SIBA MDCAT 2025, Paper C — Solved Past Paper

Body: Sukkur IBA University (SIBA), Sukkur — MDCAT for Sindh, conducted for PMDC · **Post:** MDCAT (Medical & Dental College Admission Test), Paper C · **Year:** 2025 · **Questions:** 180 in the original paper — **175 solved and verified**, 5 excluded as defective · **Price:** Free

> **How to use this paper:** each question shows the stem, the four options, and the correct answer. Click “Why each option?” under a question to see all four options explained — one question teaches four topics. Answers are as of the 2025 sitting.

Source note: Primary source: mdcatpapers.com transcription of SIBA MDCAT 2025 Paper C (accessed 31 Oct 2026), transcribed word for word, 158 questions. Second source: the SIBA MDCAT 2025 Version C PDF (180 MCQs + answer key) + Scribd reproduction, used to transcribe the English / Logical Reasoning tail (printed Q163–180, file Q159–Q176) and to recover the four proved omissions (PDF Q57, Q96, Q161, Q162). Every answer was checked by worked derivation or reference fact, independently of the transcription's marked answer. 5 questions are DEFECTIVE-excluded by the assistant's decision under the owner's 8 Nov 2026 delegation (37be precedent): Q27, Q46, Q125, Q135, printed Q57 — see the excluded list. Numbering follows the file: transcription order Q1–Q158, printed numbers shown where the file states them (Q159–Q176 = printed 163–180); the three recovered gap-fills sit in a labelled appendix under their printed numbers (GF-96, GF-161, GF-162); do NOT renumber. One question (Q48) is verbatim identical to UHS 2025 Q1 and is kept in both files as transcribed.

Question Q1 Biology

Overconsumption of which of the following foods increases the risk of calcium oxalate stone?

fy vegetables ✓ **Correct answer**

- B. Fruits contain Vitamin C*
- C. Fruits contain high fiber
- D. Whole grains

A. Leafy greens such as spinach and beet greens are rich in oxalate, which binds calcium in the urine to form calcium oxalate, the commonest kidney-stone material; correct.

B. Vitamin C is broken down in the body partly to oxalate, so very large doses can raise oxalate, but ordinary fruit is not the recognised high-oxalate food here, and the option's asterisk is unexplained in the fetched text.

C. Fibre does not raise urinary oxalate; if anything, dietary fibre is not a stone risk factor.

D. Whole grains are not high-oxalate foods and are not linked to calcium oxalate stones in this way.

Note: Option B prints "Fruits contain Vitamin C*" with an unexplained asterisk, exactly as fetched; the asterisk is reproduced in the options line and the explanation label.

Question Q2 Biology

Which product is produced by genetically modified bacteria for patients with Diabetes mellitus?

- A. Insulin ✓ **Correct answer**
- B. Erythropoietin
- C. Growth hormone
- D. Vaccine

A. Human insulin is made by bacteria carrying the cloned human insulin gene (recombinant DNA technology) and is the standard replacement treatment in diabetes; correct.

B. Erythropoietin is also made recombinantly, but it treats anaemia by stimulating red-cell

not diabetes.

C. Recombinant growth hormone treats growth deficiency, not diabetes.

D. A vaccine trains the immune system against a pathogen; it is not the bacterial product given to replace insulin in diabetes.

Question Q3 Biology

Which changes occur in the endometrium during the proliferate phase of the menstrual cycle?

- A. It begins to shed
- B. It regenerates and thickens ✓ **Correct answer**
- C. It becomes secretory
- D. No change occurs

A. Shedding is menstruation, which happens when hormone support falls at the end of the cycle, not in the proliferative phase.

B. Under rising oestrogen after menstruation, the endometrium regrows and thickens in preparation for possible implantation; correct. (The stem prints "proliferate" for proliferative.)

C. The secretory phase comes AFTER ovulation, under progesterone, when glands secrete; it is the next phase, not this one.

D. The endometrium changes markedly in this phase; it is rebuilt, not left unchanged.

Question Q4 Biology

Role of mRNA in COVID-19 vaccines like Pfizer and Moderna is to:

- A. Helps the immune system recognize the virus
- B. Instructs cells to produce the viral spike protein ✓ **Correct answer**
- C. Triggers immediate antibody release from memory cells

ivers enzymes that destroy the virus

A. Recognition follows later, once the spike protein has been made and displayed; the mRNA itself does not do the recognising.

B. The mRNA carries the code for the spike protein, the cell's ribosomes read it and build the protein, and the immune system then responds to that protein; correct.

C. Memory cells release antibody on RE-exposure to an antigen; the vaccine's mRNA does not itself trigger that release.

D. No enzymes are delivered; the vaccine delivers genetic instructions, not virus-destroying enzymes.

Question Q5 Biology

Living cells of cartilage are called as:

- A. Osteocytes
- B. Thrombocytes
- C. Chondrocytes ✓ **Correct answer**
- D. Osteoblasts

A. Osteocytes are the mature cells of BONE, sitting in lacunae in the bony matrix, not cartilage.

B. Thrombocytes are platelets, cell fragments in blood that help clotting; they have nothing to do with cartilage.

C. Chondrocytes are the mature cells that live in cartilage and maintain its matrix; correct.

D. Osteoblasts are bone-FORMING cells that lay down bone matrix; they belong to bone, not cartilage.

Q6 Biology

The regulator of muscle contraction, which is released from sarcoplasmic reticulum is:

- A. Tropomyosin
- B. Troponin
- C. Calcium ions ✓ **Correct answer**
- D. ATP

A. Tropomyosin is the filament protein that covers the binding sites on actin; it is not released from the sarcoplasmic reticulum.

B. Troponin sits on the thin filament and binds calcium; it is a regulatory protein, not the substance released from the store.

C. The sarcoplasmic reticulum stores Ca^{2+} and releases it on stimulation; the calcium binds troponin, moves tropomyosin aside, and lets contraction proceed; correct.

D. ATP supplies the energy for contraction and for pumping calcium back, but it is not the regulator released from the reticulum.

Question Q7 Biology

Automatic and rapid actions that do not involve the conscious part of brain is:

- A. Reflex actions ✓ **Correct answer**
- B. Conditioned reflexes
- C. Taxes
- D. Synapses

A. A reflex is a rapid, automatic, involuntary response (usually through the spinal cord) that does not wait for conscious decision; correct.

B. Conditioned reflexes are LEARNED responses (like Pavlov's dogs); they are acquired, not the general name for automatic rapid actions.

pisms/taxes) are directional movements of whole organisms toward or away from a stimulus, not rapid protective actions.

D. A synapse is the junction between two neurons, a structure, not an action.

Question Q8 Biology

Crossing over involves exchange of genetic material between:

- A. Sister chromatids of same chromosome
- B. Non-sister chromatids of homologous chromosomes ✓ **Correct answer**
- C. Chromatids of non-homologous chromosomes
- D. Sister chromatids of homologous chromosomes

A. Sister chromatids are identical copies of one chromosome; exchanging between them would change nothing, and crossing over does not pair them this way.

B. In prophase I of meiosis, one chromatid from each homologue of a pair breaks and swaps segments, creating new allele combinations; correct.

C. Exchange between non-homologues is a translocation abnormality, not normal crossing over.

D. This mixes the terms: sister chromatids belong to the SAME chromosome, so they cannot be "of homologous chromosomes" in the crossing-over sense.

Question Q9 Biology

Name the biomolecule essential for information storage and transmission within cells.

- A. Carbohydrates
- B. Lipids
- C. Nucleic acids ✓ **Correct answer**
- D. Proteins

A. Carbohydrates store energy and build structures; they do not carry hereditary

B. Lipids store energy, insulate and form membranes; they do not store genetic information.

C. DNA stores the genetic instructions and RNA transmits them (DNA → RNA → protein); correct.

D. Proteins do most of the cell's work (enzymes, structure, transport) but they are the PRODUCTS of the information, not its store.

Question Q10 Biology

What is the chemical composition of chromosomes?

- A. RNA and lipids
- B. DNA and proteins ✓ **Correct answer**
- C. Carbohydrates and nucleic acids
- D. Proteins and carbohydrates

A. Chromosomes are not made of RNA and fat; RNA is made FROM chromosomal DNA, and lipids are membrane material.

B. A chromosome is DNA wound around histone proteins (chromatin); correct.

C. Carbohydrates are not a structural part of chromosomes.

D. This leaves out DNA entirely, which is the defining molecule of a chromosome.

Question Q11 Biology

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

- A. Sarcolemma
- B. Sarcoplasmic reticulum ✓ **Correct answer**

- D. Sarcoplasm

A. The sarcolemma is the muscle fibre's cell membrane; it carries the signal in but does not store calcium.

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

C. T-tubules are inward folds of the membrane that conduct the action potential deep into the fibre; they are the signal path, not the calcium store.

D. Sarcoplasm is the fibre's cytoplasm, the fluid the organelles sit in; it is not the calcium-storing structure.

Question Q12 Biology

Shivering thermogenesis involves:

- A. Voluntary muscle contraction
- B. Involuntary muscle contraction ✓ **Correct answer**
- C. Dehydration
- D. Hormone secretion

A. Shivering is not done on purpose; you cannot shiver to order in the way you can flex an arm.

B. Shivering is rapid, involuntary contraction of skeletal muscle that burns energy and releases heat; correct.

C. Losing water does not generate heat by shivering and is not what shivering involves.

D. Hormones (like thyroxine) raise heat production over hours, but shivering itself is muscular contraction, not secretion.

Q13 Biology

Guanine - cytosine pairs enhance DNA stability due to:

- A. Larger size
- B. Closer pairing
- C. More hydrogen bonds ✓ **Correct answer**
- D. Double ring structure in both

A. G–C pairs are not larger in any way that explains stability; size is fixed by the base-pair geometry, the same width for A–T and G–C.

B. The pairs sit at the same spacing in the double helix; closeness is not the distinguishing factor.

C. G pairs with C by THREE hydrogen bonds while A pairs with T by two, so G–C-rich DNA needs more energy to separate; correct.

D. Both bases are NOT double-ringed: guanine is a purine (two rings) but cytosine is a pyrimidine (one ring), so this cannot be the reason.

Question Q14 Biology

Which of the following neurons conduct impulses from sensory receptors to CNS:

- A. Sensory neurons ✓ **Correct answer**
- B. Motor neurons
- C. Efferent neurons
- D. Interneurons

A. Sensory (afferent) neurons carry signals from receptors IN toward the central nervous system; correct.

B. Motor neurons carry orders OUT from the CNS to muscles and glands, the opposite direction.

another word for motor (outgoing); these carry signals away from the CNS, not toward it.

D. Interneurons relay signals BETWEEN neurons inside the CNS; they do not bring signals in from receptors.

Question Q15 Biology

Why Lamarck is being remembered till today?

- A. Due to his rejected but appealing theory of heredity ✓ **Correct answer**
- B. Due to his universally acceptable theory of evolution
- C. Due to his accepted theory of heredity
- D. Due to his theory of evolution by natural selection

A. Lamarck is remembered for inheritance of acquired characteristics — the appealing but disproved idea that traits gained in life are passed on; correct.

B. Lamarck's theory was never universally accepted; it was replaced by Darwinian evolution.

C. His theory of heredity is NOT accepted; acquired characters are not inherited in the way he proposed.

D. Natural selection is Darwin's and Wallace's mechanism, not Lamarck's.

Question Q16 Biology

Which of the following is NOT related to DNA?

- A. Adenine
- B. Thymine
- C. Uracil ✓ **Correct answer**
- D. Guanine

A. Adenine is one of the four bases of DNA, pairing with thymine.

s the DNA-only base, pairing with adenine.

C. Uracil replaces thymine in RNA and is not found in DNA; correct.

D. Guanine is a DNA base, pairing with cytosine.

Question Q17 Biology

If a male with hemophilia marries a non-carrier female, what is the likelihood of their sons inheriting the condition?

- A. 50%
- B. 100%
- C. 0% ✓ **Correct answer**
- D. 25%

A. Half the sons would be affected only if the mother were a carrier; she is stated to be a non-carrier.

B. Every son affected would require every son to receive the faulty X, which cannot happen here.

C. Haemophilia is X-linked recessive. Sons get their X from their mother (non-carrier, two normal X chromosomes) and their Y from their father, so no son can receive the father's faulty X; correct.

D. A quarter is the figure for some carrier-mother crosses, not for this cross.

Question Q18 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
- D. Point of action is allosteric site ✓ **Correct answer**

COMPETITIVE inhibitor, which competes with substrate for the active site.

B. Again competitive behaviour: more substrate outcompetes the inhibitor. Non-competitive inhibition cannot be overcome this way.

C. Inhibitors slow reactions; nothing about this option describes inhibition at all.

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

Question Q19 Biology

Which of the following event prevent backflow of blood from ventricles to atria during ventricular systole?

- A. Contraction of the atrial wall musles
- B. Closure of tricuspid and bicuspid valves ✓ **Correct answer**
- C. Opening of semilunar valve
- D. Opening of tricuspid and bicuspid valves

A. The atria contract BEFORE the ventricles (atrial systole), not during ventricular systole, and atrial contraction does not seal the ventricles. (Option A prints "musles".)

B. When the ventricles contract, pressure shuts the atrioventricular (tricuspid and bicuspid/mitral) valves, sealing the atria off; correct.

C. The semilunar valves open to let blood OUT to the arteries; they prevent backflow from arteries, not from ventricles to atria.

D. Opening these valves would LET blood flow back into the atria — the opposite of preventing it.

Question Q20 Biology

In the following process the cells release energy from oxidation of food molecules?

ular respiration ✓ **Correct answer**

- B. Photosynthesis
- C. DNA replication
- D. Protein synthesis

A. Respiration oxidises food molecules (such as glucose) and captures the released energy as ATP; correct.

B. Photosynthesis STORES light energy in food molecules; it builds them up rather than oxidising them for energy.

C. Copying DNA USES energy; it does not release energy from food.

D. Building proteins USES energy; it does not release energy from oxidising food.

Question Q21 Biology

How many NADH are produced, when one Acetyl co-A is oxidized during Krebs's cycle?

- A. 1
- B. 2
- C. 3 ✓ **Correct answer**
- D. 6

A. One NADH is made at a single step (for example isocitrate → α-ketoglutarate), but two more steps also make NADH.

B. Two counts only two of the three NADH-producing steps.

C. One turn of the cycle per acetyl-CoA makes NADH at the isocitrate, α-ketoglutarate and malate steps: 3 in total (plus 1 $FADH_2$ and 1 GTP); correct.

D. Six is the NADH total for TWO acetyl-CoA units (one whole glucose), not one.

Q22 Biology

Which of the following best describes glycoproteins?

- A. Proteins linked with carbohydrates ✓ **Correct answer**
- B. Proteins linked with DNA
- C. Proteins linked with lipids
- D. Proteins linked with minerals

A. A glycoprotein is a protein with sugar chains attached to it (for example many membrane and secreted proteins); correct.

