PMDC MDCAT — GUESS PAPER 2027 · Predicted Questions

Body: Pakistan Medical & Dental Council (PMDC, all boards) · **Post:** MDCAT (Medical & Dental College Admission Test) · **Questions:** 200 predicted — 20 repeated questions, 160 verified facts predicted to recur, 20 syllabus anchors · **Price:** Free

GUESS PAPER — predicted questions for the next sitting, MDCAT 2027, NOT a past paper. Every question below is a prediction: it is here because the same question, the same fact, or the same topic appeared in verified MDCAT (PMDC, all boards) past papers (2020–2026). **No pass guarantee.** A guess paper raises the odds; it does not promise a result. Answers are the best-supported answers, not exam keys.
Flag — next sitting: the archive already holds five 2026 sittings (UHS, KMU, SZABMU, BUMHS, NUMS 2026), so this paper predicts the NEXT sitting, MDCAT 2027, built on the current (Format C) pattern. DUHS MDCAT 2022 (37adc) is now included in the family (24 papers): its 5-option items are used as 4-option questions (option E dropped; the 42 E-answer items are excluded from the bank).

> **How to use this paper:** study the basis under each question, not just the answer — the real paper will ask the same topics in different words. Revise the underlying topic, not only the four options. Do not quote any item as "asked in the 2027 exam" — nothing here has been asked yet.

Question 1 Biology

Select an example of fibrous protein:

- A. Collagen ✓ **Predicted answer**
- B. Hemoglobin
- C. Hormones
- D. Enzymes

swer? A long, rope-like structural fibrous protein of connective tissue; correct.

Why predicted [A] — Repeated question: repeated — 37m Q39 and 37o Q67 and 37s Q54 and 37s Q106 and 37t Q36 and 37u Q73 and 37yx Q76 and 37yx Q89 all key Collagen. Also asked as: 37o Q67: “Which of the following protein establishes the matrix of bone and cartilage?”; 37s Q54: “Protein present in connective tissues of human body is:”; 37s Q106: “Which protein is present in the walls of alveoli?”; 37t Q36: “Which of the following is NOT a globular protein?”; 37u Q73: “Which of the following is not a globular protein?”; 37yx Q76: “Protein in walls of alveoli:”; 37yx Q89: “Protein establishing matrix of bone and cartilage:”

Question 2 Biology

Which organelle will increase in number, in muscles of athlete?

- A. Lysosome
- B. Mitochondria ✓ **Predicted answer**
- C. Ribosome
- D. Golgi apparatus

Why this answer? correct: athletic training raises the muscles' demand for aerobic energy, so muscle cells produce more mitochondria.

Why predicted [A] — Repeated question: repeated — 37adb Q21 and 37j Q49 and 37x Q3 and 37za Q10 and 37zb Q16 all key Mitochondria. Also asked as: 37j Q49: “Which cytoplasmic organelle make their own proteins?”; 37x Q3: “The enzyme ATP synthase is located on the mem-brane of the organelle:”; 37za 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:”; 37zb Q16: “Which one of the following is a self-replicating organelle?”

Question 3 Biology

Microscopic gap between the two neurons is called:

aptic knob

- B. Synapsis
- C. Synapse ✓ **Predicted answer**
- D. Collapse

Why this answer? The junction/gap across which one neuron signals the next; correct.

Why predicted [A] — Repeated question: repeated — 37m Q12 and 37o Q64 and 37t Q19 and 37y Q113 and 37yx Q86 all key Synapse. Also asked as: 37o Q64: “The junction between two neurons is:”; 37t Q19: “The junction between two consecutive neurons where information is transmitted from one neuron to the next is called:”; 37y Q113: “___ is a junction between two neurons or between a motor neuron and a muscle cell”; 37yx Q86: “Junction between two neurons:”

Question 4 Biology

The cells which play very important role in developing immunity are:

- A. Thrombocytes
- B. Monocytes
- C. Neutrophils
- D. Lymphocytes ✓ **Predicted answer**

Why this answer? B cells produce antibodies and T cells mediate cell-mediated immunity and memory — the cells of specific, adaptive immunity; correct.

Why predicted [A] — Repeated question: repeated — 37o Q56 and 37y Q173 and 37yx Q79 and 37yz Q128 and 37za Q68 all key Lymphocytes. Also asked as: 37y Q173: “The cells which play very important in developing immunity are”; 37yx Q79: “Cells most important for immunity:”; 37yz Q128: “The cells which play very important role developing immunity are:”; 37za Q68: “What type of blood cells are primarily and specifically responsible for specific immunity?”

5 Biology

According to Darwin theory, the main reason of evolution is:

- A. Natural selection ✓ **Predicted answer**
- B. Use and disuse of an organ
- C. Inheritance of acquired character
- D. Natural calamity

Why this answer? correct: Darwin's theory explains evolution by natural selection of favourable variations.

Why predicted [A] — Repeated question: repeated — 37aay Q31 and 37u Q55 and 37u Q75 and 37zb Q33 all key Natural selection. Also asked as: 37u Q55: “Name the idea of Darwin that best explains the ability of populations to reproduce those individuals who possess beneficial traits.”; 37u Q75: “According to Darwin, the main force behind evolution is:”; 37zb Q33: “A population of rabbits shows variation in fur colour. During snowy winters, white rabbits are less visible to predators and survive in greater numbers than brown rabbits. According to Darwin, this is an example of:”

Question 6 Biology

Which of the following hormone is responsible for the active uptake of sodium in the ascending limb?

- A. ADH
- B. Aldosterone ✓ **Predicted answer**
- C. Oestrogen
- D. Testosterone

Why this answer? correct: aldosterone is responsible for the active uptake of sodium in the ascending limb and distal parts of the nephron.

Why predicted [A] — Repeated question: repeated — 37aaz Q44 and 37t Q7 and 37y Q105 and 37yz Q139 all key Aldosterone. Also asked as: 37t Q7: “The sodium potassium

e distal convoluted tubule are activated by:"; 37y Q105: "The active uptake of sodium in the ascending limb or thick loop of henle is promoted by the action of"; 37yz Q139: "The uptake of sodium in the ascending limb of loop of Henle is controlled by:"

Question 7 Biology

The organs perform same functions in different groups of organism but are different in this internal structure called as:

- A. Homologous organs
- B. Bisymmetry
- C. Analogous organs ✓ **Predicted answer**
- D. Radial symmetry

Why this answer? correct: analogous organs perform the same function in different groups but differ in internal structure.

Why predicted [A] — Repeated question: repeated — 37adc Q41 and 37o Q52 and 37y Q149 and 37yx Q58 all key Analogous organs. Also asked as: 37o Q52: "The organs which are similar in function but differ in structure are called:"; 37y Q149: "The organs which are similar but differ in structure are called"; 37yx Q58: "Similar in function but different in structure — organs called:"

Question 8 Biology

A hormone that plays a major role in social bonding, childbirth, milk ejection and sexual reproduction is:

- A. Prolactin
- B. Secretin
- C. Estrogen
- D. Oxytocin ✓ **Predicted answer**

Why this answer? Uterine contractions, milk ejection, pair/social bonding; correct.

ed [A] — Repeated question: repeated — 37m2 Q24 and 37o Q41 and 37p Q49 and 37yx Q48 all key Oxytocin. Also asked as: 37o Q41: “Which hormone induces labour pains?”; 37p Q49: “Which one of the following hormone is responsible for the labor pains in human female at the time of birth of baby?”; 37yx Q48: “Which hormone induces labour pains?”

Question 9 Biology

Which hormone is chemically a steroid?

- A. Cortisone ✓ **Predicted answer**
- B. Insulin
- C. ADH
- D. Thyroxin

Why this answer? A glucocorticoid steroid hormone derived from cholesterol, with the four-ring steroid structure; correct.

Why predicted [A] — Repeated question: repeated — 37o Q65 and 37x Q45 and 37yx Q87 and 37yz Q167 all key Cortisone. Also asked as: 37x Q45: “Which is a steroid hormone?”; 37yx Q87: “Chemically a steroid hormone:”; 37yz Q167: “Which hormone is chemically a steroid?”

Question 10 Biology

Enzymes are:

- A. Carbohydrates
- B. Proteins ✓ **Predicted answer**
- C. Lipids
- D. Can be lipids or proteins

Why this answer? correct: enzymes are proteins (with a few RNA exceptions).

Why predicted [A] — Repeated question: repeated — 37aax Q25 and 37aaz Q49 and 37r

roteins. Also asked as: 37aaz Q49: "Which of the following biological molecules are abundantly present in the membranes, ribosomes, cytoskeleton and enzymes of the cell?"; 37r Q33: "Enzymes belong to which class of biomolecules?"

Question 11 Biology

Endorphins are produced in:

- A. Stomach
- B. Thymus
- C. Brain ✓ **Predicted answer**
- D. Adrenal gland

Why this answer? Correct: endorphins are natural pain-relieving peptides produced in the brain (and pituitary).

Why predicted [B] — Verified fact, predicted to recur: 37yx Q51 (VERIFIED) — Brain.

Question 12 Biology

Cell death due to tissue damage is called:

- A. Cancer
- B. Metastasis
- C. Apoptosis
- D. Necrosis ✓ **Predicted answer**

Why this answer? correct: cell death due to tissue damage (injury) is called necrosis.

Why predicted [B] — Verified fact, predicted to recur: 37aax Q1 (VERIFIED) — Necrosis.

Question 13 Biology

How does chemosynthesis differ from photosynthesis?

- A. Source of energy ✓ **Predicted answer**

- C. Reduction of CO_2
- D. Carried out by bacteria

Why this answer? Correct: photosynthesis uses light energy, while chemosynthesis uses chemical energy from the oxidation of inorganic compounds — the energy source is the real difference.

Why predicted [B] — Verified fact, predicted to recur: 37yz Q190 (VERIFIED) — Source of energy.

Question 14 Biology

Regarding structure of human heart chordae tendinea are present in

- A. Pulmonary valvea [sic — "valves"]
- B. Ventricles ✓ **Predicted answer**
- C. Aortic valve
- D. Atria

Why this answer? Correct: chordae tendineae run from the papillary muscles of the ventricles to the mitral/tricuspid valve leaflets, preventing prolapse during ventricular contraction.

Why predicted [B] — Verified fact, predicted to recur: 37y Q171 (VERIFIED) — Ventricles.

Question 15 Biology

Where does the trachea lie in relation to the esophagus?

- A. Lateral
- B. Dorsal
- C. Ventral ✓ **Predicted answer**
- D. Medial

swer? correct. the trachea lies ventral (in front of) the oesophagus.

Why predicted [B] — Verified fact, predicted to recur: 37aax Q50 (VERIFIED) — Ventral.

Question 16 Biology

Cell membrane also contains _____ through which the movement of materials takes place by active and passive transport:

- A. Charged pores
- B. Carbohydrates
- C. Lipids
- D. Carrier proteins ✓ **Predicted answer**

Why this answer? Carrier proteins bind a substance on one side, change shape, and release it on the other; they mediate BOTH facilitated diffusion (passive) and active transport (pumps use ATP to move substances against their gradient) — the only option covering both mechanisms named in the stem; correct.

Why predicted [B] — Verified fact, predicted to recur: 37o Q89 (VERIFIED) — Carrier proteins.

Question 17 Biology

Which of the following carbohydrates are sweetest among all?

- A. Monosaccharides ✓ **Predicted answer**
- B. Disaccharides
- C. Oligosaccharides
- D. Polysaccharides

Why this answer? Simple sugars; fructose, a monosaccharide, is the sweetest common sugar, and as a class monosaccharides taste sweeter than larger carbohydrates; correct.

Why predicted [B] — Verified fact, predicted to recur: 37m Q45 (VERIFIED) —

Question 18 Biology

The function of papillary is to:

- A. Move blood from semilunar valve into pulmonary vein.
- B. Prevent the backward flow of blood from the ventricle. ✓ **Predicted answer**
- C. Push the blood from right atrium to left atrium
- D. Push the blood from left atrium to aorta

Why this answer? Correct: the papillary muscles hold the atrioventricular valves shut during ventricular contraction, preventing blood from flowing back into the atria.

Why predicted [B] — Verified fact, predicted to recur: 37yz Q122 (VERIFIED) — Prevent the backward flow of blood from the ventricle.

Question 19 Biology

Which is correct for pattern baldness?

- A. Heterozygous female is affected
- B. It is sex linked trait
- C. Occurs due to hormonal differences between sexes ✓ **Predicted answer**
- D. Heterozygous male is normal

Why this answer? Androgen (DHT) sensitivity drives follicle miniaturisation, and the trait is expressed far more in males because of their androgen levels; correct.

Why predicted [B] — Verified fact, predicted to recur: 37w Q47 (VERIFIED) — Occurs due to hormonal differences between sexes.

