MDCAT (KMU entry test, Code B, reconduct) — 2023 · Solved Past Paper

Body: Khyber Medical University (KMU) · **Post:** MDCAT (KMU entry test, Code B, reconduct) · **Year:** 2023 · **Questions:** 200 in the original paper — **191 solved and verified**, 9 excluded as defective (Q3, Q72, Q78, Q82, Q86, Q89, Q103, Q128, Q146) · **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. General Knowledge answers are as of the 2023 sitting.

Source note: Complete Code B paper (200 questions) with its printed answer key: educationinkarachi.net (educationinkarachi.net/wp-content/uploads/2026/09/KMU-MDCAT-2023-Reconducted-CodeB.pdf). Official KMU revised answer key, 28 Nov 2023 (Codes A–D, Q1–200; '*' = one mark awarded to all candidates, 'b or d' = both options accepted): cas.kmu.edu.pk/kmumdcat/siteimages/28th-nov-MDCAT-2023KEY-new.pdf. Original official key, 26 Nov 2023: resultonline.pk. Exam held Sunday 26 November 2023 (reconduct; first sitting 10 September 2023 annulled). Subject split: Biology Q1–68, Chemistry Q69–122, Physics Q123–176, English Q177–194, Logical Reasoning Q195–200. 4 PICK-ONE (Q30, Q139, Q189, Q199): the revised key accepts both options on Q30 (b or d) and Q199 (a or c); Q139 prints identical options twice (A and D both 'mv2/r'); Q189 has two valid corrections (semicolon and 'but'). 9 DEFECTIVE-excluded (Q3, Q72, Q78, Q82, Q86, Q89, Q103, Q128, Q146): the revised key awards the mark to all candidates (*) on Q3, Q82, Q86, Q89, Q103, Q128 and Q146; Q72 and Q78 each have two true options. Printed key vs official revised key conflicts: Q76 (printed B, official c), Q153 (printed D, official b), Q111 (printed A/B, official b). Q100 option (d) had an inserted advert in the source PDF; the advert text was stripped, leaving 'Aldehydes'. Answers verified independently against reference facts, worked derivations and targeted sources, never from the printed key

ons by the assistant under the owner's 8 Nov 2026 delegation.

Question 1 Necrosis

Cell death due to tissue damage is called:

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

A. wrong: apoptosis is programmed cell death, not death from tissue damage.

B. correct: cell death due to tissue damage (injury) is called necrosis.

C. wrong: cancer is uncontrolled cell growth, not cell death from damage.

D. wrong: metastasis is the spread of cancer, not cell death.

Question 2 Autoclave use

Autoclave chambers are used for _____ of surgical instruments.

- A. Sterilization ✓ **Correct answer**
- B. Filtration
- C. Desiccation
- D. Radiation

A. correct: autoclave chambers use steam under pressure for the sterilization of surgical instruments.

B. wrong: filtration separates particles; it is not what an autoclave does.

C. wrong: desiccation is drying; it is not what an autoclave does.

D. wrong: an autoclave uses steam, not radiation.

3 Syphilis incubation period

The incubation period of syphilis is:

- A. 1–2 weeks
- B. 2–3 weeks
- C. 3–4 weeks
- D. 0–7 days

No answer is given for this question, and none is taught. DEFECTIVE-excluded (no unique correct option — see note)

A. wrong: the incubation period of syphilis is about 3 weeks, not 1–2 weeks.

B. wrong: 3 weeks falls on the boundary of this range and the next, so it is not uniquely correct.

C. wrong: 3 weeks falls on the boundary of this range and the previous one, so it is not uniquely correct.

D. wrong: the incubation period is about 3 weeks, not 0–7 days. DEFECTIVE-excluded: the incubation period of primary syphilis is about 21 days (10–90 days), which falls exactly on the boundary between options B (2–3 weeks) and C (3–4 weeks), so no unique answer exists; the official revised key awards the mark to all (*). Decided by the assistant under the owner's 8 Nov 2026 delegation. The question stays in the file with no answer taught and never enters the website JSON.

Question 4 Muscle fatigue cause

Muscle fatigue results due to deficiency of _____ and excess accumulation of _____.

- A. Adenosine triphosphate, lactic acid ✓ **Correct answer**
- B. Adenosine triphosphate, ionic imbalance
- C. Glucose, lactic acid
- D. Glucose, ionic imbalance

uscle fatigue results from ATP deficiency and the excess accumulation of lactic acid.

B. wrong: lactic acid accumulation, not ionic imbalance, is the second factor.

C. wrong: the deficiency is of ATP, not glucose.

D. wrong: the deficiency is of ATP and the accumulation is of lactic acid.

Question 5 X-linked dominant disorder

A male or female child of an affected mother has 50% chance of acquiring the disorder. Such a disorder is:

- A. X-linked recessive disorder
- B. X-linked dominant disorder ✓ **Correct answer**
- C. Y-linked dominant disorder
- D. Y-linked recessive disorder

A. wrong: an X-linked recessive disorder would not give a 50% chance to children of both sexes from an affected mother.

B. correct: a heterozygous affected mother passes the dominant X to half her children of either sex, giving a 50% chance.

