is the region of maximum probability of finding electron.
88	**a**	Acetylene hydrates to acetaldehyde (an aldehyde), not a ketone.
89	**b**	Delocalised π electrons (resonance) make benzene stable.
90	**a**	Across a period ionic charge increases and size decreases, so lattice energy rises.
91	**d**	Acidified $K_2Cr_2O_7$ oxidises 1° alcohol → aldehyde → carboxylic acid.
92	**b**	Transition metals are hard, strong with high melting points (metallic bonding with d-electrons).
93	**c**	Methyl ketones (CH_3CO–) give yellow CHI_3 in iodoform test.
94	**c**	$9.03\times10^{23} = 1.5$ mol; $1.5 \times 22.4 = 33.6$ dm^3.
95	**b**	Zero order in A, first order in B — doubling B doubles the rate.
96	**b**	N in NH_4^+ is −3; N in NO_3^- is +5.
97	**c**	Subshell has $(2\ell+1)$ orbitals, each holding 2 electrons.
98	**b**	Oxidation always occurs at the anode.
99	**d**	$+1 + x + 3(-2) = 0 \rightarrow x = +5$.
100	**a**	Molar mass of $CaCO_3$ = 100 g/mol; $0.5 \times 100 = 50$ g.
101	**b**	Crushed crystals expose greater surface area to solvent.
102	**b**	2-Butene shows cis-trans (geometric) isomerism due to C=C.
103	**a**	Hexamethylenediamine and adipic acid each contain 6 carbon atoms.
104	**b**	Ionic solid conducts only when molten; molecular solid never conducts.
105	**a**	$K_{sp} = s^2 = (7.1\times10^{-7})^2 = 5.041\times10^{-13}$.
106	**b**	In aqueous solution, water is the solvent.
107	**b**	Glass has no long-range order — amorphous solid.
108	**b**	Acetylene + HCl gives vinyl chloride, which polymerises to PVC.
109	**a**	$SOCl_2$ converts –COOH to –COCl (by-products SO_2, HCl are gases).
110	**d**	$NaBH_4$ reduces both CHO and C=O, giving pentane-1,2-diol.
111	**c**	$V \propto n$ at constant T, P: $2.0 \text{ L} \times (1.5/0.5) = 6.0$ L.
112	**d**	$R = 62.364$ $dm^3 \cdot torr \cdot K^{-1} \cdot mol^{-1}$.
113	**b**	Fe^{2+} = [Ar]$3d^6$, giving 4 unpaired electrons.
114	**c**	Z = 27 is cobalt, [Ar]$3d^7 4s^2$, a d-block element.
115	**c**	Cyclic process $\Delta E = 0$, so net work by system = 1200 − 700 = 500 J.
116	**c**	P^{3-} has 18 electrons with least nuclear charge, so largest ion.
117	**d**	Non-polar noble gas atoms are held by London dispersion forces.
118	**b**	$2\ C_2H_5Cl + Ag_2O$ (dry, heat) → C_2H_5–O–$C_2H_5 + 2AgCl$.
119	**b**	Phenol gives white ppt of 2,4,6-tribromophenol.
120	**d**	Pfund series: electron falls to n = 5 orbit (infrared).
121	**c**	H^- has 2 electrons: $1s^2$.
122	**b**	RMgX + CO_2 then acid hydrolysis gives carboxylic acid.
123	**a**	n = 4 and l = 0 means 4s orbital.
124	**c**	Real gases behave ideally at high temperature and low pressure.
125	**b**	Crystalline solids have long-range regular repeating 3D arrangement.
126	**c**	Theoretical CaO = $0.25 \times 56 = 14$ g; $12/14 \times 100 \approx 86\%$.
PHYSICS (Q127 – Q162)		
127	**a**	Coil within uniform field has no change in flux, so emf = 0.