Question 20 Biology

A patient with pancreatic insufficiency shows reduced activity of an enzyme that

the first peptide bond at the carboxyl end of proteins and peptides. Which enzyme is deficient?

- A. Collagenase
- B. Elastase
- C. Pepsin
- D. Carboxypeptidase ✓ **Predicted answer**

Why this answer? A pancreatic exopeptidase that removes amino acids one by one from the carboxyl (C-terminal) end; correct.

Why predicted [B] — Verified fact, predicted to recur: 37t Q110 (VERIFIED) — Carboxypeptidase.

Question 21 Biology

Most enzyme have an optimum temperature of around:

- A. 40 O C ✓ **Predicted answer**
- B. 50 O C
- C. 20 O C
- D. 30 O C

Why this answer? The keyed textbook figure (optimum quoted as ≈35–40 °C for human enzymes); closest listed value above body temperature 37 °C. Flagged because the physiological optimum is 37 °C itself, which is not offered, so the answer rests on the textbook's rounded convention.

Why predicted [B] — Verified fact, predicted to recur: 37m Q19 (VERIFIED) — 40 O C.

Question 22 Biology

Which of the following is NOT related to DNA?

- A. Thymine

cil ✓ **Predicted answer**

- C. Guanine
- D. Adenine

Why this answer? Uracil replaces thymine in RNA and is not found in DNA; correct.

Why predicted [B] — Verified fact, predicted to recur: 37u Q16 (VERIFIED) — Uracil.

Question 23 Biology

If green is a dominant and yellow is a recessive trait, then what percentage of the F_2 generation will be homozygous recessive?

- A. 75%
- B. 0%
- C. 25% ✓ **Predicted answer**
- D. 50%

Why this answer? correct: for a cross between heterozygous F_1 parents, the genotypes appear in a 1:2:1 ratio (GG : Gg : gg), so one of four offspring — 25% — is homozygous recessive.

Why predicted [B] — Verified fact, predicted to recur: 37zb Q47 (VERIFIED) — 25%.

Question 24 Biology

In breastfeeding mothers, which hormone would be at an increased level?

- A. Thyroxin
- B. Aldosterone
- C. Insulin
- D. Prolactin ✓ **Predicted answer**

Why this answer? correct: prolactin is increased in breastfeeding mothers; it stimulates milk production.

ed [B] — Verified fact, predicted to recur: 37aax Q18 (VERIFIED) — Prolactin.

Question 25 Biology

When fat molecule is hydrolyzed for energy, the end products will be:

- A. Glycerol and fatty acids ✓ **Predicted answer**
- B. Fatty acids and amino acids
- C. Glycerol and nitrogenous bases
- D. Amino acids and glycerol

Why this answer? correct: hydrolysing a fat (triglyceride) yields one glycerol and three fatty acids.

Why predicted [B] — Verified fact, predicted to recur: 37aay Q11 (VERIFIED) — Glycerol and fatty acids.

Question 26 Biology

Translation is:

- A. nucleus → tRNA → ER
- B. nucleus → mRNA → ribosome ✓ **Predicted answer**
- C. nucleus → tRNA → ribosome
- D. nucleus → mRNA → ER

Why this answer? correct: mRNA is transcribed in the nucleus and travels to a ribosome, where it is translated into a polypeptide.

Why predicted [B] — Verified fact, predicted to recur: 37za Q78 (VERIFIED) — nucleus → mRNA → ribosome.

27 Biology

Drugs and other poisonous substances in blood are cleared by?

- A. Lacteal
- B. Rectum
- C. Liver ✓ **Predicted answer**
- D. Villi

Why this answer? correct: the liver detoxifies drugs and poisonous substances in the blood.

Why predicted [B] — Verified fact, predicted to recur: 37aaz Q46 (VERIFIED) — Liver.

Question 28 Biology

The glycoproteins are commonly found in:

- A. Mitochondria
- B. Chloroplasts
- C. Ribosomes
- D. Plasma membrane ✓ **Predicted answer**

Why this answer? Glycoproteins sit in the cell-surface membrane as recognition and signalling molecules (the glycocalyx); correct.

Why predicted [B] — Verified fact, predicted to recur: 37t Q27 (VERIFIED) — Plasma membrane.

Question 29 Biology

Follow the route of pepsinogen secreted by zymogen cells:

- A. RER → SER → Golgi complex → Secretory vesicles ✓ **Predicted answer**
- B. Golgi complex → RER → SER → Secretory vesicles
- C. SER → RER → Golgi complex → Secretory vesicles

→ Mitochondria → Golgi complex → Secretory vesicles

Why this answer? The keyed answer: synthesis on RER ribosomes, packaging in the Golgi complex, release in secretory vesicles — the only option with the correct start (RER) and the correct end (secretory vesicles). Caveat (kept openly): the SER is not part of the protein secretory route — proteins travel from the RER to the Golgi in transport vesicles — so C is the closest listed option, not a literal itinerary; the second reproduction's key (PDF Q2) is C.

Why predicted [B] — Verified fact, predicted to recur: 37w Q138 (VERIFIED) — RER → SER → Golgi complex → Secretory vesicles.

Question 30 Biology

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 ✓ **Predicted answer**
- C. They are both alleles of the same gene
- D. The phenotypes of the genes are both influenced by the gender of their owner

Why this answer? correct: linked genes are carried on the same chromosome, so they tend to be inherited together.

Why predicted [B] — Verified fact, predicted to recur: 37za Q12 (VERIFIED) — Two genes both occupy the same chromosome.

Question 31 Biology

Polysaccharides in plants are synthesized by the process of

- A. Hydrolysis
- B. Oxidation
- C. Condensation ✓ **Predicted answer**
- D. Glycolysis

swer? Monosaccharides join by condensation (dehydration) reactions, losing water to form glycosidic bonds; correct.

Why predicted [B] — Verified fact, predicted to recur: 37p Q11 (VERIFIED) — Condensation.

Question 32 Biology

Mimosa pudica shows:

- A. Thermonastic
- B. Haptonastic
- C. Nyctinastic
- D. Seismonastic ✓ **Predicted answer**

Why this answer? correct: Mimosa pudica shows seismonastic movement — its leaflets fold when touched or shaken. **E. Photonastic** — wrong: Mimosa pudica shows seismonastic movement, not photonastic movement.

Why predicted [B] — Verified fact, predicted to recur: 37adc Q38 (VERIFIED) — Seismonastic.

Question 33 Biology

Select a method which cause the oxidation of constituent of a bacterial cell

- A. Dry heat ✓ **Predicted answer**
- B. Radiation
- C. Steam
- D. Filtration

Why this answer? Correct: dry-heat sterilisation (hot-air oven, flaming) kills by oxidation of cell constituents.

Why predicted [B] — Verified fact, predicted to recur: 37y Q163 (VERIFIED) — Dry heat.

34 Biology

During gaseous exchange in the human body, the maximum percentage of CO_2 is transported from body tissues to lungs as:

- A. Gaseous form as bubbles
- B. Bicarbonate ion ✓ **Predicted answer**
- C. Carbaminohemoglobin
- D. Dissolved CO_2 in plasma

Why this answer? correct: most carbon dioxide entering red cells is converted to carbonic acid and then bicarbonate, which carries the largest share (about 70%) toward the lungs.

Why predicted [B] — Verified fact, predicted to recur: 37zb Q63 (VERIFIED) — Bicarbonate ion.

Question 35 Biology

Which of the following surrounds myofibril in skeletal muscle that stores and distributes calcium ions during muscle functioning?

- A. Sarcoplasm
- B. Sarcolemma
- C. Sarcoplasmic reticulum ✓ **Predicted answer**
- D. Transverse tubules

Why this answer? This specialised endoplasmic reticulum wraps each myofibril, stores Ca^{2+}, and releases it to trigger contraction; correct.

Why predicted [B] — Verified fact, predicted to recur: 37u Q11 (VERIFIED) — Sarcoplasmic reticulum.

Question 36 Biology

Unique three-dimensional shape of the fully folded polypeptide, constitutes:

- B. Primary structure of protein
- C. Secondary structure of protein
- D. Tertiary structure of protein ✓ **Predicted answer**

Why this answer? The unique 3-D folding of ONE polypeptide chain; correct.

Why predicted [B] — Verified fact, predicted to recur: 37m2 Q11 (VERIFIED) — Tertiary structure of protein.

Question 37 Biology

Which of the following is NOT a feature of cartilaginous joints?

- A. Presence of joint cavity ✓ **Predicted answer**
- B. Slight mobility
- C. Absence of synovial fluid
- D. Presence of cartilage

Why this answer? correct: cartilaginous joints have NO joint cavity (that belongs to synovial joints), so this is not a feature of them.

Why predicted [B] — Verified fact, predicted to recur: 37ada Q26 (VERIFIED) — Presence of joint cavity.

Question 38 Biology

Water maintains the shape and structure of large biological molecules mainly through:

- A. Covalent bonding
- B. Hydrogen bonding and hydrophobic interactions ✓ **Predicted answer**
- C. Ionic interactions
- D. Disulfide bridges

Why this answer? correct: water maintains the shape and structure of large biological

amily through hydrogen bonding and hydrophobic interactions.

Why predicted [B] — Verified fact, predicted to recur: 37ada Q71 (VERIFIED) — Hydrogen bonding and hydrophobic interactions.

Question 39 Biology

Viruses are NOT classified based on:

- A. Morphology
- B. Host specificity
- C. Cell membrane ✓ **Predicted answer**
- D. Envelope

Why this answer? correct: viruses have no cell membrane, so they are not classified on that basis.

Why predicted [B] — Verified fact, predicted to recur: 37aax Q34 (VERIFIED) — Cell membrane.

Question 40 Biology

Which idea suggests that life was created by a supernatural force?

- A. Biogenesis
- B. Spontaneous generation
- C. Natural selection
- D. Special creation ✓ **Predicted answer**

Why this answer? correct: special creation is the idea that life was created by a supernatural force.

Why predicted [B] — Verified fact, predicted to recur: 37aay Q40 (VERIFIED) — Special creation.

41 Biology

A person quickly withdraw their hand touching a hot iron. This type of reflex is best classified as:

- A. Spinal reflex ✓ **Predicted answer**
- B. Hormonal reflex
- C. Conditional reflex
- D. Cranial reflex

Why this answer? correct: withdrawing the hand from a hot object is a spinal reflex arc through the spinal cord.

Why predicted [B] — Verified fact, predicted to recur: 37aay Q25 (VERIFIED) — Spinal reflex.

Question 42 Biology

In frog New air drawn into bucco-pharyngeal cavity through nostrils and old air retained under pressure in:

- A. Trachea
- B. Lungs ✓ **Predicted answer**
- C. Nasal
- D. Glottis

Why this answer? correct: in the frog, new air is drawn into the bucco-pharyngeal cavity through the nostrils and old air is retained under pressure in the lungs.

Why predicted [B] — Verified fact, predicted to recur: 37adc Q20 (VERIFIED) — Lungs.

Question 43 Biology

Which one of the following is not affected by an enzyme during catalysis?

- A. Time to reach equilibrium

- C. Nature of product ✓ **Predicted answer**
- D. Activation energy

Why this answer? correct: an enzyme never changes the nature of the product; it only speeds up its formation.

Why predicted [B] — Verified fact, predicted to recur: 37aaz Q59 (VERIFIED) — Nature of product.

Question 44 Biology

In energy releasing metabolism, proteins must undergo _____ before entering respiratory metabolism.

- A. Decarboxylation
- B. Dehydration
- C. Acetylation
- D. Deamination ✓ **Predicted answer**

Why this answer? correct: proteins must be deaminated (their amino groups removed) before entering respiratory metabolism.

Why predicted [B] — Verified fact, predicted to recur: 37aaz Q26 (VERIFIED) — Deamination.

Question 45 Biology

The reversal of polarity across two sides of the membrane from −70 mV to 50 mV is called:

- A. Depolarization ✓ **Predicted answer**
- B. Polarization
- C. Hyperpolarization
- D. Repolarization

swer? correct: the membrane becomes less negative (from −70 mV toward +50 mV) as sodium enters — the depolarizing phase of the action potential.

Why predicted [B] — Verified fact, predicted to recur: 37zb Q21 (VERIFIED) — Depolarization.

Question 46 Biology

A group of ribosomes attached to mRNA is known as a polysome and the attachment is controlled by:

- A. Na+ ions
- B. Mg++ ions ✓ **Predicted answer**
- C. Ca++ ions
- D. K+ ions

Why this answer? Mg^{2+} stabilises ribosome structure and the association of ribosomal subunits with mRNA in polysomes; correct.

Why predicted [B] — Verified fact, predicted to recur: 37x Q11 (VERIFIED) — Mg++ ions.

Question 47 Biology

Maltose is classified as:

- A. Polysaccharide
- B. Monosaccharide
- C. Disaccharide ✓ **Predicted answer**
- D. Trisaccharide

Why this answer? correct: maltose consists of two glucose units joined by a glycosidic bond.