C. wrong: a Y-linked disorder passes only from father to son.

D. wrong: a Y-linked disorder passes only from father to son.

Question 6 Sugar synthesis factory

Which is the factory for synthesis of sugar in autotrophic eukaryotes?

- A. Mitochondria
- B. Chloroplast ✓ **Correct answer**
- C. Ribosome

A. wrong: mitochondria release energy; they do not synthesise sugar.

B. correct: the chloroplast is the factory for sugar synthesis in autotrophic eukaryotes (photosynthesis).

C. wrong: ribosomes synthesise proteins, not sugar.

D. wrong: amyloplasts store starch; they do not synthesise sugar.

Question 7 NAD composition

The coenzyme NAD is made up of:

- A. Vitamins
- B. Amino acids
- C. Nucleotides ✓ **Correct answer**
- D. Sugar

A. wrong: NAD is not made of vitamins (its nicotinamide part comes from vitamin B3, but NAD itself is a nucleotide).

B. wrong: NAD is not made of amino acids.

C. correct: NAD (nicotinamide adenine dinucleotide) is made up of nucleotides.

D. wrong: NAD contains a sugar (ribose) but is made up of nucleotides.

Question 8 Storage diseases

Storage diseases are caused by the excessive accumulation of substances within the cell, due to defects (mutations) in one of the _____ enzymes.

- A. Amylase
- B. Lysosomal ✓ **Correct answer**
- C. Lyase

A. wrong: storage diseases are not caused by amylase defects.

B. correct: storage diseases are caused by defects in lysosomal enzymes, so substances accumulate in the cell.

C. wrong: storage diseases are not caused by lyase defects.

D. wrong: storage diseases are not caused by lipase defects alone.

Question 9 Nucleolus function

Function of the nucleolus is to form:

- A. Nuclear envelope
- B. Chromosome
- C. rRNA ✓ **Correct answer**
- D. Cytoplasm

A. wrong: the nucleolus does not form the nuclear envelope.

B. wrong: the nucleolus does not form chromosomes.

C. correct: the nucleolus is the site where ribosomal RNA (rRNA) is formed.

D. wrong: the nucleolus does not form the cytoplasm.

Question 10 Sulcus and fissure

A shallow groove in cerebrum is called _____ and deep groove is called _____.

- A. sulcus, fissure ✓ **Correct answer**
- B. fissure, sulcus
- C. gyrus, fissure
- D. fissure, gyrus

shallow groove in the cerebrum is a sulcus and a deep groove is a fissure.

B. wrong: this is the reverse order.

C. wrong: a gyrus is a ridge, not a shallow groove.

D. wrong: a gyrus is a ridge, not a deep groove.

Question 11 Threshold potential

Which brings membrane potential to threshold?

- A. Influx of sodium ions across the post synaptic membrane ✓ **Correct answer**
- B. Outflow of sodium ions across the post synaptic membrane
- C. Outflow of calcium ions across the post synaptic membrane
- D. Influx of potassium ions across the post synaptic membrane

A. correct: the influx of sodium ions depolarises the membrane and brings it to threshold.

B. wrong: outflow of sodium would hyperpolarise the membrane.

C. wrong: calcium outflow does not bring the membrane to threshold.

D. wrong: potassium influx does not depolarise the membrane to threshold.

Question 12 Cofactor and enzyme shape

What alters the shape of enzymes and makes them functional?

- A. Cofactor ✓ **Correct answer**
- B. Other enzymes
- C. Proteins
- D. Both a and c

A. correct: a cofactor binds to the enzyme, alters its shape and makes it functional.

B. wrong: other enzymes do not alter an enzyme's shape to make it functional.

e enzyme itself is a protein, proteins in general do not alter its shape.

D. wrong: the cofactor alone is the answer; proteins in general do not do this.

Question 13 Vasa vasorum

Which of the following is known as the vessels of the vessels?

- A. Vasa vasorum ✓ **Correct answer**
- B. Tunica media
- C. Tunica externa
- D. Tunica interna

A. correct: the vasa vasorum are the small vessels that supply the walls of larger vessels, known as the vessels of the vessels.

B. wrong: the tunica media is the middle layer of a vessel wall.

C. wrong: the tunica externa is the outer layer of a vessel wall.

D. wrong: the tunica interna is the inner layer of a vessel wall.

Question 14 Erythroblastosis foetalis

Which of the following is true about occurrence of erythroblastosis foetalis?

- A. Occurs when both father and mother are Rh +ive
- B. Occurs when both father and mother are Rh –ve
- C. Occurs when mother is Rh +ive and father is Rh –ive
- D. Occurs when mother is Rh –ive and father is Rh +ive ✓ **Correct answer**

A. wrong: if both parents are Rh positive, there is no incompatibility.

B. wrong: if both parents are Rh negative, there is no incompatibility.

C. wrong: this combination causes no incompatibility.

n Rh-negative mother carrying an Rh-positive baby produces antibodies that attack the baby's blood.