B. Protein–DNA complexes are chromatin/nucleoproteins, not glycoproteins.

C. Protein–lipid conjugates are lipoproteins, not glycoproteins.

D. Proteins bound to metal ions are metalloproteins, not glycoproteins.

Question Q23 Biology

The function which is common between Cerebellum and Hippocampus is;

- A. Equilibrium
- B. Memory formation ✓ **Correct answer**
- C. Body positioning
- D. Sexual arousal

A. Balance is a cerebellar job; the hippocampus has no role in equilibrium.

B. The hippocampus is central to forming new memories, and the cerebellum contributes to procedural (skill) memory; on the textbook's association this is the shared function; correct on that account.

C. Sensing body position is cerebellar/proprioceptive work, not hippocampal.

D. Neither structure is the seat of sexual arousal (limbic/hypothalamic circuits are).

VERIFIED — promoted 8 Nov 2026 by assistant under the owner's 8 Nov 2026 delegation

is FINAL under the owner's 8 Nov 2026 verification standard): the answer rests on the textbook's association of the cerebellum with procedural memory; the cerebellum's main work is motor coordination, and "memory formation" is primarily hippocampal.

Question Q24 Biology

In males, which of the following is considered a urogenital organ?

- A. Urethra ✓ **Correct answer**
- B. Ureter
- C. Urinary bladder
- D. Vas deferens

A. In males the urethra carries BOTH urine and semen, so it serves the urinary and the genital systems; correct.

B. The ureter carries urine only, from kidney to bladder; it has no genital role.

C. The bladder stores urine only; it has no genital role.

D. The vas deferens carries sperm only; it has no urinary role.

Question Q25 Biology

The most common type of arthritis is:

- A. Gout
- B. Rheumatoid arthritis
- C. Osteoarthritis ✓ **Correct answer**
- D. Spondylitis

A. Gout (uric-acid crystals in joints) is common but far less frequent than osteoarthritis.

B. Rheumatoid arthritis is an autoimmune joint disease affecting roughly 1% of people, well below osteoarthritis.

-tear degeneration of joint cartilage, the commonest arthritis by a large margin, especially with age; correct.

D. Spondylitis is inflammation of the spine (a narrower group of conditions), not the commonest arthritis overall.

Question Q26 Biology

The other name for Interstitial cells in male testes is:

- A. Leydig cell ✓ **Correct answer**
- B. Spermatogonia cell
- C. Sertoli cell
- D. Spermatocyte

A. The interstitial cells lying between the seminiferous tubules are the Leydig cells, which secrete testosterone; correct.

B. Spermatogonia are the stem cells inside the tubules that divide to start sperm production, not interstitial cells.

C. Sertoli cells are the nurse cells inside the tubules that support developing sperm, not interstitial cells.

D. Spermatocytes are developing sperm cells inside the tubules undergoing meiosis, not interstitial cells.

Question Q28 Biology

Transfer of phosphate from one compound to the other compound requires an enzyme called:

- A. Oxidoreductase
- B. Transferase ✓ **Correct answer**
- C. Hydrolase

A. Oxidoreductases move electrons (redox reactions), not phosphate groups.

B. Transferases move a functional group from one molecule to another; phosphate-transferring transferases are the kinases; correct.

C. Hydrolases break bonds by ADDING water (hydrolysis); they do not transfer a phosphate to a second compound.

D. Ligases JOIN two molecules using ATP; joining is not the same as transferring a phosphate group between compounds.

Question Q29 Biology

Linkage of genes in Drosophila was first discovered by:

- A. Thomas Hunt Morgan ✓ **Correct answer**
- B. Alfred Sturtevant
- C. Gregor Mendel
- D. Hugo de Vries

A. Morgan's fruit-fly crosses showed some genes are inherited together (linked) instead of assorting independently; correct.

B. Sturtevant was Morgan's student who built the first gene maps FROM Morgan's linkage data; he did not first discover linkage.

C. Mendel found independent assortment in peas; linkage is the EXCEPTION to his second law, found later.

D. De Vries worked on mutation theory and rediscovered Mendel's laws; he did not discover linkage in Drosophila.

Q30 Biology

Which phenomenon increases the chances of variations?

- A. Crossing Over ✓ **Correct answer**
- B. Linkage
- C. Epistasis
- D. Dominance

A. Swapping segments between homologous chromosomes creates new allele combinations in gametes, directly increasing variation; correct.

B. Linkage HOLDS genes together and REDUCES the reshuffling of combinations, so it limits variation rather than increasing it.

C. Epistasis is one gene masking another's effect; it changes how variation SHOWS, but does not itself generate new combinations.

D. Dominance is the masking of a recessive allele in a heterozygote; it hides variation rather than creating it.

Question Q31 Biology

When antibodies produced by B-cells, kill the antigens then it is called:

- A. Cell mediated response
- B. Passive response
- C. Humoral response ✓ **Correct answer**
- D. Cells collaborated response

A. Cell-mediated immunity is T-cell driven (killer T cells attacking infected cells directly); it is not antibody-driven.

B. Passive immunity means receiving READY-MADE antibodies from elsewhere (mother, injection), not making your own.

s made by B-cells (plasma cells) circulating in body fluids (humours) and neutralising antigens is the humoral response; correct.

D. This is not a standard immunological term; collaboration between cells happens, but it is not the name of the antibody response.

Question Q32 Biology

B-Lymphocytes are formed and matured in:

- A. Liver
- B. Spleen
- C. Bone marrow ✓ **Correct answer**
- D. Thymus

A. The liver makes blood cells in the foetus, but in the adult it is not where B-lymphocytes are formed and matured.

B. The spleen filters blood and hosts immune responses, but B-cells are not formed and matured there.

C. In humans B-lymphocytes are both produced and matured in the bone marrow (the "B" originally named the bursa in birds, but the human site is the marrow); correct.

D. The thymus is where T-lymphocytes mature, not B-lymphocytes.

Question Q33 Biology

Which of the following is a route of HIV transmission?

- A. Unhygienic living conditions
- B. Blood transfusion with contaminated blood ✓ **Correct answer**
- C. Hand shaking
- D. Living together in the same room

A. Poor hygiene does not transmit HIV; the virus needs blood, sexual fluids, or mother-to-

B. Infected blood entering the recipient's bloodstream directly transmits HIV; correct.

C. HIV is not spread by casual skin contact.

D. Sharing a room, food, or toilets does not transmit HIV.

Question Q34 Biology

Which part of small intestine is responsible for nutrient absorption?

- A. Duodenum
- B. Jejunum ✓ **Correct answer**
- C. Ileum
- D. Rectum

A. The duodenum is mainly where digestion finishes and acid chyme is neutralised; little nutrient absorption happens there.

B. The jejunum, with its long villi, is the main absorptive stretch for digested carbohydrates, proteins and most nutrients; correct.

C. The ileum absorbs what remains, notably bile salts and vitamin B12, but it is not the primary absorptive part.

D. The rectum is part of the LARGE intestine and stores faeces; it absorbs no nutrients from food.

Question Q35 Biology

Water can circulate in living organisms due to:

- A. Surface tension and polarity
- B. Cohesion and adhesion ✓ **Correct answer**
- C. Solubility in cells

ole liquid range

A. Polarity underlies water's behaviour and surface tension is a real property, but neither is the mechanism named for transport up vessels.

B. Cohesion (water sticking to water) holds the column together and adhesion (water sticking to vessel walls) pulls it upward, driving capillary rise and transport; correct.

C. Dissolving substances is a property of water as a solvent, not the force that circulates it.

D. Staying liquid over a wide temperature range is useful, but it does not itself move water around an organism.

Question Q36 Biology

If the disease is caused due to a defective gene located on the X chromosome, then defectives gene can only be transmitted to male offspring by the:

- A. Female gamete ✓ **Correct answer**
- B. Male gamete
- C. Bacteria
- D. Mutation

A. A son receives his single X chromosome from his mother (the egg) and his Y from his father, so an X-linked gene can reach a son only through the mother; correct. (The stem prints "defectives gene".)

B. The father's contribution to a son is the Y chromosome, which carries no copy of the X-linked gene.

C. Bacteria do not transmit human X-linked genes to offspring.

D. A new mutation can CREATE a defective gene, but it is not the route by which an existing X-linked gene is transmitted to a son.

Q37 Biology

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

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

A. Plant viruses infect plants; they cannot cause human diseases like influenza or rabies.

B. Influenza, measles and rabies are all caused by viruses that infect animals, including humans; correct.

C. Fungal viruses (mycoviruses) infect fungi, not people.

D. Bacteriophages infect bacteria only; they do not cause human disease.

Question Q38 Biology

Which of the following biological molecule releases highest energy from its one gram?

- A. Carbohydrates
- B. Lipids ✓ **Correct answer**
- C. Protein
- D. Water

A. Carbohydrates give about 4 kcal per gram, less than half the lipid value.

B. Fats give about 9 kcal per gram, more than any other food molecule, because they are more reduced (more C–H bonds); correct.

C. Protein also gives about 4 kcal per gram, the same order as carbohydrate.

D. Water gives no metabolic energy at all.

Q39 Biology

The best way to avoid AIDS is:

- A. Preventive measures ✓ **Correct answer**
- B. Vaccination
- C. Medication
- D. Shots

A. Avoiding exposure (safe sex, sterile needles, screened blood) is the recognised way to avoid HIV infection, there being no widely available vaccine; correct on the intended reading.

B. There is no widely available effective HIV vaccine, so vaccination cannot be the answer.

C. Antiretroviral medication treats HIV infection after it happens; it is not the way to AVOID the disease in the first place.

D. "Shots" names no specific preventive strategy and overlaps with vaccination/medication; it is not the intended answer. VERIFIED — promoted 8 Nov 2026 by assistant under the owner's 8 Nov 2026 delegation (one source is FINAL under the owner's 8 Nov 2026 verification standard): "best way" is a judgement resting on the intended reading; prevention, treatment and vaccination overlap in practice (for example preventive medication exists), so the answer rests on the question's framing.

Question Q40 Biology

Which of the following substances pass through the glomerulus into Bowman's capsule?

- A. Glucose ✓ **Correct answer**
- B. Red blood cells
- C. Platelets
- D. Albumin

A. Glucose is small and freely filtered at the glomerulus into the capsular filtrate (and

ater), correct.

B. Red cells are far too large to cross the filtration barrier; their presence in filtrate means damage.

C. Platelets are also too large to be filtered.

D. Albumin is a large plasma protein normally held back by size and charge; it appears in filtrate only in disease.

Question Q41 Biology

The appendix is attached to which part of large intestine?

- A. Rectum
- B. Caecum ✓ **Correct answer**
- C. Colon
- D. Ileum

A. The rectum is the final, distal part of the large intestine; the appendix is nowhere near it.

B. The vermiform appendix is a blind pouch hanging off the caecum, the first pouch of the large intestine; correct.

C. The colon is the large intestine in general, but the appendix attaches specifically to the caecum, not to the colon proper.

D. The ileum is the last part of the SMALL intestine, which joins the caecum; the appendix is not attached to it.

Question Q42 Biology

Which structural characteristic is most accurate for arteries?

- A. Thin walls with valves

:k and muscular walls ✓ **Correct answer**

- C. Highly permeable walls
- D. Large lumen lacking muscle

A. Thin walls with valves describe VEINS, which carry low-pressure blood back and need valves against backflow.

B. Arteries carry high-pressure blood from the heart and need thick elastic, muscular walls to withstand and regulate it; correct.

C. High permeability is the mark of CAPILLARIES, where exchange happens, not arteries.

D. A large lumen with little muscle describes veins, not arteries (arteries have narrow lumens relative to wall thickness).

Question Q43 Biology

A food sample contains long chains of amino acids bounded together. This indicates the presence of:

- A. Carbohydrates
- B. Lipids
- C. Proteins ✓ **Correct answer**
- D. Nucleic acids

A. Carbohydrates are chains of SUGARS, not amino acids.

B. Lipids are built from fatty acids and glycerol, not amino-acid chains.

C. A protein is exactly a long chain (polypeptide) of amino acids joined by peptide bonds; correct.

D. Nucleic acids are chains of NUCLEOTIDES, not amino acids.

Q44 Biology

Monoclonal antibodies are useful in cancer diagnosis by:

- A. Replacing damaged tissue
- B. Changing the genetic code of cancer cells
- C. Killing healthy cells to reduce tumor spread
- D. Detecting specific tumor markers in samples ✓ **Correct answer**

A. Antibodies do not replace tissue; tissue replacement is a transplant/regeneration matter.

B. Antibodies bind targets; they do not rewrite a cell's genes.

C. Deliberately killing healthy cells would be harm, not diagnosis, and is not what monoclonal antibodies are used for here.

D. A monoclonal antibody binds one specific antigen, so labelled versions reveal tumour markers in blood or tissue samples; correct.

Question Q45 Biology

The main function of the pharynx in respiratory system:

- A. Serves as passage for both food and air ✓ **Correct answer**
- B. Produces mucus
- C. Produces voice
- D. Filters air

A. The pharynx is the shared crossroads: air passes through to the larynx and food passes through to the oesophagus; correct.

B. Mucus is made mainly by nasal passages and goblet cells along the airways, not as the pharynx's main function.

C. Voice is produced at the LARYNX by the vocal cords, below the pharynx.

s done mainly in the nose (hairs, mucus); the pharynx is a passage, not a filter.

Question Q47 Biology

During diastole, the heart chambers:

- A. Relax and fill with blood ✓ **Correct answer**
- B. Contract strongly
- C. Eject blood into arteries
- D. Remain closed

A. Diastole is the relaxation phase: the chambers relax, pressure falls, and blood flows in to fill them; correct.

B. Strong contraction is systole, the opposite phase.

C. Ejection happens in systole, when the ventricles contract.

D. The chambers do not stay closed; the atrioventricular valves open during diastole so the ventricles can fill.

Question Q48 Biology

Kidneys perform their osmoregulatory role under the effect of Antidiuretic Hormone, which type of urine is produced in this situation?

- A. Hypotonic urine with decreased volume
- B. Hypotonic urine with increased volume
- C. Hypertonic urine with decreased volume ✓ **Correct answer**
- D. Hypertonic urine with increased volume

A. Wrong on concentration: ADH makes urine MORE concentrated (hypertonic), not dilute.

B. Wrong on both counts: ADH concentrates the urine and reduces its volume.

C. ADH increases water reabsorption in the collecting ducts, so less water leaves and what

re concentrated; correct.

D. Right about concentration but wrong about volume: reabsorbing more water leaves LESS urine, not more. (Dedup: this question is verbatim identical to UHS 2025 Q1; see the dedup note. It is kept here as transcribed.)

Question Q49 Biology

A person has swollen lymph nodes after throat infection. What does this indicate?

- A. Failure of circulatory system
- B. Extra glucose storage
- C. Active immune response ✓ **Correct answer**
- D. Blockage of digestive track

A. Swollen nodes are not circulatory failure; circulation failure shows as poor perfusion, not tender neck glands.

B. Glucose is stored as glycogen in liver and muscle, not in lymph nodes.

C. Lymph nodes swell because lymphocytes inside them multiply and fight the infection; correct.

D. The throat infection drains to neck nodes; a digestive blockage would show as obstruction symptoms, not swollen nodes.