Why predicted [B] — Verified fact, predicted to recur: 37zb Q9 (VERIFIED) — Disaccharide.

48 Biology

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. 3′-TGAAGTTGATGAAGTCAGCAGAGTCAGTGA-5′
- B. 3′-UGAAGUUGAUGAAGUCAGCAGAGUCAGUGA-5′
- C. 5′-ACUUCAACUACUUCAGUCGUCUCAGUCACU-3′
- D. 5′-ACTTCAACTACTTCAGTCGTCTCAGTCACT-3′ ✓ **Predicted answer**

Why this answer? correct: the coding strand has the same sequence as the mRNA with T in place of U, so ACU→ACT, UCA→TCA, GUC→GTC, giving ACT-TCA-ACT-ACT-TCA-GTC-GTC-TCA-GTC-ACT.

Why predicted [B] — Verified fact, predicted to recur: 37za Q38 (VERIFIED) — 5′-ACTTCAACTACTTCAGTCGTCTCAGTCACT-3′.

Question 49 Biology

Why is it said that plasma membrane is asymmetrical?

- A. the two surfaces and halves are not identical ✓ **Predicted answer**
- B. cholesterol molecules are only present inside
- C. proteins are not fixed at their position
- D. hydrophobic tail facing inward and hydrophilic head facing outward

Why this answer? The two leaflets differ in composition: different lipids, proteins and carbohydrates are distributed unequally between the inner and outer surfaces (e.g. carbohydrates only on the exterior); correct.

Why predicted [B] — Verified fact, predicted to recur: 37x Q8 (VERIFIED) — the two surfaces and halves are not identical.

50 Biology

Which of the following statements best compares cell division in prokaryotic and Eukaryotic cells?

- A. Eukaryotes use binary fission ; prokaryotes by meiosis
- B. Eukaryotes divide by mitosis ; prokaryotes by binary fission ✓ **Predicted answer**
- C. Both use mitosis by cell division
- D. Eukaryotes divide by budding ; prokaryotes by mitosis

Why this answer? Correct general comparison (meiosis being the eukaryotic gamete-forming division).

Why predicted [B] — Verified fact, predicted to recur: 37r Q61 (VERIFIED) — Eukaryotes divide by mitosis ; prokaryotes by binary fission.

Question 51 Biology

Which group of viruses can cause diseases like influenza, measles and rabies?

- A. Bacteriophages
- B. Plant viruses
- C. Animal viruses ✓ **Predicted answer**
- D. Fungal viruses

Why this answer? Influenza, measles and rabies are all caused by viruses that infect animals, including humans; correct.

Why predicted [B] — Verified fact, predicted to recur: 37u Q36 (VERIFIED) — Animal viruses.

Question 52 Biology

Total number of linkage groups in a normal human is:

- A. 46

- C. 02
- D. 23 ✓ **Predicted answer**

Why this answer? One linkage group per chromosome type, i.e. the haploid number 23; correct.

Why predicted [B] — Verified fact, predicted to recur: 37r Q7 (VERIFIED) — 23.

Question 53 Biology

Normal gestation period in humans is about _____ days:

- A. 270–280 ✓ **Predicted answer**
- B. 240–250
- C. 300–320
- D. 322–350

Why this answer? The standard figure: about 280 days (40 weeks) from the last menstrual period, about 270 days from conception; correct.

Why predicted [B] — Verified fact, predicted to recur: 37x Q19 (VERIFIED) — 270–280.

Question 54 Biology

Enzymes work by lowering the _____ of the reactions that catalyze [sic]

- A. Kinetic energy
- B. Activation energy ✓ **Predicted answer**
- C. Heat energy
- D. Potential energy

Why this answer? Correct: enzymes provide an alternative pathway with a lower activation-energy barrier, so more molecules can react.

Why predicted [B] — Verified fact, predicted to recur: 37y Q132 (VERIFIED) — Activation

Question 55 Biology

Which of the following bonding or interaction is responsible for quaternary protein folding?

- A. 1, 6 Glycosidic Bond
- B. 1,4 Glycosidic Bond
- C. Hydrophobic interaction ✓ **Predicted answer**
- D. Ester Bond

Why this answer? correct: the association of separate polypeptide subunits into a quaternary structure is held mainly by hydrophobic interactions between non-polar side chains (with hydrogen bonds and ionic bonds also contributing).

Why predicted [B] — Verified fact, predicted to recur: 37za Q41 (VERIFIED) — Hydrophobic interaction.

Question 56 Biology

Which hormone stimulates the secretion of gastric juice?

- A. Insulin
- B. Secretin
- C. Cholecystokinin
- D. Gastrin ✓ **Predicted answer**

Why this answer? Gastrin, from stomach G-cells, stimulates the gastric glands to secrete acid and pepsinogen; correct.

Why predicted [B] — Verified fact, predicted to recur: 37j Q26 (VERIFIED) — Gastrin.

57 Biology

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 ✓ **Predicted answer**
- B. myosin : actin : tropomyosin
- C. actin : tropomyosin : myosin
- D. actin : myosin : tropomyosin

Why this answer? correct: at rest, tropomyosin lies over the myosin-binding sites on the actin filament, blocking the myosin heads from attaching.

Why predicted [B] — Verified fact, predicted to recur: 37za Q43 (VERIFIED) — tropomyosin : actin : myosin.

Question 58 Biology

Which condition produces a sterile female with Turner's syndrome in humans but a sterile male in Drosophila?

- A. XXY
- B. X0 ✓ **Predicted answer**
- C. XX0
- D. XXX

Why this answer? Correct: XO gives a sterile Turner female in humans (the Y decides maleness) but a sterile male in Drosophila (the X-to-autosome ratio decides sex).

Why predicted [B] — Verified fact, predicted to recur: 37yy Q29 (VERIFIED) — X0.

Question 59 Biology

The element whose electrons are excited during light reaction of photosynthesis is:

- A. Carbon

rogen

- C. Magnesium ✓ **Predicted answer**
- D. Nitrogen

Why this answer? The keyed answer: Mg^{2+} sits at the centre of the chlorophyll porphyrin ring, and the pigment's excited electrons are associated with that Mg-centred complex. Flagged: strictly, it is the chlorophyll molecule's π-electrons that are excited, not magnesium's own electrons, so the wording is loose and the answer rests on the textbook convention.

Why predicted [B] — Verified fact, predicted to recur: 37m Q38 (VERIFIED) — Magnesium.

Question 60 Biology

The part of male reproductive system involved in the storage and maturation of sperms:

- A. Testes
- B. Scrotum
- C. Vas deferens
- D. Epididymis ✓ **Predicted answer**

Why this answer? correct: sperm are stored and mature in the epididymis.

Why predicted [B] — Verified fact, predicted to recur: 37aay Q15 (VERIFIED) — Epididymis.

Question 61 Biology

Which of the following is biopolymer?

- A. Histone ✓ **Predicted answer**
- B. Waxes
- C. Water
- D. Phospholipids

swer? correct: histone is a protein (a polymer of amino acids), so it is a biopolymer.

Why predicted [B] — Verified fact, predicted to recur: 37ada Q73 (VERIFIED) — Histone.

Question 62 Biology

A DNA molecule has a length of 340 nm. How many base pairs does it contain?

- A. 500
- B. 1000 ✓ **Predicted answer**
- C. 100
- D. 340

Why this answer? correct: adjacent base pairs in B-form DNA are separated by about 0.34 nm, so 340 ÷ 0.34 = 1000 base pairs.

Why predicted [B] — Verified fact, predicted to recur: 37zb Q12 (VERIFIED) — 1000.

Question 63 Biology

The process by which unwanted structures are engulfed and digested within the lysosome is termed as:

- A. Endocytosis
- B. Exocytosis
- C. Autophagy ✓ **Predicted answer**
- D. Autolysis

Why this answer? The cell wraps its own worn-out organelles or material in a membrane and delivers them to lysosomes for digestion ("self-eating"); correct.

Why predicted [B] — Verified fact, predicted to recur: 37s Q120 (VERIFIED) — Autophagy.

64 Biology

Warming up of the air in nasal cavity occurs with the help of blood capillaries, located _____:

- A. Surrounding the cilia
- B. Surrounding cartilages
- C. In the nasopharynx
- D. Underneath mucous membrane ✓ **Predicted answer**

Why this answer? correct: the air is warmed by the rich network of blood capillaries underneath the mucous membrane of the nasal cavity.

Why predicted [B] — Verified fact, predicted to recur: 37ada Q44 (VERIFIED) — Underneath mucous membrane.

Question 65 Biology

Which of the following is a largest lymph vessel?

- A. Thoracic ✓ **Predicted answer**
- B. Lacteal
- C. Iliac
- D. Subclavian

Why this answer? correct: the thoracic duct is the largest lymph vessel in the body.

Why predicted [B] — Verified fact, predicted to recur: 37aaz Q42 (VERIFIED) — Thoracic.

Question 66 Biology

A motor neuron:

- A. Carries impulse from receptors to CNS
- B. Carries impulse from CNS to muscles ✓ **Predicted answer**
- C. Connects sensory nerves to ganglions.

ries impulse from effectors to CNS

Why this answer? Motor (efferent) neurons carry commands from the CNS to muscles and glands; correct.

Why predicted [B] — Verified fact, predicted to recur: 37j Q17 (VERIFIED) — Carries impulse from CNS to muscles.

Question 67 Biology

An active athlete has more stamina of running compared to an officer of same age with physically inactive lifestyle. Which of the following organelles has greatly increased in the muscle cells of athlete?

- A. Smooth endoplasmic reticulum (SER)
- B. Nucleus
- C. Mitochondria ✓ **Predicted answer**
- D. Golgi bodies

Why this answer? Endurance training increases mitochondrial number (biogenesis), raising aerobic ATP production and stamina; correct.

Why predicted [B] — Verified fact, predicted to recur: 37r Q37 (VERIFIED) — Mitochondria.

Question 68 Biology

Ions involved in synaptic transmission of nerve impulse:

- A. K^+, Ca^{2+}
- B. K^+, Ca^{2+}, Na^+
- C. Na^+, K^+
- D. Na^+, Ca^{2+} ✓ **Predicted answer**

Why this answer? The marked key: the textbook's transmission pair — Na^+ for the

action potential and Ca^{++} influx for vesicle release.

Why predicted [B] — Verified fact, predicted to recur: 37s Q129 (VERIFIED) — Na^{+}, Ca^{2+}.

Question 69 Biology

Which of the following enzyme does not need a Co-factor?

- A. Pepsin ✓ **Predicted answer**
- B. Alcohol dehydrogenase
- C. Carbonic anhydrase
- D. Hexokinase

Why this answer? Correct: pepsin works without a cofactor.

Why predicted [B] — Verified fact, predicted to recur: 37yz Q159 (VERIFIED) — Pepsin.

Question 70 Biology

If a person is doing strenuous exercise, how many ATPs are produced by cellular respiration?

- A. 6 ATPs
- B. 2 ATPs ✓ **Predicted answer**
- C. 3 ATPs
- D. 4 ATPs

Why this answer? correct: in strenuous exercise muscles rely on anaerobic glycolysis, whose net gain is 2 ATP per glucose (4 made, 2 used).

Why predicted [B] — Verified fact, predicted to recur: 37adb Q5 (VERIFIED) — 2 ATPs.

Question 71 Biology

Which of the following are single membranous organelles?

- B. Cytosol, mitochondria and ribosomes
- C. Golgi bodies, Lysosome and ER ✓ **Predicted answer**
- D. Golgi bodies, lysosome and mitochondria

Why this answer? All bounded by a SINGLE membrane; correct.

Why predicted [B] — Verified fact, predicted to recur: 37m2 Q17 (VERIFIED) — Golgi bodies, Lysosome and ER.

Question 72 Biology

Brain stem include all of the following, Except.

- A. Pons
- B. Midbrain
- C. Medulla Oblongata
- D. Cerebrum ✓ **Predicted answer**

Why this answer? correct: the cerebrum is part of the forebrain, not the brain stem; the brain stem is midbrain, pons and medulla.

Why predicted [B] — Verified fact, predicted to recur: 37ada Q5 (VERIFIED) — Cerebrum.

Question 73 Biology

A sudden rise in estrogen levels in females, may leads to which event?

- A. LH surge ✓ **Predicted answer**
- B. Implantation
- C. Progesterone drop
- D. Menstruation

Why this answer? correct: a sudden rise in estrogen triggers the LH surge (positive

at causes ovulation.

Why predicted [B] — Verified fact, predicted to recur: 37ada Q18 (VERIFIED) — LH surge.

Question 74 Biology

Which enzyme works in alkaline pH?