Question 15 Water properties except

All are properties of water, EXCLUDING:

- A. Universal solvent
- B. Polar nature
- C. Hydrogen bonding
- D. Becomes denser when it freezes ✓ **Correct answer**

A. wrong: water is a universal solvent, so this is a real property.

B. wrong: water is polar, so this is a real property.

C. wrong: water shows hydrogen bonding, so this is a real property.

D. correct: water becomes less dense when it freezes (ice floats), so this is NOT a property of water.

Question 16 Thymus gland

Thymus gland is involved in maturation of which of the following?

- A. Platelets
- B. Eosinophils
- C. B-Lymphocytes
- D. T-Lymphocytes ✓ **Correct answer**

A. wrong: platelets mature in the bone marrow, not the thymus.

B. wrong: eosinophils mature in the bone marrow, not the thymus.

C. wrong: B-lymphocytes mature in the bone marrow, not the thymus.

D. correct: the thymus gland is involved in the maturation of T-lymphocytes.

17 Teichoic acid

Which component is present only in the cell wall of Gram-positive bacteria but NOT in Gram-negative bacteria?

- A. Teichoic acid ✓ **Correct answer**
- B. Lipids
- C. Peptidoglycan
- D. Periplasmic space

A. correct: teichoic acid is present only in the cell wall of Gram-positive bacteria.

B. wrong: lipids are present in Gram-negative bacteria (outer membrane), not exclusive to Gram-positive.

C. wrong: peptidoglycan is present in both Gram-positive and Gram-negative bacteria.

D. wrong: the periplasmic space is a feature of Gram-negative bacteria.

Question 18 Breastfeeding hormone

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

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

A. correct: prolactin is increased in breastfeeding mothers; it stimulates milk production.

B. wrong: thyroxin regulates metabolism, not milk production.

C. wrong: aldosterone regulates sodium, not milk production.

D. wrong: insulin regulates blood glucose, not milk production.

19 Independent assortment

Mendel’s law of independent assortment can be explained by:

- A. Behavior of chromosomes in mitosis
- B. Behavior of chromosomes in meiosis ✓ **Correct answer**
- C. Gene behavior in mitosis
- D. Both a and b

A. wrong: independent assortment is explained by meiosis, not mitosis.

B. correct: Mendel's law of independent assortment is explained by the random separation of homologous chromosomes in meiosis.

C. wrong: independent assortment is a meiotic phenomenon.

D. wrong: only meiosis explains independent assortment.

Question 20 Rod shaped virus

Which of the following is a rod shape virus?

- A. Bacteriophage
- B. Herpes virus
- C. Hepatitis virus
- D. Tobacco mosaic virus ✓ **Correct answer**

A. wrong: a bacteriophage is tadpole-shaped.

B. wrong: herpes virus is roughly spherical (icosahedral).

C. wrong: hepatitis virus is roughly spherical.

D. correct: tobacco mosaic virus is rod-shaped.

21 Glucose classification

Glucose is classified as a:

- A. Monosaccharide ✓ **Correct answer**
- B. Disaccharide
- C. Oligosaccharide
- D. Polysaccharide

A. correct: glucose is a monosaccharide (a single sugar unit).

B. wrong: a disaccharide is two sugar units joined.

C. wrong: an oligosaccharide is a few sugar units joined.

D. wrong: a polysaccharide is many sugar units joined.

Question 22 Opposite of condensation

Which of the following is the opposite of condensation reaction?

- A. Decarboxylation
- B. Hydration
- C. Dehydration
- D. Hydrolysis ✓ **Correct answer**

A. wrong: decarboxylation removes carbon dioxide; it is not the opposite of condensation.

B. wrong: hydration adds water but is not the standard opposite of condensation.

C. wrong: dehydration is the same as condensation (removal of water).

D. correct: hydrolysis (splitting by water) is the opposite of a condensation reaction.

Question 23 Nonvirulent pneumococcus

The cells of the nonvirulent strain of Streptococcus pneumoniae are:

sulated and called S-type

- B. Non-capsulated and called S-type
- C. Capsulated and called R-type
- D. Non-capsulated and R-type ✓ **Correct answer**

A. wrong: the capsulated S-type is virulent.

B. wrong: the non-capsulated strain is the R-type.

C. wrong: the R-type is non-capsulated.

D. correct: the nonvirulent strain of Streptococcus pneumoniae is non-capsulated and called the R-type.

Question 24 Cranial nerves

The total number of cranial nerves in a human body are:

- A. 12 pairs ✓ **Correct answer**
- B. 24 pairs
- C. 31 pairs
- D. 62 pairs

A. correct: humans have 12 pairs of cranial nerves.

B. wrong: there are 12 pairs, not 24.

C. wrong: 31 pairs are the spinal nerves.

D. wrong: there are 12 pairs of cranial nerves.

Question 25 Enzymes are

Enzymes are:

- A. Carbohydrates
- B. Proteins ✓ **Correct answer**

- D. Can be lipids or proteins

A. wrong: enzymes are not carbohydrates.

B. correct: enzymes are proteins (with a few RNA exceptions).

C. wrong: enzymes are not lipids.

D. wrong: enzymes are proteins, not lipids.

Question 26 Acquired modification

Who proposed the concept that an organism can pass on acquired modification to its offsprings?