Question Q50 Biology

Which of the following is correct about the structure of brain?

- A. Cerebral cortex is outer part consists of grey matter ✓ **Correct answer**
- B. Cerebral medulla is inner part consists of grey matter
- C. Cerebral cortex is inner part consists of white matter
- D. Cerebral medulla is outer part consists of white matter

A. The cortex is the outer rind of the cerebrum, made of neuron cell bodies (grey matter);

B. The inner part is mostly myelinated axons (white matter), not grey matter.

C. This reverses both the position and the tissue: the cortex is outer and grey.

D. This reverses the position: the medulla (inner white matter) is inside, not outside.

Question Q51 Biology

Under a microscope plant cells appeared rigid in shape, unlike flexible animal cells. Which structure explain this difference?

- A. Cell wall ✓ **Correct answer**
- B. Vacuole
- C. Cytoskeleton
- D. Plasma membrane

A. The cellulose cell wall outside the membrane gives the plant cell its fixed, rigid shape; correct.

B. The large vacuole presses the contents against the wall (turgor) and helps support the cell, but the rigid shape itself comes from the wall.

C. Both plant and animal cells have a cytoskeleton; it is not the structure that makes plant cells rigid where animal cells are flexible.

D. Both cell types have a plasma membrane, and a membrane alone is flexible, not rigid.

Question Q52 Biology

Which type of joint allows bending of the elbow joint and has a synovial cavity?

- A. Cartilaginous joint
- B. Fibrous joint
- C. Pubic symphysis

ge joint ✓ Correct answer

A. Cartilaginous joints (like between vertebrae) allow little movement and have NO synovial cavity.

B. Fibrous joints (like skull sutures) allow essentially no movement and have no synovial cavity.

C. The pubic symphysis is a cartilaginous joint; it has no synovial cavity and does not bend like an elbow.

D. The elbow is a synovial hinge joint: it bends in one plane (flexion/extension) and has a synovial cavity; correct.

Question Q53 Biology

If a round seeded pea plant is self-fertilized and all of its offspring are also round seeded:

- A. Both parents and offspring must be true breed
- B. Both parents and offspring may be true breed ✓ **Correct answer**
- C. Only parents but not offspring will be true breed
- D. Only offspring but not parents will be true breed

A. The marked key: the textbook reading is that uniform round offspring mean the parent was homozygous (true-breeding) for round, so the offspring are too.

B. The strictly correct reading: a heterozygous parent could by chance give all-round offspring in a small family (each offspring has a 3-in-4 chance of being round), so "may" is the logically safe word.

C. If the parent is homozygous round, every offspring receives a round allele from both sides and is homozygous round too; this option contradicts that.

D. Offspring cannot all be true-breeding round unless the parent supplied round alleles

a non-true-breeding parent would be expected to throw wrinkled offspring. PICK-ONE decided by assistant under the owner's 8 Nov 2026 delegation (37be precedent): B is the strictly correct reading — a heterozygous parent could by chance give all-round offspring in a small family (each offspring has a 3-in-4 chance of being round), so "must" overstates what the evidence proves. A remains the paper's marked / intended answer (PDF key A) and is recorded here, not taught as the answer. The derivation overrides the key where they conflict (see sprint key-reliability caveat).

Question Q54 Biology

A student observes a microorganism under a microscope that lacks a nucleus and is made of a single cell. Which classification would best fit this organism?

- A. Unicellular prokaryote ✓ **Correct answer**
- B. Unicellular eukaryote
- C. Multicellular eukaryote
- D. Multicellular prokaryote

A. No nucleus plus a single cell is the definition of a prokaryote such as a bacterium; correct.

B. A unicellular eukaryote (like Amoeba) has a true nucleus, which this organism lacks.

C. Multicellular eukaryotes (animals, plants) are many-celled with nuclei; this organism is single-celled without one.

D. Prokaryotes are not multicellular organisms in this classification; the observed organism is single-celled.

Question Q55 Biology

In biotechnology vaccines can be developed by cloning of:

- A. Gene for antigen of pathogen ✓ **Correct answer**
- B. Gene for receptor of the patient

- D. Gene for antibody of patient

A. Cloning the gene for a pathogen's antigen lets the antigen be produced in quantity and used to train immunity; correct.

B. The patient's own receptor gene produces no pathogen antigen and would not make a vaccine.

C. The patient's own molecules are not the foreign antigens a vaccine must present.

D. Cloning a patient's antibody gene does not produce a vaccine antigen.

Question Q56 Biology

Atrioventricular valve closed during which phase of cardiac cycle:

- A. Ventricular systole ✓ **Correct answer**
- B. Ventricular diastole
- C. Atrial systole
- D. Atrial diastole

A. When the ventricles contract, pressure rises above the atria and slams the atrioventricular valves shut, preventing backflow; correct.

B. During ventricular relaxation the valves OPEN so the ventricles can fill.

C. Atrial contraction pushes blood through the OPEN atrioventricular valves into the ventricles.

D. Atrial relaxation is not the phase that closes these valves; closure is driven by ventricular pressure.

Question Q57 Biology

Name the idea of Darwin that best explains the ability of populations to reproduce those

who possess beneficial traits.

- A. Gene flow
- B. Genetic drift
- C. Artificial selection
- D. Natural selection ✓ **Correct answer**

A. Gene flow is the movement of alleles between populations by migration; it spreads traits but is not Darwin's explanation of differential reproduction.

B. Drift is random change in allele frequencies, strongest in small populations; it is not driven by beneficial traits.

C. Artificial selection is HUMAN-directed breeding, not Darwin's natural mechanism.

D. Individuals with beneficial heritable traits leave more offspring, so those traits spread; this is Darwin's mechanism; correct.

Question Q58 Biology

At least how many saccharide units must be present in polysaccharide?

- A. 1
- B. 2
- C. 10
- D. 11 ✓ **Correct answer**

A. One unit is a monosaccharide (a single sugar), not a polysaccharide.

B. Two units make a disaccharide, not a polysaccharide.

C. Ten units is still counted as an oligosaccharide on the convention used here (up to 10 units); it does not cross into polysaccharide.

D. On the "more than 10 units" convention, 11 is the first number that counts as a polysaccharide; correct on that convention. VERIFIED — promoted 8 Nov 2026 by assistant

wner's 8 Nov 2026 delegation (one source is FINAL under the owner's 8 Nov 2026 verification standard). The more-than-10 convention is the standard textbook classification, confirmed 8 Nov 2026 (oligosaccharides 2–10 units, polysaccharides more than 10 units — chembam.com saccharides page; Testbook; Bhal & Bahl, A Textbook of Organic Chemistry). Other texts draw the line differently, so the convention is stated here rather than assumed.

Question Q59 Biology

A doctor taps below the knee and the leg kicks forward. What does this show?

- A. A conditional response
- B. Voluntary muscle contractions
- C. An involuntary reflex to external stimuli ✓ **Correct answer**
- D. A delayed response due to brain processing

A. A conditioned (learned) response needs prior training; the knee jerk is inborn, not learned.

B. The kick happens without the person deciding to kick; it is involuntary.

C. Tapping the patellar tendon stretches the muscle, the spinal reflex arc fires, and the leg extends automatically; correct.

D. The knee jerk is fast and spinal; it does not wait for the brain to process anything.

Question Q60 Biology

If fertilization does not occur, which part of uterus degenerate?

- A. Myometrium
- B. Endometrium ✓ **Correct answer**
- C. Perimetrium
- D. Cervix

metrium is the muscular wall, it stays intact and does the contracting, it does not degenerate each cycle.

B. Without fertilisation, hormone support falls and the functional endometrial lining breaks down and is shed (menstruation); correct.

C. The perimetrium is the outer covering of the uterus; it does not degenerate.

D. The cervix is the neck of the uterus; it does not degenerate when fertilisation fails.

Question Q61 Biology

Which process uses mRNA to make protein at ribosomes?

- A. Replication
- B. Transcription
- C. Translation ✓ **Correct answer**
- D. Cell fractionation

A. Replication copies DNA to DNA; it does not make protein from mRNA.

B. Transcription makes RNA from a DNA template; it produces the mRNA but does not read it into protein.

C. At the ribosome, the mRNA sequence is read and amino acids are joined into a protein; correct.

D. Cell fractionation is a laboratory technique for separating cell parts; it is not a protein-making process.

Question Q62 Biology

Which of the following is the sexually transmitted disease?

- A. Syphilis ✓ **Correct answer**
- B. Lung Cancer

erculosis

- D. Autoimmune disorders

A. Syphilis, caused by Treponema pallidum, is spread by sexual contact; correct.

B. Lung cancer is not infectious and is not sexually transmitted.

C. Tuberculosis spreads through the air in droplets, not by sexual transmission.

D. Autoimmune disorders are failures of self-tolerance, not infections at all.

Question Q63 Biology

The Golgi apparatus is structurally made of a series of flattened membrane bounded sacs.

- A. Grana
- B. Cristae
- C. Cisternae ✓ **Correct answer**
- D. Vesicles

A. Grana are stacks of thylakoids in chloroplasts, not Golgi sacs.

B. Cristae are the folds of the inner mitochondrial membrane, not Golgi sacs.

C. The Golgi apparatus is a stack of flattened membrane sacs called cisternae; correct.

D. Vesicles are small transport bubbles that bud from the Golgi, not the stacked sacs themselves.

Question Q64 Biology

Which type of change is a nerve impulse?

- A. Electrical and mechanical change
- B. Chemical and mechanical change
- C. Electrical and chemical change ✓ **Correct answer**

mical change only

A. The impulse is not a mechanical change; no bulk movement of tissue carries it.

B. This leaves out the electrical wave of depolarisation that IS the impulse travelling along the axon.

C. The impulse travels as an electrical change in membrane potential and crosses synapses by chemical transmitter release; correct.

D. Chemical change alone misses the electrical propagation along the axon.

Question Q65 Biology

Which of the following fluid flows through the lymphatic vessels?

- A. Plasma
- B. Lymph ✓ **Correct answer**
- C. Bile
- D. Serum

A. Plasma is the fluid part of BLOOD, flowing in blood vessels, not lymphatics.

B. Lymph, the fluid drained from tissues, flows through the lymphatic vessels back toward the blood; correct.

C. Bile is a digestive secretion carried by bile ducts to the intestine, not by lymphatics.

D. Serum is plasma without clotting factors, a laboratory preparation from blood, not the fluid of the lymphatics.

Question Q66 Biology

Which one of the following is the most common nitrogenous waste excreted in urine of a healthy human?

- A. Ammonia

a ✓ Correct answer

- C. Uric Acid
- D. Creatinine

A. Ammonia is the main waste of aquatic animals; in humans it is converted to urea in the liver because free ammonia is toxic.

B. Humans are ureotelic: urea is the chief nitrogenous waste in urine, far exceeding the others; correct.

C. Uric acid is the main waste of birds and reptiles, and only a minor component of human urine.

D. Creatinine comes from muscle creatine breakdown and appears in urine, but in much smaller amounts than urea.

Question Q67 Biology

Hippocampus mainly involved in:

- A. Vision and hearing reflexes
- B. Voluntary muscles movement
- C. Memory storage ✓ **Correct answer**
- D. Speech production

A. Visual and auditory reflexes are handled in the midbrain (superior/inferior colliculi), not the hippocampus.

B. Voluntary movement is commanded by the motor cortex and coordinated by the cerebellum and basal ganglia, not the hippocampus.

C. The hippocampus is central to forming and consolidating memories; correct.

D. Speech production is centred in Broca's area of the frontal lobe, not the hippocampus.

Q68 Biology

The covalently bonded non protein part of enzyme is called: -

- A. Activator
- B. Prosthetic group ✓ **Correct answer**
- C. Coenzyme
- D. Apoenzyme

A. An activator is anything (often a metal ion) that increases enzyme activity; the word does not name the covalently bound part.

B. A non-protein group permanently (covalently) attached to the enzyme protein is its prosthetic group; correct.

C. A coenzyme is an organic non-protein helper, but it binds LOOSELY (non-covalently) and comes and goes; it is not the covalently bonded part.

D. The apoenzyme is the PROTEIN part alone, without its cofactor — the opposite of the non-protein part.

Question Q69 Biology

The outer surface of the axon membrane in a resting neuron is:

- A. Negative due to sodium ions
- B. Positive due to sodium ions ✓ **Correct answer**
- C. Positive due to potassium ions
- D. Neutral due to balanced ions

A. The OUTSIDE is positive at rest, not negative; the inside is the negative side (about −70 mV).

B. Sodium is concentrated OUTSIDE the resting neuron, leaving the outer surface relatively positive against the negative interior; correct.

n is concentrated INSIDE the cell, so it cannot be what makes the outside positive.

D. The ions are deliberately UNBALANCED across the membrane (the sodium–potassium pump maintains the difference), so the membrane is polarised, not neutral.

Question Q70 Biology

Which class of animals excrete ammonia as their primary nitrogenous waste?

- A. Uricotelic
- B. Urotelic
- C. Ammonotelic ✓ **Correct answer**
- D. Ureotelic

A. Uricotelic animals (birds, reptiles, insects) excrete uric acid, not ammonia.

B. "Urotelic" is not a standard term for a waste class; it is a distractor here.

C. Ammonotelic animals (most aquatic animals) excrete ammonia directly into the water; correct.

D. Ureotelic animals (mammals, most land vertebrates) excrete urea, not ammonia.

Question Q71 Biology

Which of the following best describes the direction of impulse traveling in a typical neuron?

- A. Axon ..... dendrite ..... cell body
- B. Dendrite ..... cell body ..... axon ✓ **Correct answer**
- C. Synapse ..... axon ..... dendrite
- D. Cell body ..... dendrite ..... axon

A. This runs the impulse backwards, starting at the output end.

se is received by dendrites, passes through the cell body, and travels out along the axon to the synapse; correct.

C. The synapse is the END of the journey, not the start, and the order is reversed.

D. The cell body does not send the impulse out to the dendrites first; dendrites receive it.

Question Q72 Biology

Homopolysaccharide that is found in the cell wall of fungi and in the exoskeleton of arthropods is:

- A. Cellulose
- B. Glycogen
- C. Starch
- D. Chitin ✓ **Correct answer**

A. Cellulose is the homopolysaccharide of PLANT cell walls, not fungal walls or arthropod shells.

B. Glycogen is the animal storage polysaccharide (liver, muscle), not a structural wall material.

C. Starch is the plant storage polysaccharide, not found in fungal walls or exoskeletons.

D. Chitin, a polymer of N-acetylglucosamine, stiffens fungal cell walls and arthropod exoskeletons; correct.

Question Q73 Biology

The most abundant lipids in living things are:

- A. Terpenes
- B. Waxes
- C. Steroids
- D. Acylglycerols ✓ **Correct answer**

(plant oils, resins, pigments) are widespread but are not the bulk lipid class of living things.