- A. Enterokinase
- B. Pancreatic lipase ✓ **Predicted answer**
- C. Pepsin
- D. Sucrose

Why this answer? Pancreatic lipase is secreted into the alkaline small intestine (optimum pH ≈ 8) and is the textbook "alkaline-pH enzyme" keyed here. VERIFIED 8 Nov 2026: the second reproduction (PDF Q47) keys D; Fiveable: pancreatic lipase "works best in the slightly alkaline pH, around 7 to 8"; Aakash: optimum pH 7.5–8.5. Enterokinase also acts in alkaline intestinal fluid — the key arbitrates the textbook "alkaline-pH enzyme" reading (pancreatic lipase).

Why predicted [B] — Verified fact, predicted to recur: 37x Q47 (VERIFIED) — Pancreatic lipase.

Question 75 Biology

Decarboxylation of pyruvate and addition of Coenzyme-A to Acetyl takes place in:

- A. Inter membrane space
- B. Inner Mitochondrial membrane
- C. Mitochondrial Matrix ✓ **Predicted answer**
- D. Cytoplasm

Why this answer? correct: decarboxylation of pyruvate and the addition of coenzyme A to form acetyl CoA take place in the mitochondrial matrix.

ed [B] — Verified fact, predicted to recur: 37aaz Q75 (VERIFIED) — Mitochondrial Matrix.

Question 76 Biology

Which term best describes an organism's physical characteristic.

- A. Allele
- B. Genetic code
- C. Genotype
- D. Trait ✓ **Predicted answer**

Why this answer? A trait IS the observable physical (or behavioural) characteristic; correct.

Why predicted [B] — Verified fact, predicted to recur: 37j Q62 (VERIFIED) — Trait.

Question 77 Biology

Which of the following structural change in water molecule leads to the low density of ice?

- A. Expansion due to hydrogen bonding ✓ **Predicted answer**
- B. Increased kinetic energy
- C. Loss of polarity in molecules
- D. Formation of ionic bonds

Why this answer? On freezing, hydrogen bonds lock the molecules into an open hexagonal lattice with more empty space than in liquid water, so ice expands and is less dense; correct.

Why predicted [B] — Verified fact, predicted to recur: 37v Q61 (VERIFIED) — Expansion due to hydrogen bonding.

78 Biology

The neurotransmitter active outside the CNS (Central Nervous System) is:

- A. Serotonin
- B. Acetylcholine ✓ **Predicted answer**
- C. Dopamine
- D. Glutamate

Why this answer? The keyed answer: the transmitter at neuromuscular junctions and in the peripheral/autonomic nervous system.

Why predicted [B] — Verified fact, predicted to recur: 37m2 Q23 (VERIFIED) — Acetylcholine.

Question 79 Biology

Chemical that regulates enzymatic activity:

- A. Coenzyme
- B. Activator
- C. Inhibitor ✓ **Predicted answer**
- D. Substrate

Why this answer? Correct: inhibitors regulate enzyme activity by reducing it, the classic regulatory mechanism taught in the syllabus.

Why predicted [B] — Verified fact, predicted to recur: 37yx Q65 (VERIFIED) — Inhibitor.

Question 80 Biology

Which of the following is a characteristic of a non-competitive enzyme inhibitor?

- A. Binds to the enzyme active site
- B. Can be overcome by increasing substrate concentration
- C. Increases the speed of the reaction

nt of action is allosteric site ✓ **Predicted answer**

Why this answer? Non-competitive inhibitors bind elsewhere on the enzyme (the allosteric site), changing its shape so it works less well whatever the substrate level; correct.

Why predicted [B] — Verified fact, predicted to recur: 37u Q18 (VERIFIED) — Point of action is allosteric site.

Question 81 Biology

_____ is used to infect the stem cells with normal genes in gene therapy.

- A. Retroviruses ✓ **Predicted answer**
- B. Bacteriophages
- C. Bacterial plasmids
- D. Agrobacterium

Why this answer? correct: retroviruses are used to infect stem cells with normal genes in gene therapy.

Why predicted [B] — Verified fact, predicted to recur: 37aaz Q40 (VERIFIED) — Retroviruses.

Question 82 Biology

Most of the neurons in the CNS are?

- A. Bipolar
- B. Multipolar ✓ **Predicted answer**
- C. Pseudounipolar
- D. Unipolar

Why this answer? Most CNS neurons (e.g. motor neurons, interneurons) have one axon and many dendrites: multipolar; correct.

ed [B] — Verified fact, predicted to recur: 37j Q52 (VERIFIED) — Multipolar.

Question 83 Biology

Which of the following is a prokaryote?

- A. Fungi
- B. Protista
- C. E. coli ✓ **Predicted answer**
- D. Amoeba

Why this answer? correct: E. coli is a bacterium, hence a prokaryote.

Why predicted [B] — Verified fact, predicted to recur: 37aax Q52 (VERIFIED) — E. coli.

Question 84 Biology

It is a method for rapid production of a very large number of copies of a particular fragment of DNA

- A. DNA extraction
- B. Recombination
- C. Gel electrophoresis
- D. Polymerase chain reaction ✓ **Predicted answer**

Why this answer? Correct: PCR amplifies a target fragment exponentially through repeated denaturation, annealing and extension cycles.

Why predicted [B] — Verified fact, predicted to recur: 37y Q152 (VERIFIED) — Polymerase chain reaction.

Question 85 Biology

In a Mendelian dihybrid cross, what is the phenotypic ratio in the F2 generation?

- A. 9:3:3:1 ✓ **Predicted answer**

- C. 1:1:1:1
- D. 3:1

Why this answer? Independent assortment of two gene pairs gives the classic F2 dihybrid phenotypic ratio 9:3:3:1 (3:1 is the monohybrid ratio; 1:1:1:1 is the dihybrid test-cross ratio).

Why predicted [C] — Syllabus anchor: syllabus anchor — dihybrid/Mendel recur (37zb Q49: dihybrid test cross ratio; 37aay Q34: Mendel's second step; 37ada Q27: RR × rr F1 genotype; 37ada Q30: genotypes for round yellow peas). Standard textbook fact.

Question 86 Biology

Which chamber of the heart pumps oxygenated blood out to the whole body?

- A. Right atrium
- B. Left ventricle ✓ **Predicted answer**
- C. Right ventricle
- D. Left atrium

Why this answer? The left ventricle pumps oxygenated blood into the aorta for the whole body, so its muscular wall is the thickest of the four chambers; the right ventricle pumps only to the lungs.

Why predicted [C] — Syllabus anchor: syllabus anchor — heart chambers recur (37za Q24: thickest heart chamber is the left ventricle; 37aay Q18: cardiac muscle layer; 37aaz Q23: cardiac cycle duration). Standard textbook fact.

Question 87 Biology

Which organelle is the site of protein synthesis in the cell?

- A. Lysosome
- B. Nucleus

osome ✓ **Predicted answer**

- D. Golgi apparatus

Why this answer? Ribosomes translate mRNA into protein; the Golgi apparatus modifies and packages proteins, and the nucleus stores the genetic instructions.

Why predicted [C] — Syllabus anchor: syllabus anchor — cell organelles recur (37za Q13: ribosomes in prokaryotes and eukaryotes; 37za Q71: Golgi apparatus; 37adb Q24: toxin disrupting the Golgi apparatus). Standard textbook fact.

Question 88 Biology

Which organelle is known as the powerhouse of the cell because it generates most of the cell's ATP?

- A. Ribosome
- B. Lysosome
- C. Nucleus
- D. Mitochondria ✓ **Predicted answer**

Why this answer? Mitochondria carry out aerobic respiration and produce most of the cell's ATP; the nucleus stores genetic information and ribosomes make proteins.

Why predicted [C] — Syllabus anchor: syllabus anchor — mitochondria/ATP recur (37za Q10: ATP-producing organelle; 37adb Q9: proton pumping in mitochondria; 37ada Q78: organelle producing ATP). Standard textbook fact.

Question 89 Biology

Filtration of blood in the kidney takes place in the:

- A. Glomerulus ✓ **Predicted answer**
- B. Loop of Henle
- C. Collecting duct
- D. Renal pelvis

swer? Blood is filtered in the glomerulus, a tuft of capillaries in the Bowman's capsule; the loop of Henle and collecting duct reabsorb water and salts afterwards.

Why predicted [C] — Syllabus anchor: syllabus anchor — glomerulus/nephron recur (37za Q17: blood vessel leaving the glomerulus; 37za Q21: glomerular filtrate; 37zb Q73: nephron impermeable to water). Standard textbook fact.

Question 90 Biology

In which organelle does photosynthesis take place in a plant cell?

- A. Nucleus
- B. Chloroplast ✓ **Predicted answer**
- C. Vacuole
- D. Mitochondrion

Why this answer? Photosynthesis takes place in the chloroplast, which contains chlorophyll in its thylakoids; mitochondria carry out respiration instead.

Why predicted [C] — Syllabus anchor: syllabus anchor — chloroplast/photosynthesis recur (37zb Q14: chloroplast identification — double membrane, stroma and thylakoids; 37p Q43: autotrophic mode of nutrition depends on photosynthesis mode). Standard textbook fact.

Question 91 Chemistry

Catalytic reduction of Aldehyde & Ketone forms:

- A. Alkane
- B. Aldehyde
- C. Alcohol ✓ **Predicted answer**
- D. Carboxylic acid

Why this answer? Catalytic hydrogenation reduces C=O to CH–OH: aldehydes → primary alcohols, ketones → secondary alcohols; correct.

ed [A] — Repeated question: repeated — 37m Q177 and 37o Q137 and 37v Q64 and 37yx Q142 and 37zb Q157 all key Alcohol. Also asked as: 37o Q137: “Catalytic reduction of aldehyde & Ketone forms:”; 37v Q64: “Reduction of carboxylic acid by using lithium aluminiumhydride produce”; 37yx Q142: “Catalytic reduction of aldehyde and ketone forms:”; 37zb Q157: “Reduction of an ester with lithium aluminium hydride mainly produces:”

Question 92 Chemistry

Energy of photon is directly proportional to:

- A. velocity
- B. wavelength
- C. temperature
- D. frequency ✓ **Predicted answer**

Why this answer? correct: photon energy E = hf is directly proportional to frequency.

Why predicted [A] — Repeated question: repeated — 37aaz Q90 and 37o Q142 and 37yx Q147 and 37yz Q95 all key frequency. Also asked as: 37o Q142: “The amount of energy associated with quantum of radiation is directly proportional to:”; 37yx Q147: “Quantum energy directly proportional to:”; 37yz Q95: “The amount of energy associated with quantum of radiation is directly proportional to:”

Question 93 Chemistry

By which of the following factors equilibrim state is attained earlier?

- A. Catalyst ✓ **Predicted answer**
- B. Temperature
- C. Pressure
- D. Concentration

Why this answer? Speeds forward and reverse reactions equally, reaching the SAME

sooner, correct.

Why predicted [A] — Repeated question: repeated — 37m Q131 and 37o Q117 and 37yx Q122 and 37yz Q85 all key Catalyst. Also asked as: 37o Q117: “By which of the following factors equilibrium state is attained earlier?”; 37yx Q122: “Equilibrium attained earlier by using:”; 37yz Q85: “By which of the following factors equilibrium state is attained earlier?”

Question 94 Chemistry

Homo-cyclic organic compounds are sub divided into two groups namely:

- A. Anti-aromatic
- B. Alicyclic and Aromatic ✓ **Predicted answer**
- C. Open chain and branched chain
- D. Aromatic and non-aromatic

Why this answer? Homocyclic (all-carbon rings) divide into alicyclic (saturated/unsaturated non-aromatic rings) and aromatic rings; correct.

Why predicted [A] — Repeated question: repeated — 37m Q151 and 37o Q131 and 37p Q104 and 37yx Q136 all key Alicyclic and Aromatic. Also asked as: 37o Q131: “Homocyclic organic compounds are sub divided into two types namely:”; 37p Q104: “Homocyclic organic compounds are sub divided into two types namely:”; 37yx Q136: “Homocyclic organic compounds divided into:”

Question 95 Chemistry

Generic formula of cycloalkane is:

- A. C_nCH_{2n-2}
- B. C_nH_{2n+2}
- C. C_nH_{2n} ✓ **Predicted answer**
- D. C_nH_{2n-1}

Why this answer? Cycloalkanes (one ring, no double bonds) have two fewer hydrogens

responding alkane, correct.

Why predicted [A] — Repeated question: repeated — 37o Q133 and 37y Q55 and 37yx Q138 and 37yy Q86 all key CnH2n. Also asked as: 37y Q55: “Generic formula of cycloalkane is?”; 37yx Q138: “Generic formula of cycloalkane is:”; 37yy Q86: “The saturated alicyclic hydrocarbons have the general formula _____.”

Question 96 Chemistry

Hydrolysis of Nitriles produces:

- A. Aldehydes
- B. Ketones
- C. Esters
- D. Carboxylic acid ✓ **Predicted answer**

Why this answer? Acidic or alkaline hydrolysis of a nitrile (R–C≡N) passes through an amide intermediate and ends at the carboxylic acid R–COOH (plus ammonia/ammonium); correct.