- A. Lamarck ✓ **Correct answer**
- B. Darwin
- C. Malthus
- D. Aristotle

A. correct: Lamarck proposed that an organism can pass acquired modifications to its offspring.

B. wrong: Darwin proposed natural selection, not inheritance of acquired characters.

C. wrong: Malthus wrote on population, not inheritance.

D. wrong: Aristotle did not propose this concept.

Question 27 Cytotoxic T-cells

Cytotoxic T-cells:

- A. Directly kill invaders ✓ **Correct answer**
- B. Aid B cells in their job
- C. Both a and b

press T cell activity

A. correct: cytotoxic T-cells directly kill infected cells and invaders.

B. wrong: aiding B cells is the job of helper T-cells.

C. wrong: cytotoxic T-cells kill directly; they do not aid B cells.

D. wrong: suppressing T-cell activity is the job of suppressor (regulatory) T-cells.

Question 28 Single polar flagellum

A bacterium with single polar flagellum is:

- A. Amphitrichous
- B. Atrichous
- C. Lophotrichous
- D. Monotrichous ✓ **Correct answer**

A. wrong: amphitrichous means a flagellum at each end.

B. wrong: atrichous means no flagella.

C. wrong: lophotrichous means a tuft of flagella at one end.

D. correct: a bacterium with a single polar flagellum is monotrichous.

Question 29 HIV genome

The genome of the human immunodeficiency virus (HIV) is made up of:

- A. cDNA
- B. DNA
- C. RNA ✓ **Correct answer**
- D. rRNA

A. wrong: cDNA is made from the viral RNA by reverse transcriptase; it is not the genome.

e HIV genome is RNA, not DNA.

C. correct: the genome of HIV is made of RNA (two single strands).

D. wrong: rRNA is ribosomal RNA, not the HIV genome.

Question 30 Hip and shoulder joints

Hip joints and shoulder joints are examples of:

- A. Cartilaginous joint
- B. Synovial joints
- C. Hinge joint
- D. Ball and socket joint ✓ **Correct answer**

A. wrong: hip and shoulder joints are not cartilaginous joints.

B. one of the two answers the official key accepts: hip and shoulder joints are synovial joints.

C. wrong: hip and shoulder joints are not hinge joints.

D. the other answer the official key accepts, and the most specific classification: hip and shoulder joints are ball-and-socket joints. PICK-ONE (decided by assistant under owner's 8 Nov 2026 delegation): the official KMU revised key for Code B accepts BOTH B and D for this question; D is served as the keyed answer and B is recorded here as equally accepted.

Question 31 Locus of a gene

Locus of a gene on a chromosome means its:

- A. Position ✓ **Correct answer**
- B. Function
- C. Start point
- D. End point

The locus of a gene is its position on a chromosome.

B. wrong: the locus is a position, not a function.

C. wrong: the locus is the whole position, not just a start point.

D. wrong: the locus is the whole position, not just an end point.

Question 32 Carotenoid absorption

The carotenoids absorb light in the visible spectrum between ____ and ____ wavelengths.

- A. 400–600 nm
- B. 630–700 nm
- C. 620–700 nm
- D. 500–600 nm ✓ **Correct answer**

A. wrong: the textbook range for carotenoids is 500–600 nm.

B. wrong: this is the red region absorbed by chlorophyll.

C. wrong: this is the red region absorbed by chlorophyll.

D. correct: carotenoids absorb light in the visible spectrum between 500 and 600 nm (the textbook range).

Question 33 Coelenterate endoderm

The cells of the endoderm of coelenterates are specialised for:

- A. Excretion
- B. Digestion ✓ **Correct answer**
- C. Defence
- D. Respiration

A. wrong: the endoderm of coelenterates is specialised for digestion.

…e endoderm (gastrodermis) of coelenterates is specialised for digestion.

C. wrong: defence is a function of the ectoderm (nematocysts).

D. wrong: respiration occurs by diffusion, not by the endoderm.

Question 34 Viruses not classified by

Viruses are NOT classified based on:

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

A. wrong: viruses are classified by morphology.

B. wrong: viruses are classified by host specificity.

C. correct: viruses have no cell membrane, so they are not classified on that basis.

D. wrong: viruses are classified by the presence or absence of an envelope.

Question 35 Glycocalyx

An additional covering surrounds the cell wall of some bacteria that either prevents the bacteria from being phagocytosed by host cells or helps them to make biofilm.