B. Waxes are protective coatings; they occur widely but in small amounts compared with storage fats.

C. Steroids (cholesterol, hormones) are vital but present in far smaller amounts than storage lipids.

D. Triacylglycerols (fats and oils) are the main storage lipids and the textbook's most abundant lipid class; correct on that account. VERIFIED — promoted 8 Nov 2026 by assistant under the owner's 8 Nov 2026 delegation (one source is FINAL under the owner's 8 Nov 2026 verification standard): "most abundant" is a textbook ranking; phospholipids rival acylglycerols in membranes, and the ranking depends on whether storage or membrane lipids are counted.

Question Q74 Biology

Name the type of bond that join amino acids to form a polypeptide chain:

- A. Hydrogen bond
- B. Ionic bond
- C. Glycosidic bond
- D. Peptide bond ✓ **Correct answer**

A. Hydrogen bonds hold a folded protein's shape, but they do not join amino acids into the chain.

B. Ionic (salt) bridges stabilise folded proteins; they do not link the amino-acid chain.

C. Glycosidic bonds join SUGARS, not amino acids.

D. A peptide (amide) bond joins the carboxyl group of one amino acid to the amino group of the next; correct.

Q75 Biology

Which of the following is not a globular protein?

- A. Enzyme
- B. Hormone
- C. Channel protein
- D. Collagen ✓ **Correct answer**

A. Most enzymes are compact, roughly spherical (globular) proteins.

B. Many protein hormones (such as insulin) are globular in shape.

C. Channel proteins fold into compact globular units within the membrane.

D. Collagen is a long, rope-like FIBROUS protein built for strength in tendons and skin, not a globular protein; correct.

Question Q76 Biology

Which specialized cells of liver perform phagocyte function?

- A. Kupffer cells ✓ **Correct answer**
- B. Schwann cells
- C. Parietal cells
- D. Chief cells

A. Kupffer cells are the liver's resident macrophages; they engulf pathogens and debris from the blood; correct.

B. Schwann cells wrap peripheral nerve fibres in myelin; they are not liver phagocytes.

C. Parietal cells are stomach cells that secrete hydrochloric acid; they are not in the liver.

D. Chief cells are stomach cells that secrete pepsinogen; they are not liver phagocytes.

Q77 Biology

According to Darwin, the main force behind evolution is:

- A. Migration
- B. Genetic mutation
- C. Artificial selection
- D. Natural selection ✓ **Correct answer**

A. Migration moves genes between populations (gene flow) but is not Darwin's driving force of evolution.

B. Mutation supplies variation, the raw material, but Darwin's force is the SELECTION acting on that variation.

C. Artificial selection is human breeding; Darwin used it as an analogy, but the natural force is natural selection.

D. Differential survival and reproduction of the better-adapted is Darwin's main evolutionary force; correct.

Question Q78 Biology

Beside fertilization, the function of fallopian tube is:

- A. Nourishment of embryo
- B. Transport of ovum towards uterus ✓ **Correct answer**
- C. Secretion of female hormones
- D. Implantation of zygote

A. The embryo is nourished after implantation in the uterus (and later by the placenta), not in the tube.

B. Cilia and muscle in the tube sweep the ovum from the ovary toward the uterus; correct.

C. Female hormones are secreted mainly by the ovaries, not the tubes.

ion happens in the uterine lining; implantation in the tube is an ectopic pregnancy, not its function.

Question Q79 Biology

Which property of water allows it to stick to polar surface like wood?

- A. Density
- B. Adhesion ✓ **Correct answer**
- C. Cohesion
- D. Non-polar attraction

A. Density (mass per volume) does not make water stick to surfaces.

B. Adhesion is the attraction between water molecules and OTHER (polar) surfaces, so water clings to wood; correct.

C. Cohesion is water sticking to ITSELF, which holds droplets together but is not sticking to wood.

D. Wood surfaces here are polar (cellulose hydroxyl groups); a "non-polar attraction" would not explain sticking to a polar surface.

Question Q80 Biology

The water content of human kidney is regulated by ADH. Which of the following gland is involved in its secretion process?

- A. Adrenal gland
- B. Pituitary gland ✓ **Correct answer**
- C. Thyroid gland
- D. Parathyroid gland

A. The adrenals secrete aldosterone (which regulates salt, and indirectly water) and adrenaline, but not ADH.

pressin) is RELEASED from the posterior pituitary into the blood (it is made in the hypothalamus and stored/released by the pituitary); correct as the gland of secretion.

C. The thyroid secretes thyroxine and calcitonin, which regulate metabolism and calcium, not kidney water via ADH.

D. The parathyroids secrete parathormone for calcium balance, not ADH.

Question Q81 Chemistry

The heat of formation of CO and CO2 are -26.4 Kcal and -94.0 Kcal respectively. The heat of combustion of carbon monoxide according to Hess's Law will be:

- A. +26.4Kcal
- B. -67.6Kcal ✓ **Correct answer**
- C. +94.0Kcal
- D. -120.4Kcal

A. A positive value would mean heat is absorbed, but burning carbon monoxide releases heat; the sign is wrong.

B. By Hess's law, ΔH for $CO + ½O_2 \rightarrow CO_2$ equals $\Delta Hf(CO_2) - \Delta Hf(CO) = (-94.0) - (-26.4) = -67.6$ kcal; correct.

C. This is the size of the CO_2 heat of formation with the sign flipped; it ignores the CO that must be subtracted.

D. This ADDS the two heats of formation (−94.0 + −26.4) instead of subtracting; Hess's law requires the reactant's heat to be subtracted.

Question Q82 Chemistry

Rate of dehydration of alcohol is:

- A. 3°>2°>1° ✓ **Correct answer**
- B. 1°>3°>2°

- D. 3°>1°>2°

A. Acid dehydration goes through a carbocation; tertiary carbocations are the most stable, then secondary, then primary, so tertiary alcohols dehydrate fastest; correct.

B. This puts the least stable carbocation first, reversing the stability order.

C. Secondary alcohols do not dehydrate faster than tertiary ones.

D. Primary alcohols are the slowest, not faster than secondary.

Question Q83 Chemistry

For which reaction, the value of Kc increases with increase in temperature?

- A. $CH4 + O2 \rightarrow CO2 + H2O$
- B. $NaOH + HCl \rightarrow NaCl + H2O$
- C. $2SO2 + O2 \rightarrow 2SO3$
- D. $H2 + I2 \rightarrow 2HI$ ✓ **Correct answer**

A. Combustion of methane is strongly exothermic; heating shifts equilibrium toward reactants, so Kc FALLS.

B. Neutralisation is exothermic; heating lowers Kc.

C. Oxidation of SO_2 is exothermic; heating lowers Kc.

D. Formation of hydrogen iodide is endothermic ($\Delta H \approx +53$ kJ for 2HI), so heating shifts equilibrium toward products and Kc RISES; correct.

Question Q84 Chemistry

Correct order of bond energy will be:

- A. HCl>HBr>HI ✓ **Correct answer**
- B. HBr>HCl>HI

- D. HCl>HI>HBr

A. Bond energies fall down the group as the halogen gets larger and the bond longer: H–Cl 431, H–Br 366, H–I 299 kJ/mol; correct.

B. H–Br cannot be stronger than H–Cl; the smaller chlorine forms the shorter, stronger bond.

C. This reverses the trend entirely; H–I is the weakest of the three.

D. H–I is weaker than H–Br, not stronger.

Question Q85 Chemistry

Which of the following is least volatile?

- A. Glycerol ✓ **Correct answer**
- B. Water
- C. Acetic acid
- D. Diethyl ether

A. Glycerol has three –OH groups and very strong hydrogen bonding, giving it a very high boiling point (about 290 °C) and the lowest volatility here; correct.

B. Water is hydrogen-bonded and less volatile than ether, but far more volatile than glycerol.

C. Acetic acid is hydrogen-bonded but boils at 118 °C, well below glycerol.

D. Ether has weak intermolecular forces and boils at 35 °C; it is the MOST volatile here, not the least.

Question Q86 Chemistry

IUPAC name of the compound is CH3(CH2)CH(CH3)2:

ethylheptane ✓ **Correct answer**

- B. 3-methylheptane
- C. 4-methylheptane
- D. Octane

A. The marked answer: reading the printed chain as a seven-carbon parent with the methyl branch at carbon 2 gives 2-methylheptane.

B. A methyl at carbon 3 would need the branch one carbon further along the parent chain than the marked reading.

C. A methyl at carbon 4 would place the branch at the middle of the chain, inconsistent with the marked reading.

D. Octane is an unbranched eight-carbon chain; the printed formula shows a branch, so a straight-chain name cannot be right. VERIFIED — sprint 5 Nov 2026: the clean stem is CH3(CH2)4CH(CH3)2 (Scribd Q87 and educationinkarachi PDF Q87 agree); longest chain 7 C with the methyl at C2 gives 2-methylheptane, confirmed by NIST WebBook (2-methylheptane = (CH3)2CH(CH2)4CH3, C8H18). The garbled printing in the transcription is disclosed, not silently corrected.

Question Q87 Chemistry

IUPAC name of the compound C2H5CH=C(CCH3) C2H5 is :

- A. 1,2-diethyl-2-propylethene
- B. 3-ethylhept-3-ene
- C. 4-ethylhept-3-ene ✓ **Correct answer**
- D. 4-ethylhept-2-ene

A. This names the molecule as a substituted ethene rather than by the longest chain containing the double bond, which the IUPAC rules do not prefer here.

B. This puts the ethyl branch at carbon 3, one position away from the marked reading.

ed answer: a seven-carbon chain, double bond from carbon 3, ethyl branch at carbon 4.

D. This puts the double bond at carbon 2 rather than carbon 3. VERIFIED — sprint 5 Nov 2026: the clean stem is C2H5CH=C(C3H7)C2H5 (Scribd Q88 and educationinkarachi PDF Q88 agree); longest chain through the double bond is 7 C (hept-3-ene) with the ethyl branch at C4, giving 4-ethylhept-3-ene. The garbled printing in the transcription is disclosed, not silently corrected.

Question Q88 Chemistry

Which of the following molecules have similar molecular shape?

- A. NH_3 & $AlCl_3$
- B. BCl_3 & NH_3
- C. $AlCl_3$ & PCl_3
- D. H_2O & $SnCl_2$ ✓ **Correct answer**

A. Ammonia is trigonal pyramidal (one lone pair) while $AlCl_3$ is trigonal planar; the shapes differ.

B. BCl_3 is trigonal planar, NH_3 is trigonal pyramidal; the shapes differ.

C. $AlCl_3$ is trigonal planar, PCl_3 is trigonal pyramidal (lone pair on phosphorus); the shapes differ.

D. Both are bent/angular: water has two lone pairs bending the H–O–H angle, and $SnCl_2$ has a lone pair on tin bending the Cl–Sn–Cl angle; correct.

Question Q89 Chemistry

Value of electronegativity of atoms A and B are 1.20 and 4.0 respectively, the percent ionic character will be:

- A. 43%

- C. 55%
- D. 73% ✓ **Correct answer**

A. Too low for an electronegativity difference of 2.8, which is a large, strongly ionic difference.

B. The halfway point for a purely half-ionic bond; a difference of 2.8 gives a substantially higher ionic share.

C. Still below what the empirical relation gives for this difference.

D. The electronegativity difference is 4.0 − 1.20 = 2.8; the Hannay–Smith relation, % ionic ≈ $16(\Delta\chi) + 3.5(\Delta\chi)^2$, gives 16(2.8) + 3.5(7.84) ≈ 72%, nearest to 73%; correct on that relation. VERIFIED — promoted 8 Nov 2026 by assistant under the owner's 8 Nov 2026 delegation (one source is FINAL under the owner's 8 Nov 2026 verification standard): the answer rests on that empirical formula, a convention, not on a derivation from first principles.

Question Q90 Chemistry

Phenol differs from ethanol because it:

- A. Forms stronger hydrogen bonds to its aromatic ring
- B. Is more acidic because of resonance stabilized conjugate base ✓ **Correct answer**
- C. Readily undergoes nucleophilic substitution at the -OH group
- D. Is completely insoluble in water due to its benzene ring

A. Hydrogen bonding to the ring is not what makes phenol different; the difference is acidity, and this option describes no real distinguishing mechanism.

B. The phenoxide ion's negative charge is delocalised into the benzene ring, stabilising it, while the ethoxide ion has no such stabilisation; so phenol is far more acidic than ethanol; correct.

es NOT readily undergo nucleophilic substitution at –OH; the C–O bond has partial double-bond character from the ring.

D. Phenol is appreciably soluble in water (about 8 g per 100 mL); the benzene ring reduces solubility but does not make it "completely insoluble".

Question Q91 Chemistry

Which reagent and condition are used to bring about the reaction shown? Toluene --> p-chloro toluene

- A. Cl2 in the dark
- B. Cl2 in the presence of AlCl3 ✓ **Correct answer**
- C. Cl2 in the presence of UV light
- D. Concentrated HCl heated under reflux

A. Chlorine alone in the dark does not generate the electrophile needed for ring chlorination at a useful rate.

B. The Lewis acid polarises Cl_2 and generates the Cl^+ electrophile for electrophilic aromatic substitution, and the methyl group directs it para (and ortho); correct.

C. UV light causes FREE-RADICAL chlorination of the methyl side chain (giving benzyl chloride), not ring chlorination.

D. Hydrochloric acid does not chlorinate the ring; it is not a source of electrophilic chlorine under these conditions.

Question Q92 Chemistry

What is 50% yield when actual yield and theoretical yield are 2 g and 4 g respectively?

- A. 25%
- B. 50% ✓ **Correct answer**
- C. 75%

A. The marked answer: 25% would be the result for 1 g out of 4 g, not 2 g out of 4 g; the page's own explanation contradicts this marking.

B. Percentage yield = (actual ÷ theoretical) × 100 = (2 ÷ 4) × 100 = 50%; correct by arithmetic.

C. 75% would need an actual yield of 3 g out of 4 g.

D. 85% would need an actual yield of 3.4 g out of 4 g. PICK-ONE decided by assistant under the owner's 8 Nov 2026 delegation: B — percentage yield = (actual ÷ theoretical) × 100 = (2 ÷ 4) × 100 = 50% by arithmetic, and the source page's own explanation states the correct value is 50% while marking A. The PDF key (A, 25%) is discredited on this very item (see key-reliability caveat). The stem's garbled wording ("What is 50% yield when...") is retained as printed.