Why predicted [A] — Repeated question: repeated — 37o Q139 and 37y Q42 and 37yx Q144 and 37yz Q53 all key Carboxylic acid. Also asked as: 37y Q42: “Hydrolysis of acyl chloride results in the formation of:”; 37yx Q144: “Hydrolysis of nitriles produces:”; 37yz Q53: “Hydrolysis of Nitriles produces:”

Question 97 Chemistry

The SI unit of pressure is:

- A. Pascal ✓ **Predicted answer**
- B. mmHg
- C. Torr
- D. Atm

Why this answer? correct: the SI unit of pressure is the pascal.

ed [A] — Repeated question: repeated — 37aax Q91 and 37o Q148 and 37yx Q153 all key Pascal. Also asked as: 37o Q148: “The SI unit for pressure is:”; 37yx Q153: “SI unit of pressure:”

Question 98 Chemistry

If the temperature of a gas is doubled at constant pressure, what will be its volume:

- A. Halved
- B. Doubled ✓ **Predicted answer**
- C. Remains constant
- D. Quadrupled

Why this answer? correct: by Charles's law (V ∝ T at constant pressure), doubling the absolute temperature doubles the volume.

Why predicted [B] — Verified fact, predicted to recur: 37ada Q82 (VERIFIED) — Doubled.

Question 99 Chemistry

Which term describes a solution in which dissolved solute is in equilibrium with undissolved solute?

- A. Supersaturated
- B. Dilute
- C. Saturated ✓ **Predicted answer**
- D. Unsaturated

Why this answer? A saturated solution holds the maximum dissolved solute at that temperature and is in dynamic equilibrium with undissolved solute; correct.

Why predicted [B] — Verified fact, predicted to recur: 37x Q140 (VERIFIED) — Saturated.

100 Chemistry

For an exothermic reaction, the energy level of reactant is:

- A. Equal to the product
- B. Zero
- C. Less than the product
- D. More than the product ✓ **Predicted answer**

Why this answer? Energy is released, so the reactants are at a higher energy level than the products; the difference is the heat evolved.

Why predicted [B] — Verified fact, predicted to recur: 37t Q152 (VERIFIED) — More than the product.

Question 101 Chemistry

Q123. Number of unpaired electrons In Boron in ground state is/are:

- A. 1 ✓ **Predicted answer**
- B. 2
- C. 3
- D. 4

Why this answer? Boron (Z = 5) is $1s^2 2s^2 2p^1$: the single 2p electron is unpaired; correct.

Why predicted [B] — Verified fact, predicted to recur: 37r Q114 (VERIFIED) — 1.

Question 102 Chemistry

200 atm pressure in Haber's process used for:

- A. Cost decrease
- B. Better yield ✓ **Predicted answer**
- C. Lower yield
- D. Lower rate

swer? Correct: $N_2 + 3H_2 \rightarrow 2NH_3$ goes from 4 moles of gas to 2, so high pressure shifts the equilibrium to the product side and gives a better yield.

Why predicted [B] — Verified fact, predicted to recur: 37yx Q121 (VERIFIED) — Better yield.

Question 103 Chemistry

What is incorrect about activated complex?

- A. Potentia energy is maximum at activated complex stage
- B. It is a high energy specie
- C. It is a stable specie ✓ **Predicted answer**
- D. It is an unstable specie

Why this answer? FALSE: the activated complex is transient and unstable, existing only at the top of the barrier; correct as the incorrect statement.

Why predicted [B] — Verified fact, predicted to recur: 37m Q133 (VERIFIED) — It is a stable specie.

Question 104 Chemistry

Which element will show an outermost shell electronic configuration like ns^2, np^5?

- A. S
- B. Si
- C. C
- D. Cl ✓ **Predicted answer**

Why this answer? Correct: group VII-A (halogens) end in ns^2 np^5; chlorine is $3s^2$ $3p^5$.

Why predicted [B] — Verified fact, predicted to recur: 37yy Q81 (VERIFIED) — Cl.

105 Chemistry

When 4 g of magnesium was heated in excess of oxygen. Calculate the theoretical yield of magnesium oxide (MgO).

- A. 6.6g ✓ **Predicted answer**
- B. 3.7g
- C. 4.2g
- D. 5.4g

Why this answer? 6.6g is the verified answer (37j Q95).

Why predicted [B] — Verified fact, predicted to recur: 37j Q95 (VERIFIED) — 6.6g.

Question 106 Chemistry

The ionization energy increases along a period in periodic table due to increase in:

- A. No. of neutron
- B. Nuclear charge ✓ **Predicted answer**
- C. No. of electron
- D. No. of positron

Why this answer? correct: ionisation energy increases along a period because the nuclear charge increases (electrons are held more tightly).

Why predicted [B] — Verified fact, predicted to recur: 37adc Q104 (VERIFIED) — Nuclear charge.

Question 107 Chemistry

The type of bonding in sodium (Na) is:

- A. Covalent
- B. Co-ordinate covalent
- C. Metallic ✓ **Predicted answer**

Why this answer? Correct: sodium metal is held together by metallic bonding — positive sodium ions in a sea of delocalised electrons.

Why predicted [B] — Verified fact, predicted to recur: 37yz Q69 (VERIFIED) — Metallic.

Question 108 Chemistry

Select the organic compound which belongs to Arene family;

- A. CH2=CH2
- B. CH3-o-CH3
- C. CH3□ NH2 [sic — symbol garbled; read as CH3–NH2, methylamine]
- D. C6H6 ✓ **Predicted answer**

Why this answer? Correct: benzene is the parent arene — an aromatic hydrocarbon.

Why predicted [B] — Verified fact, predicted to recur: 37y Q53 (VERIFIED) — C6H6.

Question 109 Chemistry

Consider the following reaction in equilibrium and tell addition of which chemical will turn the cloudy solution into clear solution? BiCl3 + H2O <-> BiOCl + 2HCl

- A. HCl ✓ **Predicted answer**
- B. BiCl3
- C. H2O
- D. BiOCl

Why this answer? Adding HCl (a product) shifts equilibrium LEFT by Le Chatelier's principle, converting insoluble BiOCl back to soluble $BiCl_3$, clearing the solution; correct.

Why predicted [B] — Verified fact, predicted to recur: 37p Q82 (VERIFIED) — HCl.

110 Chemistry

Which of the following is NOT a correct feature of electrolytic cells?

- A. Oxidation occurs at anode
- B. Alternating current source is connected to electrodes ✓ **Predicted answer**
- C. Electrochemical reaction takes place
- D. Reduction occurs at cathode

Why this answer? False: electrolytic cells use a DIRECT current source; alternating current would keep reversing polarity and could not drive sustained electrolysis in one direction; correct as the incorrect feature.

Why predicted [B] — Verified fact, predicted to recur: 37p Q92 (VERIFIED) — Alternating current source is connected to electrodes.

Question 111 Chemistry

When gaseous ions of opposite charge combine to form an ionic crystal, lattice energy is _____.

- A. Vaporized
- B. Absorbed
- C. Released ✓ **Predicted answer**
- D. Stored

Why this answer? correct: bringing oppositely charged gaseous ions together lowers electrostatic potential energy as a crystal forms, so energy is released to the surroundings.

Why predicted [B] — Verified fact, predicted to recur: 37zb Q134 (VERIFIED) — Released.

112 Chemistry

The activation energy of a reaction is usually:

- A. Increases with rise in temperature.
- B. Unaffected by the process of a catalyst.
- C. Low for the reaction that takes place slowly.
- D. Different for the forward and backward reaction. ✓ **Predicted answer**

Why this answer? correct: the activation energy of the forward reaction differs from that of the backward reaction (by the enthalpy change).

Why predicted [B] — Verified fact, predicted to recur: 37aay Q112 (VERIFIED) — Different for the forward and backward reaction.

Question 113 Chemistry

Maximum electrons that can be placed in p subshell are:

- A. 6 ✓ **Predicted answer**
- B. 10
- C. 14
- D. 2

Why this answer? A p subshell has 3 orbitals (m = −1, 0, +1), each holding 2 electrons: 3 × 2 = 6; correct.

Why predicted [B] — Verified fact, predicted to recur: 37x Q135 (VERIFIED) — 6.

Question 114 Chemistry

Which element has the electronic configuration of noble-gas notation [Kr], 5s2, 4d?

- A. Sr
- B. Zr ✓ **Predicted answer**
- C. Mo

Why this answer? Zirconium (Z = 40) is [Kr] $4d^2$ $5s^2$, i.e. the printed "[Kr], 5s2, 4d" ($4d^2$ understood); correct.

Why predicted [B] — Verified fact, predicted to recur: 37j Q70 (VERIFIED) — Zr.

Question 115 Chemistry

Acetone reacts with water in presence of catalyst produces:

- A. propan-2-ol
- B. propan-1,2-diol
- C. propan-2,2-diol ✓ **Predicted answer**
- D. propanol

Why this answer? Hydration of the carbonyl gives the geminal diol — "Acetone reacts reversibly with water to form 2,2-propanediol. $CH_3COCH_3 + H_2O \rightarrow (CH_3)_2C(OH)_2$" (chemistrylearner.com, Hydration Reaction).

Why predicted [B] — Verified fact, predicted to recur: 37v Q177 (VERIFIED) — propan-2,2-diol.

Question 116 Chemistry

Q121. In a unit cell of a crystal lattice the angle β is between faces:

- A. not specified
- B. a and b
- C. b and c
- D. c and a ✓ **Predicted answer**

Why this answer? By crystallographic convention β is the interaxial angle between a and c; correct.

Why predicted [B] — Verified fact, predicted to recur: 37r Q113 (VERIFIED) — c and a

117 Chemistry

Which of the following electronic configuration is correct for carbon?

- A. 1s22s2p2 ✓ **Predicted answer**
- B. 1s22s2p1
- C. 1s22s2p3
- D. 1s22s2p4

Why this answer? Totals 6 electrons (2 + 2 + 2), filling $1s^2$ $2s^2$ $2p^2$, carbon's ground-state configuration; correct.

Why predicted [B] — Verified fact, predicted to recur: 37p Q70 (VERIFIED) — 1s22s2p2.

Question 118 Chemistry

In order to boil water at 110°C, external pressure should be

- A. 200 - 760 torr
- B. 760 - 1200 torr ✓ **Predicted answer**
- C. 665-670 torr
- D. 660-700 torr

Why this answer? Water boils when vapour pressure equals external pressure; at 110 °C the vapour pressure of water is ≈ 1075 torr, inside this range, and above normal atmospheric pressure (760 torr); correct.

Why predicted [B] — Verified fact, predicted to recur: 37p Q74 (VERIFIED) — 760 - 1200 torr.

Question 119 Chemistry

Alkyl halide, on reaction with NaOH, product is an alkane. Mechanics of reaction is:

- A. Decomposition
- B. Electrophilic substitution reaction

- D. Elimination

Why this answer? correct: an alkyl halide reacting with NaOH (nucleophilic substitution) follows the S_N mechanism.

Why predicted [B] — Verified fact, predicted to recur: 37adc Q102 (VERIFIED) — S_n.

Question 120 Chemistry

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

- A. Sulphonation
- B. Halogenation
- C. Friedel-Crafts acylation reaction
- D. Friedel-Crafts alkylation reaction ✓ **Predicted answer**

Why this answer? Benzene + R–X/$AlCl_3$ → alkylbenzene; correct.

Why predicted [B] — Verified fact, predicted to recur: 37m2 Q98 (VERIFIED) — Friedel-Crafts alkylation reaction.

Question 121 Chemistry

30 grams of 2-propanol were mixed with excess acidified K2Cr2O7 and boiled under reflux for 20 minutes. The organic product was then collected by distillation. The yield of product was 75.0%. What is the mass of product produced?

- A. 21.75g ✓ **Predicted answer**
- B. 2.74g
- C. 29.9 g
- D. 1.74g

Why this answer? Working: 2-propanol (M_r 60) oxidises to acetone/propanone (M_r 58).

0 = 0.30 mol, theoretical acetone = 0.30 × 58 = 29.0 g; at 75% yield = 0.75 × 29.0 ≈ 21.75 g. Correct.

Why predicted [B] — Verified fact, predicted to recur: 37m2 Q67 (VERIFIED) — 21.75g.

Question 122 Chemistry

Type of hybridization of carbon in Ethene (H2C=CH2) is:

- A. Sp3
- B. sp2 ✓ **Predicted answer**
- C. Sp
- D. dsp2

Why this answer? Each ethene carbon bonds to three atoms (one double + two single bonds) with trigonal-planar geometry, i.e. sp^2 hybridised, leaving one p orbital for the π bond; correct.

Why predicted [B] — Verified fact, predicted to recur: 37x Q146 (VERIFIED) — sp2.

Question 123 Chemistry

The shape of an orbital is determined by which quantum number?