- A. Capsule
- B. Slime
- C. Glycocalyx ✓ **Correct answer**
- D. Spore

A. wrong: a capsule is one specific form of glycocalyx, not the general covering.

B. wrong: a slime layer is one specific form of glycocalyx.

e glycocalyx is the additional covering that prevents phagocytosis or helps form a biofilm.

D. wrong: a spore is a resistant resting structure, not a surface covering.

Question 36 Capsid

The protein coat surrounding the genome of virus is called:

- A. Capsid ✓ **Correct answer**
- B. DNA sheath
- C. Phage
- D. Viroid

A. correct: the protein coat surrounding the viral genome is the capsid.

B. wrong: there is no structure called a DNA sheath around a viral genome.

C. wrong: a phage is a virus that infects bacteria, not its protein coat.

D. wrong: a viroid is a small infectious RNA, not a protein coat.

Question 37 Non-cyclic electron deficit

In the non-cyclic electron transport of light reaction, the deficit of ____ electrons occurs in the chlorophyll, as it absorbs energy.

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

A. wrong: the deficit is of two electrons, not one.

B. correct: in non-cyclic electron transport, a deficit of two electrons occurs in the chlorophyll as it absorbs energy.

D. wrong: the deficit is of two electrons, not four.

Question 38 Pyruvic acid carbons

What is the number of carbon atoms in pyruvic acid?

- A. 2
- B. 3 ✓ **Correct answer**
- C. 4
- D. 5

A. wrong: pyruvic acid has three carbon atoms, not two.

B. correct: pyruvic acid (CH3COCOOH) has three carbon atoms.

C. wrong: pyruvic acid has three carbon atoms, not four.

D. wrong: pyruvic acid has three carbon atoms, not five.

Question 39 Sucrose hydrolysis

Sucrose is hydrolyzed into:

- A. Lactose and glucose
- B. Lactose and fructose
- C. Glucose and fructose ✓ **Correct answer**
- D. Glucose and galactose

A. wrong: sucrose does not give lactose.

B. wrong: sucrose does not give lactose.

C. correct: sucrose hydrolyses into glucose and fructose.

D. wrong: glucose and galactose come from lactose, not sucrose.

40 Heat of vaporisation

_____ is the heat required to convert a gram of water into vapours at its boiling point.

- A. Heat of vaporization ✓ **Correct answer**
- B. Specific heat capacity
- C. Heat of ionization
- D. Polarity of water

A. correct: the heat required to convert a gram of water into vapour at its boiling point is the heat of vaporisation.

B. wrong: specific heat capacity is the heat needed to raise the temperature by one degree.

C. wrong: heat of ionisation concerns the removal of an electron.

D. wrong: polarity is a property, not a quantity of heat.

Question 41 Bacterial conjugation

Which mode of genetic exchange between bacteria involves cell-to-cell contact between the bacterial cells?

- A. Transduction
- B. Transformation
- C. Conjugation ✓ **Correct answer**
- D. A and B

A. wrong: transduction transfers genes by a virus, not by cell-to-cell contact.

B. wrong: transformation takes up free DNA, not by cell-to-cell contact.

C. correct: conjugation is the genetic exchange between bacteria by direct cell-to-cell contact.

D. wrong: neither transduction nor transformation involves cell-to-cell contact.

42 Selective permeability regulation

_____ regulates the selective permeability of the plasma membrane, allowing movement of molecules according to the needs of the cells.

- A. Membrane proteins ✓ **Correct answer**
- B. Membrane carbohydrate
- C. Membrane glycolipids
- D. Membrane cholesterol

A. correct: membrane proteins regulate the selective permeability of the plasma membrane.

B. wrong: membrane carbohydrates serve in recognition, not in regulating permeability.

C. wrong: glycolipids serve in recognition, not in regulating permeability.

D. wrong: cholesterol affects fluidity, not selective permeability.

Question 43 Polarised neuron

The neuron is said to be polarized when the:

- A. Inside of the plasma membrane has a negative energy compared to the outside. ✓ **Correct answer**
- B. Inside of the plasma membrane has a positive energy compared to the outside.
- C. Inside of the plasma membrane has same energy compared to the outside.
- D. Positive charge moves inside the neuron.

A. correct: a neuron is polarised when the inside of its membrane is negative relative to the outside (the resting potential).

B. wrong: that would be depolarised, not polarised.

C. wrong: equal potentials would mean no polarisation.

D. wrong: positive charge moving in depolarises the neuron.

44 Hippocampus memory

Which part of the brain plays a key role in long term memory?

- A. Thalamus
- B. Hippocampus ✓ **Correct answer**
- C. Hypothalamus
- D. Amygdala

A. wrong: the thalamus is a sensory relay centre, not the seat of long-term memory.

B. correct: the hippocampus plays a key role in long-term memory.

C. wrong: the hypothalamus regulates homeostasis, not long-term memory.

D. wrong: the amygdala processes emotions, not long-term memory.

Question 45 Hydrolase example

Which of the following is an example of hydrolase?