Question Q93 Chemistry

IUPAC name of CHCCl is:

- A. Chloroethane
- B. Chloroethylene
- C. Chloroethene ✓ **Correct answer**
- D. Ethylchloride

A. Chloroethane is the saturated compound CH3CH2Cl; it has no double bond, so it cannot name an alkene.

B. The marked answer: "chloroethylene" is the COMMON name for vinyl chloride, not its systematic IUPAC name.

C. The systematic IUPAC name for CH2=CHCl is chloroethene ("ethene" is the IUPAC parent, with the chloro- prefix); correct by the IUPAC rules.

oride" is another common name for chloroethane, the saturated compound, not the alkene. PICK-ONE decided by assistant under the owner's 8 Nov 2026 delegation: C — the stem asks for the IUPAC name, and the systematic / preferred IUPAC name for CH2=CHCl is chloroethene (ptable: Preferred IUPAC name Chloroethene; Royal Society of Chemistry nomenclature table, CH2=CHCl → Chloroethene; "chloroethylene", option B, is the common name, and "chloroethene" is its systematic name). Confirmed 8 Nov 2026. The structure as printed ("CHCCl") does not parse, so the identification of the compound itself rests on the source's reading; that defect is stated, not silently corrected.

Question Q94 Chemistry

The order of reactivity of following R-X for SN reaction is:

- A. RF>RCl>RBr>RI
- B. RBr>RF>RCl>RI
- C. RCl>RF>RBr>RI
- D. RI>RBr>RCl>RF ✓ **Correct answer**

A. This reverses the true order: fluoride is the WORST leaving group, not the best.

B. This puts fluoride ahead of chloride and iodide last, both wrong.

C. This puts chloride first and iodide last, reversing the leaving-group trend.

D. Reactivity follows leaving-group ability: iodide leaves most easily (weakest C–X bond, most stable ion), then bromide, then chloride, then fluoride; correct.

Question Q95 Chemistry

Which of the following is expected to be the most paramagnetic?

- A. H
- B. Be
- C. B
- D. C ✓ **Correct answer**

…en atom has 1 unpaired electron, so it is paramagnetic, but less so than carbon.

B. Beryllium's ground state ($1s^2 2s^2$) has all electrons paired, so it is diamagnetic, not paramagnetic.

C. Boron ($1s^2 2s^2 2p^1$) has 1 unpaired electron, the same count as hydrogen.

D. Carbon ($1s^2 2s^2 2p^2$) has 2 unpaired electrons in separate p orbitals (Hund's rule), the most unpaired electrons of the four, so it is the most paramagnetic; correct.

Question Q96 Chemistry

The formation of activated complex in a reaction is:

- A. Exothermic process
- B. Endothermic process ✓ **Correct answer**
- C. Either endo or exo
- D. Always energy released

A. Reaching the transition state never RELEASES energy relative to the reactants; the complex sits at an energy maximum.

B. Forming the activated complex means climbing the activation-energy barrier, absorbing energy to reach it, whatever the overall reaction enthalpy; correct.

C. The climb to the barrier is always an energy input from the reactants' side; it is not sometimes exothermic.

D. Energy is TAKEN IN to reach the activated complex; release (if any) comes afterwards, as products form.

Question Q97 Chemistry

The maximum probability of finding an electron is at a distance of:

- B. 0.35 nm
- C. 0.053 nm ✓ **Correct answer**
- D. 0.0053 nm

A. Ten times the Bohr radius; the electron is not most likely to be found this far out in the ground state.

B. No feature of the hydrogen ground state puts the maximum probability here.

C. The Bohr radius, a_0 = 0.053 nm (5.3×10^{-11} m), is the most probable distance of the ground-state hydrogen electron from the nucleus; correct.

D. Ten times too small; this is a tenth of the Bohr radius.

Question Q98 Chemistry

The IUPAC name of Vinyl acetylene is:

- A. But-1-en-3-yne ✓ **Correct answer**
- B. But-3-en-1-yne
- C. Pent-3-en-1-yne
- D. Pent-2-en-4-yne

A. Vinylacetylene (CH2=CH–C≡CH) has four carbons; numbering to give the lowest locants puts the double bond at 1 and the triple bond at 3; correct. (The stem as fetched begins with the printed number "100." — see the numbering note.)

B. Numbering from the other end would give the triple bond the lowest locant, but the rules give the double bond priority for low locants here, and the printed structure has the double bond at the end numbered 1.

C. "Pent" means five carbons, but vinylacetylene has only four.

D. Again five carbons, and the locants do not match the four-carbon structure.

Q99 Chemistry

Which atom has at least single electron in dumbell shape orbital?

- A. H
- B. He
- C. Li
- D. B ✓ **Correct answer**

A. Hydrogen has only a 1s electron; s orbitals are spherical, not dumbbell-shaped.

B. Helium has a filled 1s shell only; no p electron.

C. Lithium's outer electron is 2s (spherical); it has no p electron in the ground state.

D. Boron ($1s^2 2s^2 2p^1$) has an electron in a 2p orbital, and p orbitals are dumbbell-shaped; correct. (The stem as fetched begins with the printed number "101." — see the numbering note.)

Question Q100 Chemistry

Which of following adhesive is used to bond broken pieces of jewelry?

- A. Super glue ✓ **Correct answer**
- B. Epoxy resin
- C. Silicon resin
- D. Starch

A. Cyanoacrylate "super glue" sets in seconds and bonds small items such as jewellery; it is the common quick repair adhesive named here; correct on the intended usage.

B. Epoxy also bonds jewellery and is often STRONGER for a lasting repair; it is a genuine alternative, which is why this question rests on common-usage convention.

C. Silicone resins are sealants, not the usual adhesive for bonding broken jewellery.

D. Starch paste is a weak paper adhesive; it cannot bond jewellery. VERIFIED — promoted

...y assistant under the owner's 8 Nov 2026 delegation (one source is FINAL under the owner's 8 Nov 2026 verification standard): the answer rests on common-practice convention (quick small repair = super glue); epoxy is a defensible alternative for a permanent repair, so the question's "used to bond" wording, not a derivation, decides it. (The stem as fetched begins with the printed number "102." — see the numbering note.)

Note: CAVEAT retained: epoxy resin is a defensible alternative for a permanent jewellery repair (stronger, more water-resistant once cured); super glue is the common-usage answer for a quick small repair, which is what the stem's wording is taken to mean.

Question Q101 Chemistry

Ratio of sigma bonds and pi bonds present in benzene are:

- A. 4:1 ✓ **Correct answer**
- B. 1:4
- C. 2:3
- D. 6:1

A. Benzene (C_6H_6) has 12 sigma bonds (6 C–C and 6 C–H) and 3 pi bonds (the three double bonds of the Kekulé form), and 12:3 simplifies to 4:1; correct.

B. This reverses the ratio; there are far more sigma than pi bonds.

C. Neither 12:3 nor any correct count of benzene's bonds simplifies to 2:3.

D. This would need 18 sigma bonds to 3 pi, or 6 sigma to 1 pi; benzene has 12 sigma bonds. (The stem as fetched begins with the printed number "103." — see the numbering note.)

Question Q102 Chemistry

Which one is addition polymer?

- A. polyvinyl chloride ✓ **Correct answer**

- C. nylon 6,10
- D. polyester

A. PVC is made by addition polymerisation of vinyl chloride monomers joining together with no small molecule lost; correct.

B. Nylon 6,6 is a CONDENSATION polymer (diamine + dicarboxylic acid, losing water).

C. Nylon 6,10 is likewise a condensation polymer.

D. Polyesters are condensation polymers (diol + dicarboxylic acid, losing water). (The stem as fetched begins with the printed number "104." — see the numbering note.)

Question Q103 Chemistry

When one mole of a substance is decomposed preferably as compared to evaporation then decomposition has:

- A. Low energy ✓ **Correct answer**
- B. High energy
- C. Equal energy
- D. Cannot predicted

A. The intended reading: if the substance decomposes rather than evaporating, the decomposition pathway takes the lower-energy route under those conditions; correct on that reading.

B. A higher-energy pathway would not be the preferred one over evaporation.

C. If the energies were equal there would be no reason for one pathway to be preferred.

D. On the intended reading the preference itself is taken as evidence about the relative energies, so "cannot be predicted" is not the expected answer. VERIFIED — promoted 8 Nov 2026 by assistant under the owner's 8 Nov 2026 delegation (one source is FINAL

wner's 8 Nov 2026 verification standard). The filed answer A is the paper's intended reading (the preferred pathway is the lower-energy pathway) and the PDF key agrees (key A). CAVEAT retained: AskFilo's worked solution argues the opposite answer, B (High energy), on sound general chemistry — breaking covalent bonds costs more than overcoming intermolecular forces — so the item has two defensible readings and the stem states no measurable comparison or energies. The A reading is taught as the paper's intended answer; the B argument is recorded here, not hidden. (See 37u batch addendum, 8 Nov 2026, Part 2.) (The stem as fetched begins with the printed number "105." — see the numbering note.)

Note: CAVEAT retained: AskFilo's worked solution argues the opposite answer, B (High energy), on sound general chemistry — breaking covalent bonds costs more than overcoming intermolecular forces — so the item has two defensible readings. A is taught as the paper's intended answer (PDF key A agrees); the B argument is recorded in the file, not hidden.

Question Q104 Chemistry

At start of reaction:

- A. Average rate is high
- B. Instantaneous rate is high ✓ **Correct answer**
- C. Both rates are same
- D. Both rates are slow

A. The average rate over an interval depends on how long the interval is; it is not the quantity that is highest at the initial moment.

B. At the start, reactant concentrations are at their maximum, so the rate at that instant is at its highest for an ordinary reaction; correct on the textbook reading.

C. Average and instantaneous rates coincide only over an infinitesimally short interval, not as a general statement.

fastest, not slowest, when concentrations are highest at the start. VERIFIED — promoted 8 Nov 2026 by assistant under the owner's 8 Nov 2026 delegation (one source is FINAL under the owner's 8 Nov 2026 verification standard): the distinction between "average" and "instantaneous" here rests on the textbook's convention; the stem gives no rate data from which either rate could be computed. (The stem as fetched begins with the printed number "106." — see the numbering note.)

Question Q105 Chemistry

Which is not true about benzene:

- A. Sp2 hybridization
- B. Fractional bond order
- C. No elimination reaction
- D. 6 sites for monosubstitution ✓ **Correct answer**

A. True: every benzene carbon is sp^2 hybridised, giving the planar ring.

B. True: delocalisation gives each C–C bond an order of 1.5, a fractional value between single and double.

C. True in the intended sense: benzene resists the addition/elimination chemistry of alkenes and instead undergoes substitution, preserving its aromatic ring.

D. The intended false statement: all six carbons are EQUIVALENT by symmetry, so monosubstitution gives only ONE product, not six different ones. VERIFIED — promoted 8 Nov 2026 by assistant under the owner's 8 Nov 2026 delegation (one source is FINAL under the owner's 8 Nov 2026 verification standard): the answer rests on reading "6 sites" as six DIFFERENT sites/products; taken literally there are six carbon atoms at which substitution can occur. Defect stated, not silently corrected. (The stem as fetched begins with the printed number "107." — see the numbering note.)

Q106 Chemistry

During Clemmenson reduction of aldehyde and ketone, carbonyl group into alkane group is carried out with:

- A. H2 and Pd
- B. LiAlH4
- C. Zn/Hg conc.HCl ✓ **Correct answer**
- D. NH2-NH2/KOH

A. Catalytic hydrogenation with H_2/Pd reduces alkenes and alkynes; it is not the Clemmensen reagent for carbonyls.

B. Lithium aluminium hydride reduces aldehydes and ketones to ALCOHOLS, stopping there, not to alkanes.

C. Zinc amalgam in concentrated hydrochloric acid is the Clemmensen reagent, reducing C=O fully to CH_2; correct.

D. Hydrazine with strong alkali is the Wolff–Kishner reduction, a DIFFERENT method of reaching the alkane (used for base-stable compounds). (The stem as fetched begins with the printed number "108." — see the numbering note. The stem prints "Clemmenson" for Clemmensen.)

Question Q107 Chemistry

Consider the given reaction: N2 + 3H2 --> 2NH3. If 56 g of N2 reacts with 12 g of H2 and produces 51 g of NH3, what is the theoretical yield (TY) of NH3 and the percentage yield (PY) of the reaction? (Molar mass of N2 = 28 g/mol, H2 = 2 g/mol and NH3 = 17 g/mol)

- A. TY = 68 g and PY = 75% ✓ **Correct answer**
- B. TY = 34 g and PY = 67%
- C. TY = 68 g and PY = 33%
- D. TY = 34 g and PY = 75%

2 mol and 12 g H_2 = 6 mol are exactly in the 1:3 ratio, so neither is in excess: 2 mol N_2 gives 4 mol NH_3 = 68 g theoretical, and 51 ÷ 68 = 75%; correct.

B. 34 g is the yield from only 1 mol of N_2, half the amount present.

C. The theoretical yield is right but 33% does not follow from 51 g out of 68 g.

D. 75% of 34 g would be 25.5 g, not the 51 g produced. (The stem as fetched begins with the printed number "109." — see the numbering note.)

Question Q108 Chemistry

When SHE is connected with Cu electrode using salt bridge and external wire:

- A. Cu reduces
- B. Cu+2 reduces ✓ **Correct answer**
- C. H+ reduces
- D. H2 reduces

A. Metallic copper is not reduced; it is the product of reduction here, and "Cu reduces" is ambiguous and wrong.

B. Copper's standard potential (+0.34 V) is above the SHE (0 V), so the copper electrode is the cathode: $Cu^{2+} + 2e^- \rightarrow Cu$, copper ions are reduced; correct.

C. At the SHE in this cell, hydrogen is OXIDISED ($H_2 \rightarrow 2H^+ + 2e^-$); H^+ is not reduced.

D. H_2 is oxidised at the SHE here, not reduced; and "H2 reduces" misstates the direction. (The stem as fetched begins with the printed number "110." — see the numbering note.)

Question Q109 Chemistry

The ionic compound among the following with the highest lattice energy is:

- A. LiF ✓ **Correct answer**
- B. NaCl

- D. CsI

A. Lattice energy rises with ionic charge and falls with ionic size; Li^+ and F^- are the smallest ions listed, giving the strongest attraction and the highest lattice energy; correct.

B. Sodium and chloride are both larger than lithium and fluoride, so the lattice energy is lower.

C. Potassium is larger again than sodium, so the lattice energy is lower still.

D. Caesium and iodide are the largest ions listed, giving the weakest attraction and the lowest lattice energy. (The stem as fetched begins with the printed number "111." — see the numbering note.)

Question Q110 Chemistry

All of following have two bond pairs and show linear geometry except:

- A. SnCl2 ✓ **Correct answer**
- B. CS2
- C. HCN
- D. CO2

A. $SnCl_2$ has two bond pairs PLUS a lone pair on tin, which pushes the molecule into a bent/angular shape; it is the exception; correct.

B. CS_2 has two bond pairs and no lone pair on carbon, so it is linear.

C. HCN has two bonding regions and no lone pair on carbon, so it is linear.

D. CO_2 has two bond pairs and no lone pair on carbon, so it is linear. (The stem as fetched begins with the printed number "112." — see the numbering note.)

Q111 Chemistry

If ionization energy of an element is greater then:

- A. More is it's reducing power
- B. More is it's electropositivity
- C. Less is it's metallic character ✓ **Correct answer**
- D. More is it's atomic radius

A. A high ionisation energy means the atom holds its electrons tightly and does NOT give them up easily, so reducing power is LESS, not more.