- A. s
- B. n
- C. l ✓ **Predicted answer**
- D. m

Why this answer? The azimuthal (subsidiary) quantum number l sets the subshell and hence the orbital SHAPE (s spherical, p dumb-bell, d cloverleaf, f complex); correct.

Why predicted [B] — Verified fact, predicted to recur: 37x Q138 (VERIFIED) — l.

124 Chemistry

In Friedel Craft acylation an acyl group is introduced in benzene ring in the presence of catalyst:

- A. H2SO4
- B. Sunlight
- C. V2O5
- D. AlCl3 ✓ **Predicted answer**

Why this answer? Anhydrous aluminium chloride, a Lewis acid, generates the acylium ion ($R–C\equiv O^+$) from the acyl chloride; the standard Friedel–Crafts acylation catalyst; correct.

Why predicted [B] — Verified fact, predicted to recur: 37p Q107 (VERIFIED) — AlCl3.

Question 125 Chemistry

Calculate the number of molecules in 244g of Benzoic acid? ($C_7H_6O_2$)

- A. 1.2×10^{24} ✓ **Predicted answer**
- B. 0.12×10^{31}
- C. 12×10^{24}
- D. 12×10^{23}

Why this answer? correct: benzoic acid ($C_7H_6O_2$) has molar mass 122 g/mol, so 244 g = 2 mol = $2 \times 6.02 \times 10^{23} = 1.2 \times 10^{24}$ molecules.

Why predicted [B] — Verified fact, predicted to recur: 37ada Q119 (VERIFIED) — 1.2×10^{24}.

Question 126 Chemistry

Brass is an alloy of:

- A. Copper and magnesium
- B. Copper and zinc ✓ **Predicted answer**

per and silver

- D. Copper and iron

Why this answer? correct: brass is an alloy of copper and zinc.

Why predicted [B] — Verified fact, predicted to recur: 37aax Q119 (VERIFIED) — Copper and zinc.

Question 127 Chemistry

According to kinetic particle theory, which of the following statement is NOT TRUE about behavior of ideal gases?

- A. ideal gases have no force of attraction between their molecules
- B. The particles of gases are in constant random motion
- C. Kinetic energy is lost during the collisions ✓ **Predicted answer**
- D. ideal gases have zero particle volume

Why this answer? correct: collisions of ideal gas particles are perfectly elastic, so no kinetic energy is lost; this statement is NOT true.

Why predicted [B] — Verified fact, predicted to recur: 37aaz Q96 (VERIFIED) — Kinetic energy is lost during the collisions.

Question 128 Chemistry

Formic acid reacts with ethanol in presence of acid catalyst produces:

- A. Ether
- B. Acid anhydride
- C. Phenol
- D. Ester ✓ **Predicted answer**

Why this answer? A carboxylic acid plus an alcohol with an acid catalyst gives an ester (Fischer esterification; here ethyl formate) plus water; correct.

ed [B] — Verified fact, predicted to recur: 37u Q116 (VERIFIED) — Ester.

Question 129 Chemistry

A molecule will be chiral, if it has:

- A. no element of symmetry ✓ **Predicted answer**
- B. superimposed
- C. mirror image
- D. three different group

Why this answer? correct: a molecule is chiral if it has no element of symmetry (no plane or centre of symmetry).

Why predicted [B] — Verified fact, predicted to recur: 37aay Q121 (VERIFIED) — no element of symmetry.

Question 130 Chemistry

In liquid, with the change in dipole-dipole forces, there is a change in some physical properties. Select the property which is not affected by the strength of dipole-dipole forces?

- A. heat of sublimation
- B. moles ✓ **Predicted answer**
- C. boiling point
- D. heat of vaporization

Why this answer? An amount of substance; it is not a property affected by force strength; correct.

Why predicted [B] — Verified fact, predicted to recur: 37m2 Q75 (VERIFIED) — moles.

131 Chemistry

Addition of sodium acetate to aqueous solution of acetic acid suppresses its:

- A. Reduction
- B. Condensation
- C. Ionization ✓ **Predicted answer**
- D. Evaporation

Why this answer? correct: sodium acetate supplies acetate ions, already produced when acetic acid dissociates; by the common ion effect the equilibrium $CH_3COOH \rightleftharpoons H^+ + CH_3COO^-$ shifts left, so the fraction of acetic acid ionising decreases.

Why predicted [B] — Verified fact, predicted to recur: 37zb Q136 (VERIFIED) — Ionization.

Question 132 Chemistry

The kinetic molecular theory of gases explains:

- A. Electron
- B. Mass number
- C. Atoms number
- D. The behavior of gases ✓ **Predicted answer**

Why this answer? correct: the kinetic molecular theory of gases explains the behaviour of gases.

Why predicted [B] — Verified fact, predicted to recur: 37adc Q80 (VERIFIED) — The behavior of gases.

Question 133 Chemistry

Which of the following is the unit of rate of reaction?

- A. mol dm^{-3} s^{-1} ✓ **Predicted answer**

- C. mol dm^3 s^{-1}
- D. mol dm^{-3} s

Why this answer? Correct: rate = change in concentration per unit time = mol dm^{-3} s^{-1}. (The options are garbled in the reproduction's typesetting and are transcribed here in the standard forms; the answer is unaffected.)

Why predicted [B] — Verified fact, predicted to recur: 37yy Q104 (VERIFIED) — mol dm^{-3} s^{-1}.

Question 134 Chemistry

Unit of rate constant for a particular reaction depends upon the:

- A. molecularity of reaction
- B. order of reaction ✓ **Predicted answer**
- C. temperature of reaction
- D. activation energy of reaction

Why this answer? correct: the unit of the rate constant depends on the overall order of the reaction.

Why predicted [B] — Verified fact, predicted to recur: 37aay Q119 (VERIFIED) — order of reaction.

Question 135 Chemistry

The fourth state of matter is:

- A. Liquid
- B. Gaseous liquid
- C. Plasma ✓ **Predicted answer**
- D. Solid

swer? An ionised gas of free electrons and ions, reached at very high temperatures, is conventionally called the fourth state of matter; correct.

Why predicted [B] — Verified fact, predicted to recur: 37s Q70 (VERIFIED) — Plasma.

Question 136 Chemistry

Which element has the highest electronegativity in the periodic table?

- A. Nitrogen
- B. Chlorine
- C. Oxygen
- D. Fluorine ✓ **Predicted answer**

Why this answer? Fluorine is the most electronegative element (about 4.0 on the Pauling scale); electronegativity increases across a period and decreases down a group.

Why predicted [C] — Syllabus anchor: syllabus anchor — electronegativity/periodic trends recur (37adb Q79: electronegativity order, Group IIA; 37ada Q96: lowest electronegativity; 37adb Q75: decreasing order of ionization energy). Standard textbook fact.

Question 137 Chemistry

Human blood is slightly alkaline. Its normal pH is closest to:

- A. 7.4 ✓ **Predicted answer**
- B. 8.5
- C. 5.5
- D. 6.0

Why this answer? Normal human blood pH is about 7.35–7.45, i.e. slightly alkaline; below 7.35 is acidosis and above 7.45 is alkalosis.

Why predicted [C] — Syllabus anchor: syllabus anchor — pH items recur (37adb Q66: pH

ood is maintained at 7.35, 37adb Q38: pollution changing the pH of water). Standard textbook fact.

Question 138 Chemistry

Which functional group is present in a carboxylic acid?

- A. -CHO
- B. -COOH ✓ **Predicted answer**
- C. -OH
- D. -NH2

Why this answer? A carboxylic acid carries the carboxyl group -COOH; -CHO is the aldehyde group, -OH the alcohol group and -NH2 the amine group.

Why predicted [C] — Syllabus anchor: syllabus anchor — functional groups recur (37adb Q81: functional group of a primary acid amide; 37aax Q75: acid halide functional group; 37aaz Q97: carboxylic acid solubility). Standard textbook fact.

Question 139 Chemistry

One mole of carbon dioxide (CO_2) contains how many molecules?

- A. 6.02×10^{22}
- B. 3.01×10^{23}
- C. 6.02×10^{23} ✓ **Predicted answer**
- D. 1.20×10^{24}

Why this answer? One mole of any substance contains Avogadro's number of particles, 6.02×10^{23} — so one mole of CO_2 contains 6.02×10^{23} molecules.

Why predicted [C] — Syllabus anchor: syllabus anchor — Avogadro/mole recur (37aax Q93: Avogadro's number; 37za Q91: Avogadro's law volume; 37zb Q118: molar mass of $CaCO_3$). Standard textbook fact.

140 Chemistry

Ethene reacts with bromine water and the brown colour of bromine disappears. This is an example of:

- A. Nucleophilic substitution
- B. Free-radical substitution
- C. Elimination
- D. Electrophilic addition ✓ **Predicted answer**

Why this answer? Alkenes such as ethene undergo electrophilic addition across the double bond — the bromine adds to the two carbons and the brown colour is discharged, the standard test for unsaturation.

Why predicted [C] — Syllabus anchor: syllabus anchor — alkene reactions recur (37aay Q115: alkene characteristic reaction; 37adb Q84: reactions of alkenes; 37zb Q149: IUPAC alkene parent chain). Standard textbook fact.

Question 141 Physics

Lenz’s law is also a statement of law of conservation of:

- A. Energy ✓ **Predicted answer**
- B. Momentum
- C. Mass
- D. Charge

Why this answer? Lenz's law (induced effects oppose the change) prevents energy being created from nothing; correct.

Why predicted [A] — Repeated question: repeated — 37m Q111 and 37o Q3 and 37o Q13 and 37x Q69 and 37yx Q3 and 37yy Q174 all key Energy. Also asked as: 37o Q3: “The 1st law of thermodynamics is the generalization of the law of conservation of:”; 37o Q13: “The Lenz's law is also statement of law of conservation of:”; 37x Q69: “Q.69 Lenz's law is based on the law of conservation of:”; 37yx Q3: “The 1st law of thermodynamics is

…n of law of conservation of:"; 37yy Q174: "Lenz's law of electromagnetic induction is in accordance with the law of conservation of_____."

Question 142 Physics

Measure of displacement covered with passage of time is called:

- A. Speed
- B. Velocity ✓ **Predicted answer**
- C. Deceleration
- D. Acceleration

Why this answer? correct: velocity is the displacement covered per unit time.

Why predicted [A] — Repeated question: repeated — 37aax Q149 and 37aaz Q154 and 37o Q24 and 37yx Q13 all key Velocity. Also asked as: 37aaz Q154: "The slope of displacement time graph represents:"; 37o Q24: "The slope of a displacement-time graph is equal to:"; 37yx Q13: "Slope of a displacement-time graph is:"

Question 143 Physics

The SI unit of capacitance is:

- A. Watts
- B. Henry
- C. Farad ✓ **Predicted answer**
- D. Joules

Why this answer? correct: the SI unit of capacitance is the farad.

Why predicted [A] — Repeated question: repeated — 37aax Q166 and 37o Q6 and 37p Q144 and 37yx Q6 all key Farad. Also asked as: 37o Q6: "The S.I unit of capacitance of a capacitor is:"; 37p Q144: "The S.I unit of capacitance of a capacitor is:"; 37yx Q6: "The S.I unit of capacitance is:"

144 Physics

A man pulls a trolley through a distance of 50 m by applying a force of 100 N which makes an angle of 60° with the x-axis. Calculate the work done. (cos 60° = 0.5)

- A. 5340 J
- B. 6430 J
- C. 7120 J
- D. 2500 J ✓ **Predicted answer**

Why this answer? Correct: W = F d cos θ = 100 × 50 × 0.5 = 2500 J.

Why predicted [B] — Verified fact, predicted to recur: 37yy Q129 (VERIFIED) — 2500 J.

Question 145 Physics

A wave has velocity 300m/s and frequency 100Hz. If the medium is changed so that velocity doubles but frequency remains constant, the new wavelength will be:

- A. Doubled ✓ **Predicted answer**
- B. Same
- C. Zero
- D. Halved

Why this answer? Wavelength λ = v/f: originally 300/100 = 3 m; with v = 600 m/s and f = 100 Hz, λ = 6 m, double; correct.

Why predicted [B] — Verified fact, predicted to recur: 37t Q101 (VERIFIED) — Doubled.

Question 146 Physics

When a charge "Q" on a capacitor is doubled then energy stored "U" will be:

- A. U/2
- B. 4U ✓ **Predicted answer**
- C. 2U

Why this answer? Correct: stored energy $U = Q^2/2C$, so doubling Q multiplies the energy by $2^2 = 4$.

Why predicted [B] — Verified fact, predicted to recur: 37yz Q31 (VERIFIED) — 4U.

Question 147 Physics

In deriving Bernoulli's equation, the quantity ' pressure x volume' represents:

- A. kinetic energy
- B. potential energy
- C. work done ✓ **Predicted answer**
- D. density

Why this answer? correct: in Bernoulli's equation, pressure × volume represents work done (pressure energy) — the work done in pushing the fluid.