- A. Transmethylase
- B. Oxygenases
- C. Peroxidase
- D. Phosphatase ✓ **Correct answer**

A. wrong: a transmethylase transfers methyl groups; it is not a hydrolase.

B. wrong: oxygenases add oxygen; they are not hydrolases.

C. wrong: peroxidase breaks down peroxides; it is not a hydrolase.

D. correct: phosphatase hydrolyses phosphate esters, so it is a hydrolase.

Question 46 Neutrophils except

All of the following are true about neutrophils, except:

st abundant form of WBCs

- B. Have short life span
- C. Made by the thymus gland ✓ **Correct answer**
- D. Released by the bone marrow

A. wrong: neutrophils are the most abundant white blood cells, so this is true.

B. wrong: neutrophils have a short lifespan, so this is true.

C. correct: neutrophils are made by the bone marrow, not the thymus gland, so this is the exception.

D. wrong: neutrophils are released by the bone marrow, so this is true.

Question 47 Neo-Darwinism evolution

According to Neo-Darwinism, which one of the following is a case of evolution?

- A. Reproductive isolation ✓ **Correct answer**
- B. Infinite large population
- C. Environmental stability
- D. Both a and b

A. correct: by neo-Darwinism, reproductive isolation is a case of evolution (it leads to speciation).

B. wrong: an infinitely large population would not evolve.

C. wrong: a stable environment does not drive evolution.

D. wrong: only reproductive isolation is a case of evolution.

Question 48 Origin of Species concern

Darwin’s Origin of Species by natural selection is mainly concerned with:

- A. Origin of life

ptation

- C. Extinction
- D. Speciation ✓ **Correct answer**

A. wrong: Darwin's book is not about the origin of life.

B. wrong: adaptation is part of the theory, but the book is mainly concerned with speciation.

C. wrong: extinction is discussed, but the book is mainly concerned with speciation.

D. correct: the Origin of Species by natural selection is mainly concerned with speciation (the origin of new species).

Question 49 SA node location

The sinoatrial node is located in the _____ wall of the right atrium.

- A. Lower dorsal
- B. Upper dorsal ✓ **Correct answer**
- C. On the interatrial septum
- D. Near the coronary sinus

A. wrong: the SA node is in the upper dorsal wall.

B. correct: the sinoatrial node is located in the upper dorsal wall of the right atrium.

C. wrong: the AV node is near the interatrial septum, not the SA node.

D. wrong: the coronary sinus is near the AV node, not the SA node.

Question 50 Trachea vs oesophagus

Where does the trachea lie in relation to the esophagus?

- A. Dorsal
- B. Ventral ✓ **Correct answer**

- D. Lateral

A. wrong: the trachea lies ventral to the oesophagus, not dorsal.

B. correct: the trachea lies ventral (in front of) the oesophagus.

C. wrong: the trachea is not medial to the oesophagus.

D. wrong: the trachea is not lateral to the oesophagus.

Question 51 Bradykinin

Which of the following is true about bradykinin?

- A. It is produced at the site of tissue injury. ✓ **Correct answer**
- B. It has no role in the leakage of fluids into the tissues in inflammation
- C. It destroys phagocytes.
- D. It produces interferon gamma.

A. correct: bradykinin is produced at the site of tissue injury and causes pain and swelling.

B. wrong: bradykinin increases vascular permeability, causing fluid leakage.

C. wrong: bradykinin does not destroy phagocytes.

D. wrong: bradykinin does not produce interferon gamma.

Question 52 Prokaryote

Which of the following is a prokaryote?

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

otists are eukaryotes.

B. correct: E. coli is a bacterium, hence a prokaryote.

C. wrong: amoeba is a eukaryote.

D. wrong: fungi are eukaryotes.

Question 53 Endospore formation

Endospore formation is:

- A. A reproductive process
- B. A vegetative process ✓ **Correct answer**
- C. Can be reproductive or vegetative depending on the conditions
- D. Is related to invading host cells

A. wrong: endospore formation does not increase the number of cells.

B. correct: endospore formation is a vegetative (survival) process, not reproduction.

C. wrong: endospore formation is a survival process, not reproduction.

D. wrong: endospore formation is about survival, not invasion.

Question 54 Sertoli cells not

Which among the following is not the role of Sertoli cells?

- A. Protects sperms
- B. Provides liquid medium to sperms
- C. Provides nourishment to sperms
- D. Secrete testosterone ✓ **Correct answer**

A. wrong: Sertoli cells do protect sperms.

B. wrong: Sertoli cells do provide a liquid medium.

rtoli cells do nourish the developing sperms.

D. correct: Sertoli cells do not secrete testosterone; Leydig cells do.

Question 55 Menstrual phase hormones

At the beginning of the menstrual phase the _____ are at the lowest level.