B. Electropositivity is the tendency to LOSE electrons; high ionisation energy means low electropositivity.

C. Metals lose electrons readily (low ionisation energy); an element that holds electrons tightly is less metallic; correct.

D. High ionisation energy goes with a SMALLER radius (electrons held closer), not a larger one. (The stem as fetched begins with the printed number "113." — see the numbering note.)

Question Q112 Chemistry

Which compound will not show geometrical isomerism:

- A. But-2-ene
- B. 1,2-dimethylcyclopropane
- C. Pent-1-ene ✓ **Correct answer**
- D. 1,3-dimethylcyclopentane

A. But-2-ene has two different groups on each double-bond carbon, so cis and trans forms exist.

B. The two methyl groups can lie on the same side or opposite sides of the ring, giving cis/trans forms.

e bond is terminal ($CH_2=CH-$), so one double-bond carbon carries two identical hydrogens and no cis/trans pair is possible; correct.

D. The methyl groups can be cis or trans relative to the ring plane, so geometrical isomerism is possible. (The stem as fetched begins with the printed number "114." — see the numbering note.)

Question Q113 Chemistry

The mass of hydrogen gas needed to produce 51 g ammonia:

- A. 6g
- B. 9g ✓ **Correct answer**
- C. 12g
- D. 15g

A. 6 g of H_2 (3 mol) makes 2 mol of NH_3 = 34 g, not 51 g.

B. From $N_2 + 3H_2 \rightarrow 2NH_3$: 34 g NH_3 needs 6 g H_2, so 51 g (1.5 × 34 g) needs 1.5 × 6 g = 9 g H_2; correct.

C. 12 g of H_2 would make 68 g of NH_3, more than asked.

D. 15 g of H_2 would make 85 g of NH_3, far more than asked. (The stem as fetched begins with the printed number "115." — see the numbering note.)

Question Q114 Biology

Digestion of protein started when food enters in:

- A. Mouth
- B. Stomach ✓ **Correct answer**
- C. Intestine
- D. Epiglottis

A. The mouth starts CARBOHYDRATE digestion (salivary amylase); no protein-digesting

in the mouth.

B. In the stomach, pepsinogen is activated to pepsin by acid and protein digestion begins; correct.

C. The small intestine CONTINUES protein digestion (trypsin and others), but it does not start it.

D. The epiglottis is the flap that closes the airway during swallowing; it digests nothing. (The stem as fetched begins with the printed number "116." — see the numbering note. The page labels this question Biology although it sits inside the Chemistry block; it is counted as Biology in the site's split.)

Question Q115 Chemistry

Select the standard condition for temperature and pressure:

- A. 1 atm and 0K
- B. 760 torr and 25°C
- C. 2 bar and 25°C
- D. 14.7 psi and 0°C ✓ **Correct answer**

A. 0 K is absolute zero, where no gas exists to measure; it is not a laboratory standard condition.

B. This mixes the STP pressure (760 torr = 1 atm) with the SATP temperature (25 °C); it is not one single recognised convention.

C. 2 bar is not a standard pressure for either STP or SATP.

D. 14.7 psi is 1 atm, and 1 atm with 0 °C is STP (standard temperature and pressure); correct on the STP convention. VERIFIED — promoted 8 Nov 2026 by assistant under the owner's 8 Nov 2026 delegation (one source is FINAL under the owner's 8 Nov 2026 verification standard): the answer rests on the STP convention being the one the paper means by "standard condition"; SATP (25 °C, 1 bar) is a different recognised standard, and

es not say STP. (The stem as fetched begins with the printed number "117." — see the numbering note.)

Question Q116 Chemistry

Which of the following is NOT a state function?

- A. Enthalpy
- B. Work ✓ **Correct answer**
- C. Internal energy
- D. Pressure

A. Enthalpy depends only on the current state (H = U + PV); it is a state function.

B. Work depends on the PATH taken (for example expansion against different external pressures gives different work between the same two states), so it is not a state function; correct.

C. Internal energy depends only on the state of the system; it is a state function.

D. Pressure is a property of the state itself; it is a state function.

Question Q117 Chemistry

Which one is not a type of stereoisomerism?

- A. Confirmational isomerism
- B. Optical isomerism
- C. Geometrical isomerism
- D. Metamerism ✓ **Correct answer**

A. Conformational isomerism (rotation about single bonds giving different spatial arrangements) is a class of stereoisomerism. (The option prints "Confirmational" for conformational.)

B. Optical isomerism (non-superimposable mirror images) is a class of stereoisomerism.

tal (cis/trans) isomerism is a class of stereoisomerism.

D. Metamerism (different alkyl groups on either side of a functional group) changes the CONNECTIVITY, so it is structural/constitutional isomerism, not stereoisomerism; correct.

Question Q118 Chemistry

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

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

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

B. Ethers come from dehydrating two ALCOHOLS, not from an acid plus an alcohol.

C. An anhydride comes from two carboxylic acid molecules (or an acid plus an acyl chloride), not from an acid plus ethanol.

D. Phenol is a benzene ring with an –OH group; nothing in this reaction builds a benzene ring.

Question Q119 Chemistry

K is called specific rate constant because it is:

- A. Rate per unit concentration ✓ **Correct answer**
- B. Temperature independent
- C. Depends on concentration
- D. Unitless

A. The textbook's definition: k is "specific" because the rate equals k when every reactant concentration is unity (1 mol/L), i.e. it is the rate per unit concentration; correct on that

B. False: k changes with temperature (Arrhenius behaviour); it is not temperature-independent.

C. k does NOT depend on concentration; the RATE depends on concentration through k, while k itself is fixed at a given temperature.

D. k has units that depend on the reaction order (for example s^{-1}, $L \cdot mol^{-1} \cdot s^{-1}$); it is not unitless. VERIFIED — promoted 8 Nov 2026 by assistant under the owner's 8 Nov 2026 delegation (one source is FINAL under the owner's 8 Nov 2026 verification standard): the answer rests on the textbook's definitional phrasing; "rate per unit concentration" is exact only for a first-order rate law, and the stem states no order.

Question Q120 Chemistry

Number of sigma bonds in methyl chloride is due to sp3 overlap is/are:

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

A. One would count only a single bond; methyl chloride has four sigma bonds in total.

B. Two counts neither the three C–H bonds nor all four bonds.

C. The marked key: the three C–H sigma bonds are formed by carbon sp^3 orbitals overlapping hydrogen s orbitals.

D. The C–Cl sigma bond is ALSO formed by a carbon sp^3 orbital (overlapping a chlorine p orbital), so counting every sigma bond that involves sp^3 overlap gives four, not three. PICK-ONE decided by assistant under the owner's 8 Nov 2026 delegation: D — all four sigma bonds in CH_3Cl involve a carbon sp^3 orbital (the three C–H bonds, sp^3(C)–s(H), plus the C–Cl bond, sp^3(C)–p(Cl)); the file's stem ("due to sp3 overlap") covers both, and the

verrides the key where they conflict (see sprint key-reliability caveat). C counts only the three C–H bonds and is the keyed / C–H-only reading (PDF Q122, "sp3-s overlap", key C), recorded here, not taught as the answer.

Question Q121 Chemistry

When pressure is 1520 torr then density of oxygen gas will be:

- A. 64/RT ✓ **Correct answer**
- B. 32/RT
- C. 16/RT
- D. 128/RT

A. Density ρ = PM/RT. 1520 torr = 2 atm, and M(O_2) = 32 g/mol, so ρ = (2 × 32)/RT = 64/RT; correct.

B. This uses 1 atm instead of 2 atm, halving the pressure.

C. This uses the atomic mass of oxygen (16) instead of the molecular mass of O_2 (32), and 1 atm.

D. This doubles the correct value, as if the pressure were 4 atm.

Question Q122 Chemistry

Which equation is used to calculate concentration for n mole of an ideal gas?

- A. P/RT ✓ **Correct answer**
- B. PV/RT
- C. CV/RT
- D. PM/RT

A. From PV = nRT, concentration c = n/V = P/RT; correct.

B. PV/RT equals n, the NUMBER OF MOLES, not the concentration.

ession has no meaning for concentration; C is not defined in the gas law.

D. PM/RT is the DENSITY (mass per volume), not the molar concentration.

Question Q123 Chemistry

50.0 g Mg is burnt with 32g of oxygen to form MgO, amount of excess reagent left is?

- A. 6g Mg
- B. 2g Mg ✓ **Correct answer**
- C. 8g O2
- D. 16g O2

A. 6 g of excess magnesium would follow from using less oxygen than is present; the arithmetic does not give 6 g.

B. Reaction: $2Mg + O_2 \rightarrow 2MgO$. With Ar(Mg) = 24 as the paper uses, 32 g O_2 = 1 mol needs 2 mol Mg = 48 g; 50 − 48 = 2 g Mg left over; correct.

C. Oxygen is the limiting reagent here, so no oxygen is left over.

D. Oxygen is fully used up; 16 g left would mean only half the oxygen reacted.

Question Q124 Chemistry

Which carbonyl carbon is more electrophilic:

- A. HCOOH
- B. HCHO ✓ **Correct answer**
- C. CH3COCH3
- D. CH3COOH

A. In formic acid the –OH group donates electron density into the carbonyl by resonance, making the carbon less electrophilic.

B. Formaldehyde has no alkyl group donating electrons and no resonance stabilisation, so

carbon is the most electron-poor and most open to nucleophilic attack; correct.

C. Acetone's two methyl groups donate electron density to the carbonyl carbon, reducing its electrophilicity.

D. Acetic acid's –OH resonance-stabilises the carbonyl, making it less electrophilic than an aldehyde.

Question Q126 Physics

The magnetic flux through a loop of 1m^2 in a 0.5T magnetic field is same as magnetic flux through a loop of 0.5 m^2 in a magnetic field of:

- A. 1.0 T at 0° ✓ **Correct answer**
- B. 1.0 T at 60°
- C. 2.0 T at 90°
- D. 0.5 T at 90°

A. First flux: $\Phi = BA\cos\theta = 0.5 \times 1 \times 1 = 0.5$ Wb. Second: $1.0 \times 0.5 \times \cos 0° = 0.5$ Wb — equal; correct.

B. $1.0 \times 0.5 \times \cos 60° = 0.25$ Wb, half the required flux.

C. $\cos 90° = 0$, so the flux is zero, not 0.5 Wb.

D. Again $\cos 90° = 0$, so the flux is zero.

Question Q127 Physics

A body of mass 10 kg is falling through a viscous medium and reached terminal velocity. The net force on the body will be:

- A. 0 N ✓ **Correct answer**
- B. 9.8 N
- C. 98 N

A. At terminal velocity the speed is constant, so acceleration is zero and, by Newton's second law, the net force is zero (drag exactly balances weight); correct.

B. 9.8 is the value of g, not a force on a 10 kg body.

C. 98 N is the body's WEIGHT (mg), not the NET force; the drag cancels it.

D. This is ten times the weight, with no basis in the numbers given.

Question Q128 Physics

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

- A. Increases
- B. Decreases
- C. Remain same ✓ **Correct answer**
- D. Becomes zero

A. Resistance rises with temperature only if the coefficient is POSITIVE.

B. Resistance falls with temperature only if the coefficient is NEGATIVE.

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

D. A zero coefficient means the resistance does not CHANGE, not that it vanishes.

Question Q129 Physics

The path difference between two sound waves coming from a coherent source of wavelength 50 cm at a point is 100 cm. The superposition of the waves at that point produces:

- A. Beats
- B. Echo

dness ✓ **Correct answer**

- D. Silence

A. Beats need two waves of SLIGHTLY DIFFERENT frequencies; these waves come from one coherent source at one wavelength.

B. An echo is a reflected sound heard after a delay; superposition at a point is not an echo.

C. The path difference (100 cm) is exactly 2 wavelengths, an integer multiple of λ, so the waves arrive in phase and interfere constructively, giving maximum amplitude — loudness; correct.

D. Silence needs DESTRUCTIVE interference (an odd number of half-wavelengths), the opposite of this case.

Question Q130 Physics

Potential energy decreases in the process of:

- A. Compressing a spring
- B. Stretching a spring
- C. Releasing a stretched spring ✓ **Correct answer**
- D. Holding the spring at maximum extension

A. Compressing stores elastic potential energy ($\frac{1}{2}kx^2$ grows as x grows), so the energy increases.

B. Stretching likewise stores more elastic potential energy.

C. As the spring returns toward its natural length, its stored energy falls (converted to kinetic energy); correct.

D. Holding it still keeps the stored energy constant at its maximum; it does not decrease.

Q131 Physics

A diver of mass m is swimming at a depth h below the sea level. If the reference level is taken at sea level, the gravitational potential energy of the diver is:

- A. 0
- B. mgh
- C. -mgh ✓ **Correct answer**
- D. 2mgh

A. Zero is the value AT the reference level (sea level); the diver is below it.

B. Positive mgh is the value h ABOVE the reference level, not below it.

C. Potential energy is mg times height measured from the reference: height = −h below sea level, so U = −mgh; correct.

D. Nothing in the setup doubles the depth; the value is −mgh, not 2mgh.

Question Q132 Physics

A constant force F acts on a body and displaces it by distance Δd in a time Δt. The rate at which force is doing work is:

- A. F x Δd
- B. F x Δt
- C. F x Δd/Δt ✓ **Correct answer**
- D. F x Δt/Δd

A. F × Δd is the WORK done, not the RATE of doing work (work per time).

B. F × Δt is the impulse, not power.

C. Power = work ÷ time = (F·Δd)/Δt; correct.

D. This inverts the ratio; it has the wrong units and no physical meaning here.

Q133 Physics

In circular motion, if angular displacement is kept constant, decreasing the radius will:

- A. Increase linear displacement
- B. Increase linear velocity
- C. Decrease linear displacement ✓ **Correct answer**
- D. Not affect linear displacement

A. Linear displacement s = rθ; shrinking r shrinks s, it does not increase it.

B. No velocity is asked about, and with θ fixed the arc length falls; nothing here increases.

C. With θ fixed, s = rθ, so a smaller radius gives a shorter arc; correct.

D. The arc length depends directly on the radius, so changing r changes s.

Question Q134 Physics

When force and displacement are in opposite direction then the work done is said to be:

- A. Positive
- B. Negative ✓ **Correct answer**
- C. Infinite
- D. Maximum

A. Positive work needs force and displacement in the SAME direction (angle under 90°).

B. Work W = Fd cosθ with θ = 180° gives cosθ = −1, so the work is negative (as with friction opposing motion); correct.

C. Nothing here is infinite; the work has the finite value −Fd.

D. Maximum POSITIVE work is at θ = 0°; opposite directions give the maximum NEGATIVE value, not "maximum" work as the option implies.

Q136 Physics

When a droplet reaches terminal velocity, its acceleration is:

- A. Zero ✓ **Correct answer**
- B. Variable
- C. Not changed
- D. Negative

A. At terminal velocity the droplet falls at constant speed, so its acceleration is zero (drag balances weight); correct.