Q#	Ans	Reason
128	**b**	Work done per unit positive charge between two points = potential difference.
129	**c**	Each spectral line is a photon of definite energy (electron transition).
130	**b**	Fast air reduces pressure (Bernoulli), liquid is pushed up the tube.
131	**a**	$a = F/m = 10/2 = 5\ m/s^2$.
132	**a**	P.E. = mgh, so ratio = h : 2h = 1 : 2.
133	**c**	$A \cdot B = AB\cos0° = AB$, product of magnitudes.
134	**b**	Volume flow rate = Av (area × speed).
135	**d**	In adiabatic process Q = 0, so work done comes from internal energy.
136	**c**	Temperature constant, so internal energy stays the same.
137	**b**	$Q = 0$, $\Delta U = -W = -10$ J.
138	**d**	Av is volume of fluid passing per second — volume flow rate.
139	**c**	Ideal transformer: input power = output power ($V_pI_p = V_sI_s$).
140	**a**	Heat supplied = increase in internal energy + work done by system.
141	**c**	Moving bullet possesses kinetic energy that does the work.
142	**b**	$f = 10$ Hz, $\lambda = v/f = 10/10 = 1$ m.
143	**d**	Destructive interference points of zero amplitude are nodes.
144	**b**	A constant emf source maintains steady potential difference and current.
145	**b**	Co-60 gamma rays are used in radiotherapy to destroy cancer cells.
146	**b**	Each unstable nucleus has a constant probability of decay per unit time.
147	**c**	$R = v^2\sin2\theta/g$ is maximum when $2\theta = 90°$, $\theta = 45°$.
148	**b**	Moist air is less dense than dry air, so sound travels faster.
149	**d**	$V = kQ/r - kQ/r = 0$ at the midpoint.
150	**d**	$\omega = 2\pi f = 2\pi \times 2 = 4\pi$ rad/s.
151	**c**	Converting AC into DC is rectification (diodes).
152	**d**	$f = v/\lambda = 2/0.25 = 8$ Hz.
153	**d**	Distance covered by a wave per unit time is wave speed.
154	**d**	$f = v/\lambda = 4/0.5 = 8$ Hz.
155	**c**	Particle vibration perpendicular to propagation gives transverse waves.
156	**c**	Molar specific heat has unit J mol^{-1} K^{-1}.
157	**c**	Constant acceleration gives a straight-line v–t graph.
158	**b**	Newton's 2nd law: $F = \Delta p/\Delta t$.
159	**b**	Slope of tangent on s–t graph gives instantaneous velocity at that point.
160	**c**	Lenz's law gives the direction of induced emf (opposes change).
161	**b**	$\omega^2 = (2\pi f)^2 = g/l$ for a simple pendulum.
162	**c**	50% → 25% → 12.5% is 2 half-lives in 10 s, so $T_{½} = 5$ s.
ENGLISH (Q163 – Q171)		
163	**d**	Reported: am taking → was taking, can → could.
164	**b**	"Broke down" means lost emotional control.
165	**c**	3rd conditional active: could have avoided … if they had followed.
166	**d**	"Everywhere" tells where — adverb of place.
167	**a**	Contentious means causing dispute/controversy — disputed.
168	**c**	"Whose" shows possession: the director whose movie …
169	**a**	Exclamatory sentence correctly ends with an exclamation mark.
170	**b**	Head of the table is the seat of the leader — position of authority.
171	**a**	Reported "could" returns to "can"; he → I.

Q#	Ans	Reason
LOGICAL REASONING (Q172 – Q180)		
172	**d**	Their sons are cousins so X and Y are siblings; Y has no brother, X is sister.
173	**c**	Differences −3, −5, −7, −9, next −11: 24 − 11 = 13.
174	**d**	Depends on actual price (25% of price vs $25) — cannot be determined.
175	**d**	Black-Yellow pair must be 2–3 (Blue at 4), so position 2 is Black.
176	**a**	54 s ÷ 5400 s × 100 = 1%.
177	**c**	A belief is reasonable when based on evidence and logic.
178	**c**	Improving safety rules prevents accidents without stopping learning.
179	**d**	Pattern a : 5(a+1) → 7 : 40 expected, so 7 : 45 is odd.
180	**a**	D:G has gap of 3 letters; others have gap of 2.

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