- A. Follicle-stimulating hormone
- B. Gonadotropins
- C. Ovarian hormones ✓ **Correct answer**
- D. None of these

A. wrong: FSH is not at its lowest at the start of menstruation.

B. wrong: gonadotropins are not at their lowest at the start of menstruation.

C. correct: at the beginning of the menstrual phase the ovarian hormones (oestrogen and progesterone) are at their lowest level.

D. wrong: the ovarian hormones are at their lowest.

Question 56 Cartilage at bone ends

Which cartilage is found at the end of long bones?

- A. Calcified
- B. Elastic
- C. Fibrous
- D. Hyaline ✓ **Correct answer**

A. wrong: calcified cartilage is found in growing bones, not at the ends of long bones.

B. wrong: elastic cartilage is found in the ear and epiglottis.

C. wrong: fibrous cartilage is found in intervertebral discs.

yaline cartilage covers the ends of long bones.

Question 57 Actin around myosin

How many actin filaments surround the myosin at each end?

- A. 2
- B. 4
- C. 6 ✓ **Correct answer**
- D. 8

A. wrong: six actin filaments surround each myosin filament.

B. wrong: six actin filaments surround each myosin filament.

C. correct: six actin filaments surround the myosin at each end.

D. wrong: six actin filaments surround each myosin filament.

Question 58 Rh antibodies production

When are the Rh antibodies produced in Rh–ve persons?

- A. Naturally before birth
- B. Naturally after birth
- C. After exposure to Rh antigen ✓ **Correct answer**
- D. After exposure to Rh antibodies

A. wrong: Rh antibodies are not produced naturally before birth.

B. wrong: Rh antibodies are not produced naturally; they need exposure.

C. correct: Rh antibodies are produced only after exposure to the Rh antigen.

D. wrong: exposure to antibodies does not produce antibodies.

59 Common haemophilia type

Which of the following types of Haemophilia is more common in the human population?

- A. Haemophilia A ✓ **Correct answer**
- B. Haemophilia B
- C. Haemophilia C
- D. Haemophilia VI

A. correct: haemophilia A (factor VIII deficiency) is the more common type.

B. wrong: haemophilia B is less common than A.

C. wrong: haemophilia C is rare.

D. wrong: there is no common type called haemophilia VI.

Question 60 Parazoa origin

Parazoa are simple multicellular animals which are believed to have evolved from:

- A. Bacteria
- B. Protists ✓ **Correct answer**
- C. Fungi
- D. Plants

A. wrong: parazoa did not evolve from bacteria.

B. correct: parazoa (sponges) are believed to have evolved from protists.

C. wrong: parazoa did not evolve from fungi.

D. wrong: parazoa did not evolve from plants.

Question 61 Arthropod excretion

Which structure is responsible for the excretion in arthropods?

- B. Pronephridia
- C. Metanephridia
- D. Malpighian tubules ✓ **Correct answer**

A. wrong: the nephron is the vertebrate kidney unit.

B. wrong: pronephridia are found in flatworms.

C. wrong: metanephridia are found in annelids.

D. correct: Malpighian tubules are the excretory structures of arthropods.

Question 62 Alternation of generations

Alternation of generation is the character of phylum:

- A. Annelida
- B. Arthropoda
- C. Coelenterata ✓ **Correct answer**
- D. Echinodermata

A. wrong: annelids do not show alternation of generations.

B. wrong: arthropods do not show alternation of generations.

C. correct: alternation of generations (polyp and medusa) is characteristic of coelenterates.

D. wrong: echinoderms do not show alternation of generations.

Question 63 Preventing viral infection

Which of the following can be effective in preventing viral infection in humans?

- A. Taking antihistamines
- B. Getting vaccinated ✓ **Correct answer**

lying antiseptics

- D. Taking antibiotics

A. wrong: antihistamines treat allergy, not viral infection.

B. correct: vaccination is effective in preventing viral infection.

C. wrong: antiseptics kill microbes on surfaces, not viruses inside the body.

D. wrong: antibiotics do not work against viruses.

Question 64 Purines

Purines are _____ nitrogenous bases.

- A. Double ringed ✓ **Correct answer**
- B. Single ringed
- C. Double bond
- D. Single bond

A. correct: purines (adenine and guanine) are double-ringed nitrogenous bases.

B. wrong: single-ringed bases are pyrimidines.

C. wrong: purines are defined by their double ring, not a double bond.

D. wrong: purines are defined by their double ring.

Question 65 FAD

What is ‘Flavin adenine dinucleotide’?

- A. Catalyst
- B. Coenzyme ✓ **Correct answer**
- C. Cofactor
- D. Enzyme

D is not a catalyst by itself.