B. The acceleration is not varying at terminal velocity; it has settled at zero.

C. "Not changed" is vague and wrong: the acceleration CHANGED during the fall (from g down to zero) and is now zero.

D. Negative acceleration would mean the droplet is still slowing down; at terminal velocity it is not.

Question Q137 Physics

Newton's original formula underestimated speed of sound in air because he:

- A. Ignored viscosity
- B. Assumed isothermal ✓ **Correct answer**
- C. Considered vacuum conditions
- D. Assumed adiabatic

A. Viscosity is not the reason Newton's value was low; his error was thermodynamic, not viscous.

B. Newton treated the compressions as isothermal (no temperature change), giving $v = \sqrt{(P/\rho)}$; the correct treatment is adiabatic, giving the larger $\sqrt{(\gamma P/\rho)}$; correct.

C. Newton did not treat air as a vacuum; his formula used air's pressure and density.

atic assumption is Laplace's CORRECTION, which gives the right (larger) speed; Newton did not assume it.

Question Q138 Physics

The point where the electric field is zero between two opposite charge lies:

- A. Closer to the positive charge
- B. At the mid-point
- C. Closer to the negative charge
- D. Nowhere between them ✓ **Correct answer**

A. Between opposite charges the two fields point the SAME way (away from + toward −), so they add, never cancel, anywhere between.

B. At the midpoint the fields reinforce each other; the net field is at its strongest there, not zero.

C. Moving toward either charge between them only strengthens the nearer field in the same direction; no cancellation occurs.

D. The fields can only cancel OUTSIDE the interval, on the side of the smaller charge, where they point oppositely; correct.

Question Q139 Physics

Consider these two vectors A = 2i + 3j and B = -6i + 4j. The angle between these two vectors is:

- A. 60°
- B. 90° ✓ **Correct answer**
- C. 120°
- D. 180°

A. A 60° angle would need a positive dot product of half the product of the magnitudes;

uct here is zero.

B. A·B = (2)(−6) + (3)(4) = −12 + 12 = 0, and a zero dot product means the vectors are perpendicular; correct.

C. A 120° angle would need a negative dot product, but the dot product is exactly zero.

D. A 180° angle would mean the vectors point in exactly opposite directions; they do not.

Question Q140 Physics

A displacement time graph is a straight line inclined up at angle of 45° with X-axis, velocity of body according to this graph is:

- A. Increasing
- B. Decreasing
- C. Constant ✓ **Correct answer**
- D. Decreasing at start and then may decrease

A. Increasing velocity would need the slope to keep growing (a curving graph), not a straight line.

B. Decreasing velocity would need the slope to shrink; a straight line has one fixed slope.

C. Velocity is the slope of the displacement–time graph, and a straight line has a constant slope, so the velocity is constant; correct.

D. This option is garbled as printed, and no change in slope occurs on a straight-line graph. Defect stated, not silently corrected.

Question Q141 Physics

A 150 kg car has its velocity reduced from 20 m/s to 10 m/s in 3.0 sec. How large was the average retarding force?

- A. 500 N ✓ **Correct answer**

- 0 N
- C. 1500 N
- D. 1000 N

A. Acceleration a = (10 − 20)/3.0 = −10/3 m/s², so F = ma = 150 × (10/3) = 500 N retarding; correct.

B. Five times too large; it would need a velocity change of 50 m/s in 3 s.

C. Three times too large; it would need a velocity change of 30 m/s in 3 s.

D. Twice too large; it would need a velocity change of 20 m/s in 3 s.

Question Q142 Physics

The phenomenon of interference of sound waves requires:

- A. Two sources with different frequencies
- B. Two coherent sources ✓ **Correct answer**
- C. A single source
- D. A single source and a reflecting surface

A. Different frequencies give beats that drift, not a stable interference pattern.

B. Interference needs sources of the same frequency with a constant phase difference (coherence), so the pattern of maxima and minima stays fixed; correct.

C. One source alone has nothing to interfere with.

D. A source plus its reflection CAN produce interference in some setups, but the standard requirement the question asks for is two coherent sources, and a lone source with a reflector is not itself a source pair.

Question Q143 Physics

A gas expands from 1 m^3 to 3 m^3 at constant pressure of 2 Pa. Work done is:

- B. 4J ✓ **Correct answer**
- C. 6J
- D. 8J

A. 2 J would be the work for a 1 m^3 change at 2 Pa, but the change here is 2 m^3.

B. Work at constant pressure is $W = P\Delta V = 2\ Pa \times (3 - 1)\ m^3 = 4\ J$; correct.

C. 6 J would be the work of expanding to 3 m^3 from zero volume, not from 1 m^3.

D. 8 J would need a 4 m^3 change, double the actual change.

Question Q144 Physics

If frequency of AC is doubled, the inductive reactance will:

- A. Remain same
- B. Be halved
- C. Be doubled ✓ **Correct answer**
- D. Become zero

A. Inductive reactance depends on frequency; it cannot stay the same when frequency changes.

B. Halving is what CAPACITIVE reactance does when frequency doubles; inductive reactance does the opposite.

C. $X_L = 2\pi fL$ is directly proportional to frequency, so doubling f doubles X_L; correct.

D. XL grows with frequency; it never becomes zero by raising the frequency.

Question Q145 Physics

The force between two charges is 28 N in vacuum. If paraffin wax of relative permittivity 2.8 is introduced between the charges as a medium, then the force reduces to:

- B. 20 N
- C. 15 N
- D. 10 N ✓ **Correct answer**

A. Barely less than 28 N; a medium with εr = 2.8 reduces the force far more than this.

B. This would follow from dividing by 1.4, not by 2.8.

C. This has no basis in the division by 2.8.

D. In a medium the Coulomb force is divided by the relative permittivity: 28 ÷ 2.8 = 10 N; correct.

Question Q146 Physics

A body moves along a semicircular path of radius 10 m from one end of the diameter to the other. The ratio of distance to displacement is:

- A. π : 1
- B. 1 : π
- C. π : 2 ✓ **Correct answer**
- D. 2 : π

A. This would need the displacement to equal the radius (10 m), but the displacement is the full diameter.

B. This inverts the ratio and uses the wrong displacement.

C. Distance = half the circumference = πr = 10π m; displacement = diameter = 20 m; ratio = 10π : 20 = π : 2; correct.

D. This is the reciprocal ratio (displacement to distance), not distance to displacement.

Q147 Physics

A body is projected with speed v making an angle θ with the horizontal and covers horizontal range R. If its speed is doubled, the new range will be:

- A. R/2
- B. R
- C. 2R
- D. 4R ✓ **Correct answer**

A. Halving the range would need the speed to fall, not double.

B. The range cannot stay the same when the launch speed doubles at the same angle.

C. Doubling the range would follow if range were proportional to speed; it is proportional to speed SQUARED.

D. Range $R = (v^2 \sin 2\theta)/g$, so doubling v multiplies the range by $2^2 = 4$; correct.

Question Q148 Physics

A ball of mass m strikes a wall and rebounds with the same speed in the opposite direction, taking the initial direction as positive, the change in the momentum of the ball is:

- A. 0
- B. mv
- C. -2mv ✓ **Correct answer**
- D. -mv

A. Zero change would mean the ball kept its momentum; reversing direction reverses the momentum.

B. mv is only the size of the initial momentum, not the change.

C. Initial momentum +mv, final momentum −mv, so $\Delta p = -mv - (+mv) = -2mv$; correct.

e FINAL momentum, not the change from the initial value.

Question Q149 Physics

A point lies 3m from a +5μC charge and 4m from a -3μC charge. The most appropriate direction of the net electric field at this point is directed:

- A. Away from +5μC charge ✓ **Correct answer**
- B. Towards +5μC charge
- C. Away from the -3μC charge
- D. Perpendicular to the line joining the charges

A. The field from the +5 μC charge (proportional to $5/3^2 \approx 0.56$) is about three times the field from the −3 μC charge ($3/4^2 \approx 0.19$), and the field of a positive charge points away from it, so the net field points predominantly away from the +5 μC charge; correct on that dominance reading.

B. The field of a positive charge points AWAY from it, not toward it.

C. The field of a negative charge points TOWARD it, not away, and it is the weaker field here.

D. No symmetry puts the net field perpendicular to the joining line; the dominant field lies along the line from the +5 μC charge. VERIFIED — promoted 8 Nov 2026 by assistant under the owner's 8 Nov 2026 delegation (one source is FINAL under the owner's 8 Nov 2026 verification standard): the stem gives distances but no geometry (the point's position relative to the line joining the charges), so the exact net-field direction cannot be derived; the answer rests on the magnitude-dominance approximation that the stronger field decides the direction. Defect stated, not silently corrected.

Note: CAVEAT retained: the stem gives distances but no geometry (the point's position relative to the line joining the charges), so the exact net-field direction cannot be derived; the answer rests on the magnitude-dominance approximation (the +5 μC field is ~3× the −3 μC field).

Q150 Physics

The increase in kinetic energy associated with decreased pressure of a fluid in a horizontal pipe is a consequence of the:

- A. Bernoulli's Principle ✓ **Correct answer**
- B. Equation of continuity
- C. Pascal's principle
- D. Torricelli's theorem

A. Bernoulli's equation trades pressure energy against kinetic energy: where the fluid speeds up, its pressure falls; correct.

B. Continuity says mass flow is conserved (Av = constant); it explains the speed change, not the pressure–energy trade-off itself.

C. Pascal's principle says pressure applied to an enclosed fluid is transmitted undiminished; it is about static pressure, not flowing energy.

D. Torricelli's theorem gives the exit speed of a liquid from a tank; it is a special case, not the general principle behind the pressure–speed trade-off.

Question Q151 Physics

The electric field at a point due to a point charge is 200N/C. If suppose a -4C test charge is placed at that point then the magnitude of electric field and electric force on it is:

- A. 200N/C and 50N
- B. 200N/C and 200N
- C. 200N/C and 800N ✓ **Correct answer**
- D. 800N/C and 800N

A. 50 N would come from dividing 200 by 4, but force is charge TIMES field, not field divided by charge.

B. 200 N would be the force on a 1 C charge, not a 4 C charge.

t the point is fixed by the source charge (200 N/C, unchanged by the test charge), and the force magnitude is |q|E = 4 × 200 = 800 N; correct.

D. The field does not become 800 N/C; the test charge does not change the field that was already there.

Question Q152 Physics

Internal resistance reduces the terminal voltage because it:

- A. Produces back emf
- B. Causes power loss inside the battery ✓ **Correct answer**
- C. Increases the current
- D. Decreases the emf

A. Internal resistance does not generate an opposing emf; it drops voltage as current flows through it.

B. Current through the internal resistance dissipates energy as heat (I^2r loss), so the voltage reaching the terminals (V = E − Ir) is less than the emf; correct.

C. Internal resistance LIMITS the current; it does not increase it.

D. The emf itself is unchanged by internal resistance; what falls is the TERMINAL voltage delivered to the circuit.

Question Q153 Physics

The angle formed at the center of a circle as a body moves from one position to another is:

- A. Angular displacement ✓ **Correct answer**
- B. Angular velocity
- C. Angular acceleration
- D. Angular momentum

swept out at the centre between two positions is exactly the angular displacement; correct.

B. Angular velocity is the RATE of change of that angle with time, not the angle itself.

C. Angular acceleration is the rate of change of angular velocity, a further step removed from the angle.

D. Angular momentum (moment of inertia × angular velocity) is a dynamical quantity of the moving body, not the geometric angle.

Question Q154 Physics

During the drilling of a metal surface the drill bit heats up. This heat comes from the:

- A. Vibration of the tool
- B. Work done against friction ✓ **Correct answer**
- C. Flow of electric current
- D. Compression of air

A. Vibration accompanies drilling but is not the main source of the heat; the heat comes from the cutting friction itself.

B. Mechanical work against friction between the bit and the metal is converted into thermal energy, heating the bit; correct.

C. The motor's current heats the motor, not the drill bit's cutting edge.

D. No significant air compression happens at the cutting point; air is not the heat source.

Question Q155 Physics

If 2J of work is done in moving two coulombs of charge from one point to the other in an electric field. The potential difference between the points is:

- A. 1 JC

- C. 1 JV ✓ **Correct answer**
- D. 2 J/C

A. The printed unit is garbled; the VALUE 1 with the right unit (J/C = volt) is what option C states, and this option's unit as printed does not express it.

B. 2 is the work in joules, not the potential difference; dividing by the 2 C charge is still required.

C. Potential difference V = W/q = 2 J ÷ 2 C = 1 J/C = 1 volt, which is the value this option states (its unit prints as "JV" for the volt); correct.

D. 2 J/C would be the result of forgetting to divide by the 2 coulombs. Defect: the options print "JC" and "JV" where J/C (volt) is meant; the defect is stated, not silently corrected.

Question Q156 Physics

The motion of transverse waves involves particle's vibration:

- A. Along the wave direction
- B. Opposite to energy flow
- C. Perpendicular to wave propagation ✓ **Correct answer**
- D. In random direction at every point

A. Vibration along the wave direction is LONGITUDINAL motion (as in sound), not transverse.

B. Particles in a transverse wave vibrate at right angles to the energy flow, not against it.

C. In a transverse wave each particle oscillates at right angles to the direction the wave travels; correct.

D. The vibration is orderly and perpendicular everywhere, not random.

Q157 Physics

In laminar flow of fluid, its adjacent layers:

- A. Resist each other
- B. Mix with each other
- C. Slide smoothly pass each other ✓ **Correct answer**
- D. Produce turbulence

A. Layers do exert viscous drag on each other, but "resist" is not the defining picture of laminar flow; the layers move steadily past one another.

B. Mixing between layers is the mark of TURBULENT flow, not laminar flow.

C. Laminar flow is orderly: parallel layers glide past one another without mixing; correct.

D. Turbulence is the opposite regime; laminar flow is defined by its absence.

Question Q158 Physics

A body moving in a circle, half revolution in terms of radians is equivalent to:

- A. π ✓ **Correct answer**
- B. π/6
- C. π/2
- D. 2π

A. One full revolution is 2π radians, so half a revolution is π radians; correct.

B. π/6 is one-twelfth of a revolution (30°), not half.

C. π/2 is a quarter revolution (90°), not half.

D. 2π is a FULL revolution, not half of one.

Q159 (printed 163) English

The board will approve the budget only after the auditor verifies the accounts. The most appropriate passive voice for the given sentence is:

- A. The budget will be approved by the board only after the accounts are verified by the auditor. ✓ **Correct answer**
- B. The budget is approved by the board only after the accounts have been verified by the auditor.
- C. The budget is being approved by the board only after the accounts are verified by the auditor.
- D. The budget has been approved by the board only after the accounts were verified by the auditor.

A. The main clause is future simple ("will approve") → future passive ("will be approved"); the subordinate clause is present simple ("verifies") → present passive ("are verified"). Both tenses are preserved exactly.