Why predicted [B] — Verified fact, predicted to recur: 37ada Q132 (VERIFIED) — work done.

Question 148 Physics

Which one of the following is the SI unit of angular displacement?

- A. Revolution
- B. Steradian
- C. Degree
- D. Radian ✓ **Predicted answer**

Why this answer? Correct: the radian is the SI unit of plane angle.

Why predicted [B] — Verified fact, predicted to recur: 37yy Q136 (VERIFIED) — Radian.

149 Physics

Stability of radioactivity element is determined by:

- A. Decay constant ✓ **Predicted answer**
- B. Rate of the radioactive decay
- C. Time of decay
- D. Number of radioactive nuclei

Why this answer? λ is the intrinsic property of the nuclide: a large λ means rapid decay (unstable), a small λ means slow decay (stable), and half-life is t½ = ln 2 / λ; correct.

Why predicted [B] — Verified fact, predicted to recur: 37s Q5 (VERIFIED) — Decay constant.

Question 150 Physics

The capacitance of parallel plates capacitor is 5 μ F. When a glass plate is placed between the plates of capacitor, its potential becomes1/8 of its original value. The value of dielectric constant will be:

- A. 5
- B. 8 ✓ **Predicted answer**
- C. 40
- D. 1.6

Why this answer? correct: the potential falls to 1/8, so the capacitance rises eightfold, giving a dielectric constant of 8.

Why predicted [B] — Verified fact, predicted to recur: 37aaz Q153 (VERIFIED) — 8.

Question 151 Physics

Q133. An angular displacement of 90° is equal to:

- A. One half revolution

- C. One-fourth revolution ✓ **Predicted answer**
- D. One- third revolution

Why this answer? 90°/360° = 1/4 of a full turn; correct.

Why predicted [B] — Verified fact, predicted to recur: 37r Q124 (VERIFIED) — One-fourth revolution.

Question 152 Physics

The formula V = W / qo represents

- A. Electric field gradient
- B. Electric intensity
- C. Electric power
- D. Electric potential ✓ **Predicted answer**

Why this answer? Potential V is the work done per unit positive charge in bringing a test charge from infinity to the point, $V = W/q_o$; correct.

Why predicted [B] — Verified fact, predicted to recur: 37p Q143 (VERIFIED) — Electric potential.

Question 153 Physics

Electric forces change the magnitude and direction of velocity while magnetic forces change_____ of velocity

- A. Only direction ✓ **Predicted answer**
- B. Magnitude and direction
- C. Neither magnitude nor direction
- D. Only Magnitude

Why this answer? Magnetic force acts perpendicular to velocity, curving the path at

ed, correct.

Why predicted [B] — Verified fact, predicted to recur: 37m2 Q152 (VERIFIED) — Only direction.

Question 154 Physics

A bullet fired from gun pierces a target due to:

- A. Heat energy
- B. Kinetic energy ✓ **Predicted answer**
- C. Potential energy
- D. Mechanical energy

Why this answer? correct: a fired bullet moves at high speed, and its kinetic energy ($\frac{1}{2}mv^2$) does the work of piercing the target.

Why predicted [B] — Verified fact, predicted to recur: 37za Q157 (VERIFIED) — Kinetic energy.

Question 155 Physics

If the capacitance in a purely capacitive AC circuit is doubled, the current will be:

- A. Remain same
- B. Decrease to the fourth
- C. Double ✓ **Predicted answer**
- D. Become half

Why this answer? correct: doubling the capacitance halves the capacitive reactance, so the current doubles.

Why predicted [B] — Verified fact, predicted to recur: 37aay Q155 (VERIFIED) — Double.

156 Physics

Q.171 In a photoelectric effect experiment, the stopping potential is:

- A. a. The kinetic energy of the most energetic electron ejected
- B. b. The potential energy of the most energetic electron ejected
- C. c. The photon energy
- D. d. The electric potential that causes the electron current to vanish ✓ **Predicted answer**

Why this answer? The retarding potential that just stops the photocurrent; correct (eV_0 = K_max).

Why predicted [B] — Verified fact, predicted to recur: 37m2 Q163 (VERIFIED) — d. The electric potential that causes the electron current to vanish.

Question 157 Physics

Which of the following pair of angles have same rang for a projectile?

- A. 75° and 15° ✓ **Predicted answer**
- B. 45° and 60°
- C. 0° and 30°
- D. 10° and 20°

Why this answer? Ranges are equal for complementary angles (θ and 90° − θ), since sin 2θ = sin(180° − 2θ); 75° + 15° = 90°; correct.

Why predicted [B] — Verified fact, predicted to recur: 37x Q81 (VERIFIED) — 75° and 15°.

Question 158 Physics

The value of temperature co-efficient of a conductor is zero. This indicates that with the rise in temperature, resistance of conductor:

reases

- B. Remain same ✓ **Predicted answer**
- C. Becomes zero
- D. Increases

Why this answer? With a zero coefficient, $R = R_0(1 + \alpha\Delta T) = R_0$ whatever the temperature change; correct.

Why predicted [B] — Verified fact, predicted to recur: 37u Q125 (VERIFIED) — Remain same.

Question 159 Physics

3 kg stone falls from 20 m high platform. Find its falling speed at 10 m height.

- A. 100 m/s
- B. 196 m/s
- C. 14 m/s ✓ **Predicted answer**
- D. 10 m/s

Why this answer? Correct: the stone has fallen 10 m, so $v^2 = 2 \times 9.8 \times 10 = 196$, giving $v = 14$ m/s.

Why predicted [B] — Verified fact, predicted to recur: 37yz Q15 (VERIFIED) — 14 m/s.

Question 160 Physics

If different colored light beams have same total energy, which color beam will contain the smallest number of photons?

- A. Blue
- B. Green
- C. Red
- D. Violet ✓ **Predicted answer**

swer? Each photon carries E = hf, violet has the highest frequency of the colours listed, so each violet photon carries the most energy and the fewest photons are needed to reach a fixed total energy; correct.

Why predicted [B] — Verified fact, predicted to recur: 37v Q101 (VERIFIED) — Violet.

Question 161 Physics

Q.170 The process of ejection of loosely bound electrons from a certain photo sensitive surface by absorption of photon is called:

- A. b. Photoelectric effect ✓ **Predicted answer**
- B. c. Pair production
- C. d. Black body radiation
- D. a. Compton effect

Why this answer? Photon absorption ejects electrons from a surface; correct.

Why predicted [B] — Verified fact, predicted to recur: 37m2 Q162 (VERIFIED) — b. Photoelectric effect.

Question 162 Physics

Two equal charges experience a certain force when placed in vacuum. When the charges are placed in a medium, the force becomes 1/4th. The dielectric constant of the medium is:

- A. 2
- B. 4 ✓ **Predicted answer**
- C. 16
- D. 0.25

Why this answer? In a medium F = F_vacuum/κ, so a force of one quarter means κ = 4; correct.

ed [B] — Verified fact, predicted to recur: 37t Q120 (VERIFIED) — 4.

Question 163 Physics

The distance between two successive particles which are exactly in the same state of vibration is called

- A. Frequency
- B. Amplitude
- C. Wavelength ✓ **Predicted answer**
- D. Time period

Why this answer? The distance between two successive particles in exactly the same phase of vibration (e.g. crest to crest) IS the wavelength; correct.

Why predicted [B] — Verified fact, predicted to recur: 37p Q139 (VERIFIED) — Wavelength.

Question 164 Physics

In hydrogen spectrum, the Brackett series lies in

- A. X ray region
- B. Ultraviolet region
- C. Visible region
- D. Infrared region ✓ **Predicted answer**

Why this answer? The Brackett series ends at n = 4, with lower-energy photons in the infrared; correct.

Why predicted [B] — Verified fact, predicted to recur: 37t Q84 (VERIFIED) — Infrared region.

165 Physics

Q132. In an ideal transformer, if the primary voltage is doubled and the turns ratio remains the same, what happens to the secondary current?

- A. Doubles ✓ **Predicted answer**
- B. Halves
- C. Remains the same
- D. Becomes four times

Why this answer? With fixed turns ratio the secondary voltage doubles; for a fixed load impedance the secondary current (V/R) doubles; correct under that fixed-load reading.

Why predicted [B] — Verified fact, predicted to recur: 37r Q123 (VERIFIED) — Doubles.

Question 166 Physics

An ideal gas is heated at constant volume. It absorbs 200 J of heat. The work done by the gas is:

- A. 200 J
- B. 0 J ✓ **Predicted answer**
- C. -200 J
- D. Varies with pressure

Why this answer? correct: at constant volume ΔV = 0, so the work done by the gas W = PΔV = 0 J (all 200 J goes into internal energy).

Why predicted [B] — Verified fact, predicted to recur: 37ada Q138 (VERIFIED) — 0 J.

Question 167 Physics

A 4 kg block and an 8 kg block are pushed with the same force on a frictionless surface. Which statement is correct?

- A. Both blocks move with the same velocity

- C. The 4 kg block has double the acceleration of the 8 kg block ✓ **Predicted answer**
- D. The 8 kg block has double the acceleration of the 4 kg block

Why this answer? correct: a = F/m, so halving the mass doubles the acceleration (a_4 = F/4, a_8 = F/8, a_4/a_8 = 2).

Why predicted [B] — Verified fact, predicted to recur: 37zb Q86 (VERIFIED) — The 4 kg block has double the acceleration of the 8 kg block.

Question 168 Physics

When two vectors A and B are added, which statement is correct?

- A. The commutative law applies only when the vectors are perpendicular
- B. A + B and B + A have different magnitudes but the same direction
- C. The resultant depends on which vector is drawn first
- D. A + B = B + A, so changing the order does not change the resultant ✓ **Predicted answer**

Why this answer? correct: vector addition is commutative; a head-to-tail diagram reaches the same endpoint either way.

Why predicted [B] — Verified fact, predicted to recur: 37zb Q82 (VERIFIED) — A + B = B + A, so changing the order does not change the resultant.

Question 169 Physics

An electric motor turns at 400 revolutions per minute. Its angular velocity in rad/s will be:

- A. 40π/3 ✓ **Predicted answer**
- B. 30π/4
- C. 20π/3
- D. 30π/3

swer? ω = 400 rev/min × 2π rad/rev ÷ 60 s/min = (400 × 2π)/60 = 40π/3 rad/s; correct.

Why predicted [B] — Verified fact, predicted to recur: 37o Q34 (VERIFIED) — 40π/3.

Question 170 Physics

If a test charge of magnitude 2C experience forces of 100N and 200N at two points A and B in an electric field respectively. The ratio of electric fields at A to that of B is:

- A. 1:1
- B. 1:2 ✓ **Predicted answer**
- C. 1:4
- D. 2:1

Why this answer? Field E = F/q with the same q = 2 C at both points, so E_A:E_B = 100:200 = 1:2; correct.

Why predicted [B] — Verified fact, predicted to recur: 37v Q121 (VERIFIED) — 1:2.

Question 171 Physics

The resistance of a conductor does not depend on which of the following?

- A. resistivity
- B. length
- C. mass ✓ **Predicted answer**
- D. area

Why this answer? Working: R = ρL/A. R does not depend directly on mass (mass follows from density × volume, but R is fixed by ρ, L, A); correct as the exception.

Why predicted [B] — Verified fact, predicted to recur: 37m2 Q148 (VERIFIED) — mass.

172 Physics

A nurse is pushing a wheelchair with an 80kg patient sitting on it. How much work is done by the patient's weight?

- A. Half of the work
- B. Maximum work
- C. Minimum work
- D. No work ✓ **Predicted answer**

Why this answer? W = Fd·cos 90° = 0; correct (on flat ground with no vertical displacement).

Why predicted [B] — Verified fact, predicted to recur: 37j Q123 (VERIFIED) — No work.

Question 173 Physics

Q127. If P is the momentum of an object and m is its mass, then its kinetic energy is:

- A. P^2/2m ✓ **Predicted answer**
- B. 1/2 Pm^2
- C. 1/2 P^2/m^2
- D. P/2m

Why this answer? From KE = ½mv^2 and p = mv: KE = p^2/2m; correct.

Why predicted [B] — Verified fact, predicted to recur: 37r Q118 (VERIFIED) — P^2/2m.

Question 174 Physics

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

- A. 30^0
- B. 45^0 ✓ **Predicted answer**
- C. 60^0
- D. 22.5^0

swer? correct. range R = v² sin2θ/g is maximum when sin2θ = 1, i.e. 2θ = 90°, so θ = 45°.

Why predicted [B] — Verified fact, predicted to recur: 37za Q127 (VERIFIED) — 45⁰.

Question 175 Physics

Temperature coefficient of resistance is defined as increase in resistance per ohm original resistance per _____?

- A. Unit decrease in capacitance
- B. Degree drop in temperature
- C. Degree rise in temperature ✓ **Predicted answer**
- D. Unit increase in electric current

Why this answer? α = ΔR/(R_0·ΔT): fractional resistance change per degree; correct.

Why predicted [B] — Verified fact, predicted to recur: 37j Q146 (VERIFIED) — Degree rise in temperature.

Question 176 Physics

A car doubles its speed from 20 m/s to 40 m/s. Its kinetic energy becomes:

- A. Eight times
- B. Two times
- C. Three times
- D. Four times ✓ **Predicted answer**

Why this answer? Kinetic energy = ½mv², so it depends on the square of the speed: doubling v multiplies the energy by 2^2 = 4.

Why predicted [C] — Syllabus anchor: syllabus anchor — kinetic energy recurs (37ada Q128: velocity doubled, kinetic energy; 37adb Q101: car speed doubled, kinetic energy; 37aax Q127: man's kinetic energy). Standard textbook fact.

177 Physics

According to Ohm's law, the voltage V across a resistor is equal to:

- A. I × R ✓ **Predicted answer**
- B. I ÷ R
- C. I^2 × R
- D. R ÷ I

Why this answer? Ohm's law is V = IR (voltage = current × resistance), for a conductor at constant temperature.

Why predicted [C] — Syllabus anchor: syllabus anchor — Ohm's law/resistance recur (37aax Q151: Ohm's law; 37adb Q122: ohmic in nature; 37aax Q165: resistance depends on). Standard textbook fact.

Question 178 Physics

Potential difference is measured in:

- A. Ohm
- B. Volt ✓ **Predicted answer**
- C. Watt
- D. Ampere

Why this answer? Potential difference (voltage) is measured in volts; current is measured in amperes, resistance in ohms and power in watts.

Why predicted [C] — Syllabus anchor: syllabus anchor — potential difference recurs (37za Q144: potential difference; 37aax Q143: potential difference; 37aax Q167: SI unit of electric potential). Standard textbook fact.

Question 179 Physics

Pressure is force per unit area. Its SI unit, the pascal, equals:

- B. 1 newton metre
- C. 1 newton per square metre ✓ **Predicted answer**
- D. 1 newton per metre

Why this answer? Pressure = force ÷ area, so 1 pascal = 1 newton per square metre (1 N/m^2); a joule per second is a watt and a newton metre is a joule.

Why predicted [C] — Syllabus anchor: syllabus anchor — SI units recur (37aax Q91: SI unit of pressure; 37aax Q166: SI unit of capacitance; 37aax Q167: SI unit of electric potential; 37zb Q94: SI unit of angular displacement). Standard textbook fact.

Question 180 Physics

Two projectiles are fired with the same speed, one at 30° and the other at 60° to the horizontal. How do their horizontal ranges compare?

- A. Both have the same maximum height
- B. The 30° projectile goes further
- C. The 60° projectile goes further
- D. Both have the same range ✓ **Predicted answer**

Why this answer? Range $R = v^2 \cdot \sin(2\theta)/g$; sin(60°) = sin(120°), so complementary angles give equal ranges (the 60° projectile reaches a greater height, but not a greater range).

Why predicted [C] — Syllabus anchor: syllabus anchor — projectile motion recurs (37za Q127: projectile maximum range; 37zb Q87: projectile maximum height; 37ada Q148: projectile motion; 37adb Q96: projectile height = range angle). Standard textbook fact.

Question 181 English

"To cut off the head". Idiom means:

- A. Decapitate ✓ **Predicted answer**
- B. Impaled

- D. Defrock

Why this answer? correct: 'to cut off the head' means to decapitate.

Why predicted [B] — Verified fact, predicted to recur: 37aax Q193 (VERIFIED) — Decapitate.

Question 182 English

Choose the example of opinion statement.

- A. If a number is divisible by 2, then it is even.
- B. The ground is wet, it probably rained. ✓ **Predicted answer**
- C. The Eiffel Tower is in Paris.
- D. The human body has 206 bones.

Why this answer? correct: this is an opinion (an inference), not a certain fact.

Why predicted [B] — Verified fact, predicted to recur: 37aaz Q167 (VERIFIED) — The ground is wet, it probably rained.

Question 183 English

Pick out the sentence which illustrates the use of infinitive.

- A. He refused obey the orders.
- B. He refused obeyed the orders.
- C. He refused to obey the orders. ✓ **Predicted answer**
- D. He refused obeying the orders.

Why this answer? "To obey" is the infinitive (to + base verb), correctly used after "refused"; correct.

Why predicted [B] — Verified fact, predicted to recur: 37v Q135 (VERIFIED) — He refused to obey the orders.

184 English

Choose the sentence that is grammatically correct.

- A. We agreed that the play was rather bored so we felt boring
- B. We agreed that the play was rather bore so we felt bores
- C. We agreed that the play was rather bores so we felt bored
- D. We agreed that the play was rather boring so we felt bored ✓ **Predicted answer**

Why this answer? "Boring" describes the play (causing boredom); "bored" describes people's feeling; correct pairing.

Why predicted [B] — Verified fact, predicted to recur: 37m2 Q181 (VERIFIED) — We agreed that the play was rather boring so we felt bored.

Question 185 English

Choose the sentence with correct order of adjectives.

- A. I met two beautiful, young, British girls at the airport. ✓ **Predicted answer**
- B. I met two, British, young, beautiful girls at the airport.
- C. I met two young, beautiful British girls at the airport.
- D. I met, young two, beautiful, British girls at the airport.

Why this answer? The adjective ORDER is correct: opinion (beautiful) before age (young) before origin (British) is the standard sequence; correct. The comma before "British" is a minor punctuation flaw (origin adjectives are cumulative and usually take no comma), recorded openly — it does not overturn the order, which is what the question tests.

Why predicted [B] — Verified fact, predicted to recur: 37s Q83 (VERIFIED) — I met two beautiful, young, British girls at the airport.

Question 186 English

Which version improves tone and formality in the sentence: "You boys need to submit

- A. Everyone needs to get the paper in quickly.
- B. The paper should be submitted as soon as possible. ✓ **Predicted answer**
- C. Y’all better hand it in now.
- D. You should submit the paper as soon as you can.

Why this answer? correct: the formal passive construction with 'as soon as possible' gives the most formal tone.

Why predicted [B] — Verified fact, predicted to recur: 37aay Q168 (VERIFIED) — The paper should be submitted as soon as possible.

Question 187 English

Blueprint is to architect as algorithm is to _____

- A. Engineer
- B. Physician
- C. Programmer ✓ **Predicted answer**
- D. Designer

Why this answer? A blueprint guides an architect's building; an algorithm guides a programmer's program; correct.

Why predicted [B] — Verified fact, predicted to recur: 37j Q182 (VERIFIED) — Programmer.

Question 188 English

His courage earned him honour. The underlined verb 'earned' is:

- A. Complex transitive
- B. Linking
- C. Intransitive

ransitive ✓ **Predicted answer**

Why this answer? "Earned" takes TWO objects: the indirect object "him" and the direct object "honour"; correct.

Why predicted [B] — Verified fact, predicted to recur: 37w Q127 (VERIFIED) — Di-transitive.

Question 189 English

Choose the synonym of "Benevolent".

- A. Kind ✓ **Predicted answer**
- B. Selfish
- C. Harsh
- D. Cruel

Why this answer? "Benevolent" means kind and generous, wishing others well.

Why predicted [C] — Syllabus anchor: syllabus anchor — vocabulary/synonym items recur (37aax Q182: synonym of promptly; 37aaz Q166: grave synonym; 37adb Q136: antonym of clarity). Standard fact.

Question 190 English

Choose the antonym of "Transparent".

- A. Thin
- B. Opaque ✓ **Predicted answer**
- C. Clear
- D. Obvious

Why this answer? "Transparent" means letting light through so objects can be seen clearly; its opposite is opaque.

Why predicted [C] — Syllabus anchor: syllabus anchor — vocabulary/antonym items

Q130. antonym of clarity; 37aax Q182. synonym of promptly; 37aaz Q166: grave synonym). Standard fact.

Question 191 Logical Reasoning

All daffodils are plants. All plants are living things. Some living things are real. Conclusions: I. All daffodils are living things. II. Some living things are flowers. III. All daffodils are real. Which conclusions follow?

- A. Only II and III
- B. All follow
- C. Only I ✓ **Predicted answer**
- D. Only I and II

Why this answer? Conclusion I follows by transitivity: daffodils ⊆ plants ⊆ living things; correct under the convention used.

Why predicted [B] — Verified fact, predicted to recur: 37r Q161 (VERIFIED) — Only I.

Question 192 Logical Reasoning

CAT is to DOG, as MOUSE is to:

- A. DOG
- B. CHEESE
- C. RAT
- D. CAT ✓ **Predicted answer**

Why this answer? correct: as the dog chases the cat, so the cat chases the mouse.

Why predicted [B] — Verified fact, predicted to recur: 37aay Q172 (VERIFIED) — CAT.

Question 193 Logical Reasoning

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

er ✓ **Predicted answer**

- B. Cousin
- C. Nephew
- D. Uncle

Why this answer? correct: X's son and Y's son are cousins, so X and Y are siblings; Y has no brother, so X (the sibling) must be Y's sister.

Why predicted [B] — Verified fact, predicted to recur: 37za Q177 (VERIFIED) — Sister.

Question 194 Logical Reasoning

In a group of 100 players, 70 play football, 50 play hockey and 55 play cricket. 30 play both hockey and cricket, 25 play both football and hockey, and 20 play all three games. How many players play both football and cricket?

- A. 35
- B. 40 ✓ **Predicted answer**
- C. 25
- D. 30

Why this answer? Correct: inclusion–exclusion — 100 = 70 + 50 + 55 − 25 − 30 − x + 20, giving 100 = 140 − x, so x = 40.

Why predicted [B] — Verified fact, predicted to recur: 37yy Q198 (VERIFIED) — 40.

Question 195 Logical Reasoning

Which number comes in the missing place? 120, 119, 117, 114, 110, _____

- A. 95
- B. 100
- C. 105 ✓ **Predicted answer**
- D. 107

swer? Successive differences are −1, −2, −3, −4 (120→119, 119→117, 117→114, 114→110). The next difference is −5, so the missing number is 110 − 5 = 105.

Why predicted [B] — Verified fact, predicted to recur: 37u Q172 (VERIFIED) — 105.

Question 196 Logical Reasoning

One apple pie has 10 slices, and each apple pie feeds five people. Henry is having a party with 200 people. How many slices of pie does he need?

- A. 100
- B. 200
- C. 50
- D. 400 ✓ **Predicted answer**

Why this answer? 200 people ÷ 5 per pie = 40 pies; 40 × 10 slices = 400 slices; correct.

Why predicted [B] — Verified fact, predicted to recur: 37r Q162 (VERIFIED) — 400.

Question 197 Logical Reasoning

You park your car in a no-parking zone and are approached by a traffic police officer. What is the most appropriate response?

- A. Cooperate with the officer and comply with traffic regulations ✓ **Predicted answer**
- B. Try to run away from the location
- C. Argue with the officer to resolve the issue
- D. Leave immediately without permission

Why this answer? correct: the violation has already occurred, so the appropriate response is to cooperate with the officer and follow traffic rules.

Why predicted [B] — Verified fact, predicted to recur: 37zb Q177 (VERIFIED) — Cooperate with the officer and comply with traffic regulations.

198 Logical Reasoning

In a certain university, 25% candidates failed university admission test. Of those who passed the test, 80% got the admission in the university. If 1800 got admission, how many candidates appear in the test?

- A. 5000
- B. 3000 ✓ **Predicted answer**
- C. 9000
- D. 6000

Why this answer? correct: 25% failed, so 75% passed; 80% of those were admitted, i.e. 60% of all candidates; 60% of 3000 is 1800.

Why predicted [B] — Verified fact, predicted to recur: 37aay Q176 (VERIFIED) — 3000.

Question 199 Logical Reasoning

Find the next number in the series: 6, 11, 18, 27, 38, ...?

- A. 49
- B. 50
- C. 51 ✓ **Predicted answer**
- D. 53

Why this answer? The differences are +5, +7, +9, +11, so the next difference is +13; 38 + 13 = 51.

Why predicted [C] — Syllabus anchor: syllabus anchor — number series recur (37za Q174: number series 48, 45, 40, 33, 24...; 37zb Q173: triangular number series). New series, worked answer.

Question 200 Logical Reasoning

Book is to Reading as Fork is to:

- B. Drinking
- C. Writing
- D. Eating ✓ **Predicted answer**

Why this answer? A book is used for reading, just as a fork is used for eating — the same use/purpose relation.

Why predicted [C] — Syllabus anchor: syllabus anchor — analogy items recur (37aay Q172: analogy cat dog mouse; 37aax Q197: mice to cats analogy). Standard reasoning fact.* ---

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