B. Wrong tense: present simple passive ("is approved") changes a future approval into a present one.

C. Wrong tense and aspect: present continuous passive ("is being approved") implies the approval is happening now.

D. Wrong tense: present perfect passive ("has been approved") states the approval already happened.

Question Q160 (printed 164) English

Identify the simile:

- A. She trembled like a leaf in the wind. ✓ **Correct answer**
- B. She was a statue, frozen in fear.
- C. She was drowning in doubt.
- D. Her thoughts were a whirlwind.

an explicit comparison using "like" (or "as"); "trembled like a leaf" compares her trembling to a leaf, with the marker "like" present.

B. A metaphor: she is directly called a statue, with no "like"/"as".

C. A metaphor: drowning is used figuratively, with no comparison marker.

D. A metaphor: thoughts are directly called a whirlwind, with no comparison marker.

Question Q161 (printed 165) English

"His lachrymose speech at the funeral moved everyone to tears." Choose the synonym for 'lachrymose':

- A. Joyful
- B. Weepy ✓ **Correct answer**
- C. Monotonous
- D. Humorous

A. Opposite in sense: joyful means happy; the speech moved people to tears.

B. "Lachrymose" means tearful, given to weeping; "weepy" is its plain synonym, and the sentence context (funeral, tears) confirms it.

C. Wrong sense: monotonous means dull and unvarying in tone, nothing to do with tears.

D. Opposite in sense: humorous means funny; a funeral speech that moves people to tears is not humorous.

Question Q162 (printed 166) English

He said, 'Will you listen to such a man?' Choose the most appropriate indirect speech conversion from the given options:

- A. He asked them that they would listen to such a man.
- B. He asked them whether they would listen to such a man. ✓ **Correct answer**

told them whether they will listen to such a man.

- D. He asked them to listen to such a man.

A. Wrong connector: a yes/no question converts with "whether"/"if", never "that".

B. Reporting verb "asked" (a question was asked), connector "whether" for a yes/no question, and backshift "will" → "would".

C. Wrong on two counts: "told them whether" mixes a statement verb with a question connector, and "will" is not backshifted to "would".

D. Changes the meaning: it turns a question ("will you listen?") into an instruction ("listen"), which is not what was said.

Question Q163 (printed 167) English

Choose the sentence in which 'only' indicates that Jamila was the only person who spoke about her tiredness.

- A. Only Jamila said she was tired. ✓ **Correct answer**
- B. Jamila only said she was tired.
- C. Jamila said only she was tired.
- D. Jamila said she was only tired.

A. "Only" placed immediately before "Jamila" limits the subject: nobody except Jamila said it.

B. "Only" before the verb limits the action: she merely said it (did nothing else about it).

C. "Only" before "she" limits the person spoken about: she spoke about herself and nobody else.

D. "Only" before "tired" limits the state: she was tired and nothing else.

Q164 (printed 168) English

Choose the correct sentence:

- A. The new policy aims at reduce waste, to promote recycling, and creating awareness among citizens.
- B. The new policy aims to reducing waste, promoting recycling, and create awareness among citizens.
- C. The new policy aims to reduce waste, to promote recycling, and creating awareness among citizens.
- D. The new policy aims to reduce waste, promote recycling, and create awareness among citizens. ✓ **Correct answer**

A. Wrong: "aims at reduce" is ungrammatical, and the three items mix a bare verb, a "to"-infinitive and an "-ing" form.

B. Wrong: the list mixes "-ing" forms with a bare infinitive ("create"); the items are not parallel.

C. Wrong: two "to"-infinitives followed by an "-ing" form ("creating") breaks the parallel structure.

D. All three items are parallel bare infinitives after "aims to": "to reduce waste, promote recycling, and create awareness".

Question Q165 (printed 169) English

The purpose of using exaggerated language in parody is:

- A. To create a serious tone
- B. To criticize societal norms
- C. To entertain and mock ✓ **Correct answer**
- D. To confuse the reader

A. Opposite: exaggeration in parody is comic, not serious; a serious tone is what parody

B. This is the purpose of satire, not parody specifically: satire uses humour to criticise societal issues and provoke change, while parody targets a particular work or style for comic effect.

C. Parody deliberately exaggerates a specific work or genre for humorous effect; its primary objective is to make the reader laugh by mocking (comically imitating) its target (SuperSummary).

D. Wrong: confusion is never the purpose; parody depends on the audience recognising the target.

Question Q166 (printed 170) English

Choose the word with incorrect spelling:

- A. Immigrant
- B. Ancestors
- C. Montessori
- D. Pregmetic ✓ **Correct answer**

A. Correctly spelled: "immigrant" (one who comes to live permanently in a country).

B. Correctly spelled: "ancestors" (forebears).

C. Correctly spelled: "Montessori" (the educational method, capitalised proper name).

D. "Pregmetic" is not a word; the intended word is "pragmatic" (p-r-a-g-m-a-t-i-c), misspelled here with "e" for "a" and "e" for "a" in the second syllable.

Question Q167 (printed 171) English

He does his work without any care. The underlined part of the sentence is:

- A. Adverb phrase ✓ **Correct answer**

ective phrase

- C. Noun phrase
- D. Appositive phrase

A. The phrase "without any care" is a prepositional phrase modifying the verb "does" (how he does his work), i.e. it functions adverbially.

B. Wrong: an adjective phrase modifies a noun; "without any care" modifies the verb, not a noun.

C. Wrong: a noun phrase functions as a subject, object or complement; this phrase modifies the verb.

D. Wrong: an appositive phrase renames a noun placed beside it; nothing here renames a noun. CAVEAT (retained): neither reproduction renders the underline — the PDF and Scribd texts show no underlining, so which words are underlined cannot be seen. The verification assumes the underlined part is "without any care", the only phrase in the sentence that is an adverb phrase and the reading the key letter A implies. If the underlined part were a different phrase, the answer would change.

Note: CAVEAT retained: neither reproduction renders the underline — the PDF and Scribd texts show no underlining, so which words are underlined cannot be seen. The verification assumes the underlined part is "without any care", the only phrase in the sentence that is an adverb phrase and the reading the key letter A implies. If the underlined part were a different phrase, the answer would change.

Question Q168 (printed 172) Logical Reasoning

A spying agent coded POWER as QPXFS. Using this pattern, what will be the code for GUNED?

- A. HVPFE
- B. HVRFE
- C. HVOFE ✓ **Correct answer**

A. Wrong at the third letter (P instead of O): it shifts N by +2. The pattern is +1 per letter: P→Q, O→P, W→X, E→F, R→S.

B. Wrong at the third letter (R instead of O): it shifts N by +4.

C. Correct: every letter shifts one place forward, so GUNED → G→H, U→V, N→O, E→F, D→E = HVOFE.

D. Wrong at the first and third letters (I instead of H, R instead of O).

Question Q169 (printed 173) Logical Reasoning

A new virus is spreading rapidly in the city. The government should impose temporary travel restrictions. What is true about this course of action?

- A. Travel restrictions help control the virus spread ✓ **Correct answer**
- B. The government should promote travel to support the economy
- C. Travel restrictions do not affect virus transmission
- D. People should disregard government advice

A. Restricting movement reduces contact between infected and uninfected people, which slows transmission; this is the stated rationale for the course of action.

B. Contradicts the premise: promoting travel during rapid spread would increase transmission, not control it.

C. False as a general claim and contrary to the premise: limiting movement does affect transmission.

D. Wrong: disregarding the advice defeats the control measure and follows from nothing in the stem. NOTE: a judgement item — B, C and D each contradict the premise; its verification is that elimination, not a derivation.

Q170 (printed 174) Logical Reasoning

A tank can hold 240 liters of water. Currently, water is filled to one third of its capacity. How much more water can it hold?

- A. 60 liters
- B. 80 liters
- C. 100 liters
- D. 160 liters ✓ **Correct answer**

A. 60 is neither the amount present (80) nor the amount remaining (160).

B. 80 is the amount already in the tank, not the amount it can still hold.

C. 100 has no relation to the numbers given.

D. One third of 240 = 80 litres already in the tank; remaining capacity = 240 − 80 = 160 litres.

Question Q171 (printed 175) Logical Reasoning

M, N, P, Q, S, ??

- A. T ✓ **Correct answer**
- B. U
- C. V
- D. W

A. M(13) → N(14) is +1; N(14) → P(16) is +2; P(16) → Q(17) is +1; Q(17) → S(19) is +2. The pattern alternates +1, +2, so the next step is +1: S(19) + 1 = T(20).

B. U would require a +2 step after a +2 step, breaking the alternation.

C. V would require +3.

D. W would require +4.

Q172 (printed 176) Logical Reasoning

If Amna is older than Muneeb, and Muneeb is younger than Jaffar, then Amna is:

- A. Amna is older than Jaffar
- B. Amna is younger than Jaffar
- C. Amna and Jaffar are the same age
- D. There is not enough information to say ✓ **Correct answer**

A. Unprovable: Jaffar could be older than Amna.

B. Unprovable: Amna could be older than Jaffar.

C. Unprovable: no equality is given.

D. The premises give Amna > Muneeb and Jaffar > Muneeb. Both Amna and Jaffar are older than Muneeb, but nothing relates Amna to Jaffar: Amna could be older than, younger than, or the same age as Jaffar.

Question Q173 (printed 177) Logical Reasoning

Statements: All melons are apples. No apples are mangoes. Which of the following conclusions about the given statements are true? Conclusion I: All melons are mangoes. Conclusion II: Apples are not mangoes.

- A. Only I
- B. Only II ✓ **Correct answer**
- C. Both I and II
- D. Neither I nor II

A. Wrong: conclusion I is false — melons ⊆ apples and apples ∩ mangoes = ∅, so melons ∩ mangoes = ∅; I asserts the opposite of what follows.

B. Correct: only II — conclusion II ("apples are not mangoes") restates the second premise and is true.

nclusion I is false.

D. Wrong: conclusion II is true.

Question Q174 (printed 178) Logical Reasoning

In a family of six members: P is the father of Q; R is the mother of Q; S is the sister of Q; T is the brother of P. Who is the Uncle of Q?

- A. P
- B. R
- C. S
- D. T ✓ **Correct answer**

A. P is Q's father, not uncle.

B. R is Q's mother, not uncle.

C. S is Q's sister, not uncle.

D. P is Q's father and R is Q's mother, so P and R are Q's parents. T is the brother of P, i.e. the brother of Q's father — Q's paternal uncle. NOTE: the PDF runs the family facts inline; the Scribd reproduction bullets them. Same facts, same answer.

Question Q175 (printed 179) Logical Reasoning

If A is mother of B and C is child of B, then what is the relationship between A and C?

- A. Aunt
- B. Grandmother ✓ **Correct answer**
- C. Sister
- D. Cousin

A. An aunt is the sister of a parent; A is the parent of a parent.

B. A is B's mother; C is B's child, so C is A's grandchild and A is C's grandmother.

ares parents with B, A is B's mother, a generation above.

D. A cousin is the child of a parent's sibling; A is two generations above C.

Question Q176 (printed 180) Logical Reasoning

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

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

A. 95 would require a difference of −15.

B. 100 would require a difference of −10.

C. 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.

D. 107 would require a difference of −3, repeating an earlier step instead of continuing the sequence.

Question GF-96 (printed 96) Chemistry

Among the following compounds, the most susceptible to nucleophilic attack on carbonyl carbon is:

- A. CH3COCl ✓ **Correct answer**
- B. CH3CHO
- C. CH3COOCH3
- D. CH3COOCOCH3

A. Acetyl chloride: the chloride ion is an excellent leaving group and the strongly electronegative chlorine polarises the carbonyl carbon, making it highly susceptible to nucleophilic attack; acid chlorides are the most reactive carboxylic-acid derivatives.

nigan State University open textbook: "acid chlorides are more reactive than anhydrides, esters and carboxylic acids", and "aldehydes and ketones are more reactive than all carboxylic acid derivatives except acid chlorides"); correct. The PDF key agrees (key A).

B. Acetaldehyde is reactive toward nucleophiles, but it has no leaving group and undergoes addition rather than substitution; it is less reactive than an acid chloride.

C. Methyl acetate: the ester carbonyl is stabilised by resonance with the alkoxy oxygen and the alkoxide is a poor leaving group, so it is much less reactive than the acid chloride.

D. Acetic anhydride is reactive, but less so than the acid chloride (the reactivity order is acid chloride > anhydride > ester > amide).

Note: Appendix item, recovered from the SIBA MDCAT 2025 Version C PDF (printed Q96); its stem, options and key letter (A) are as printed in the PDF and cross-checked against the Scribd reproduction. VERIFIED by derivation + the OCLUE open textbook (acid chlorides most reactive); the PDF key agrees but was not used as sole authority.

Question GF-161 (printed 161) Physics

If A = (ai + bj) and B = 4(ai + bj), magnitude of A x B =

- A. $4(a^2+b^2)$
- B. 4abk
- C. 8(a+b)
- D. 0 ✓ **Correct answer**

A. This is |A| × |B| (the product of the two magnitudes: $|A| = \sqrt{(a^2+b^2)}$, $|B| = 4\sqrt{(a^2+b^2)}$), not the magnitude of the cross product.

B. A vector along k with magnitude 4ab: the cross product of two parallel vectors has no component at all, so no k-component can arise.

C. Dimensionally wrong: a + b is not a magnitude (magnitudes combine in quadrature,

d 8(a+b) is not the cross product of anything here.

D. B = 4A, so B is a scalar multiple of A: the two vectors are parallel, the angle between them is 0, and |A × B| = |A||B|sin 0 = 0; correct. The PDF key agrees (key D).

Note: Appendix item, recovered from the SIBA MDCAT 2025 Version C PDF (printed Q161); its stem, options and key letter (D) are as printed in the PDF and cross-checked against the Scribd reproduction. VERIFIED by derivation (B = 4A, so the vectors are parallel and |A × B| = 0); the PDF key agrees but was not used as sole authority.

Question GF-162 (printed 162) Physics

A proton and an alpha particle enter in the same magnitude [field] with equal speeds, compared to proton, the alpha particle's path will have:

- A. Larger radius ✓ **Correct answer**
- B. Smaller radius
- C. Smaller path length
- D. Greater deflection

A. For a charged particle in a magnetic field, r = mv/qB. The alpha particle has m = $4m_p$ and q = 2e against the proton's m = m_p and q = e, with the same v and B, so $r_\alpha = (4/2)\cdot r_p = 2r_p$: twice the proton's radius; correct. The PDF key agrees (key A).

B. Backwards: the alpha particle is four times heavier but only twice as charged, so its radius is larger, not smaller.

C. The path is a circle of larger radius, so the path is longer, not smaller; and "path length" is not the quantity the radius formula compares.

D. Greater deflection would need a tighter curve (smaller radius); the alpha particle curves less, not more.

Note: Appendix item, recovered from the SIBA MDCAT 2025 Version C PDF (printed Q162); its stem, options and key letter (A) are as printed in the PDF and cross-checked against the

duction. VERIFIED by derivation (r = mv/qB; the alpha particle's radius is twice the proton's); the PDF key agrees but was not used as sole authority.

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