B. correct: flavin adenine dinucleotide (FAD) is a coenzyme.

C. wrong: FAD is specifically a coenzyme, not just a cofactor.

D. wrong: FAD is not an enzyme.

Question 66 Cerebellum function

The cerebellum is primarily concerned with:

- A. Thinking and reasoning
- B. Balancing during active movement ✓ **Correct answer**
- C. Temperature regulation
- D. Initiation of muscular contraction

A. wrong: thinking and reasoning are functions of the cerebrum.

B. correct: the cerebellum is primarily concerned with balance and coordination during movement.

C. wrong: temperature regulation is a hypothalamic function.

D. wrong: muscular contraction is initiated by the motor cortex, not the cerebellum.

Question 67 Adding substrate no difference

Adding substrates will NOT make a difference to the enzyme catalyzed reaction:

- A. When few enzyme molecules are left unsaturated ✓ **Correct answer**
- B. When the substrate cools down
- C. When the substrate heats up
- D. When many enzyme molecules remain unsaturated

A. correct: when almost all enzyme molecules are saturated, adding more substrate makes no difference to the rate.

oling changes the rate; it is not the condition for no difference.

C. wrong: heating changes the rate; it is not the condition for no difference.

D. wrong: when many enzymes are unsaturated, adding substrate increases the rate.

Question 68 Animals begin life as

All animals begin life as a:

- A. Multicellular fertilized egg
- B. Single fertilized egg ✓ **Correct answer**
- C. Hollow blastula
- D. Gastrula

A. wrong: the fertilized egg is a single cell.

B. correct: all animals begin life as a single fertilized egg (zygote).

C. wrong: the blastula comes later, after cleavage.

D. wrong: the gastrula comes after the blastula.

Question 69 Propanal identification

X is a compound that does not react with Na metal but produces carboxylic acid when heated under reflux with acidified potassium dichromate. X is:

- A. Propanal ✓ **Correct answer**
- B. Propanone
- C. Propan-1-ol
- D. Propan-2-ol

A. correct: propanal does not react with sodium metal (no OH group) and is oxidised by acidified potassium dichromate to propanoic acid.

B. wrong: propanone is not oxidised to a carboxylic acid by acidified dichromate.

propan-1-ol reacts with sodium metal.

D. wrong: propan-2-ol reacts with sodium metal and oxidises to a ketone, not a carboxylic acid.

Question 70 Forward reaction Kc

Which reaction will proceed in forward direction?

- A. Kc = 10 ✓ **Correct answer**
- B. Kc = 1
- C. Kc = 1/10
- D. Kc = 1/100

A. correct: Kc greater than 1 means the products are favoured, so the reaction proceeds in the forward direction.

B. wrong: Kc = 1 means the reaction is at equilibrium, not proceeding forward.

C. wrong: Kc less than 1 means the backward reaction is favoured.

D. wrong: Kc less than 1 means the backward reaction is favoured.

Question 71 Five unpaired d-electrons

Which pair of ions has five unpaired d-electrons?

- A. Fe2+ and Mn2+
- B. Fe2+ and Mn3+
- C. Fe3+ and Mn3+
- D. Fe3+ and Mn2+ ✓ **Correct answer**

A. wrong: Fe2+ is d6 (four unpaired), not five.

B. wrong: Fe2+ is d6 (four unpaired) and Mn3+ is d4 (four unpaired).

C. wrong: Mn3+ is d4 (four unpaired), not five.

e3+ is d5 and Mn2+ is d5, so both have five unpaired d-electrons.

Question 72 Nucleophile

Which one of the following is a nucleophile?

- A. H2O
- B. AlCl3
- C. BF3
- D. Cl-

No answer is given for this question, and none is taught. DEFECTIVE-excluded (two options true — see note)

A. true: water has lone pairs and acts as a nucleophile.

B. wrong: aluminium chloride is an electrophile (electron-pair acceptor).

C. wrong: boron trifluoride is an electrophile.

D. ALSO true: the chloride ion has lone pairs and acts as a nucleophile. DEFECTIVE-excluded: both H2O (A) and Cl- (D) are nucleophiles, so the question has two correct options and no unique answer; the official key names A only. Decided by the assistant under the owner's 8 Nov 2026 delegation. The question stays in the file with no answer taught and never enters the website JSON.

Question 73 Most metallic

Which one is more metallic?

- A. Na
- B. Mg
- C. Cs ✓ **Correct answer**
- D. K

A. wrong: caesium is more metallic than sodium.

esium is more metallic than magnesium.

C. correct: caesium is the most metallic of the four (largest atom, lowest ionisation energy).

D. wrong: caesium is more metallic than potassium.

Question 74 Visible spectral series

Which of the following spectral line series lies in the visible region?

- A. Lyman series
- B. Balmer series ✓ **Correct answer**
- C. Pfund series
- D. Brackett series

A. wrong: the Lyman series is in the ultraviolet.

B. correct: the Balmer series lies in the visible region.

C. wrong: the Pfund series is in the infrared.

D. wrong: the Brackett series is in the infrared.

Question 75 Acid halide functional group

Which of the following represents the functional group of acid halides?

- A. R–OH
- B. R–COX ✓ **Correct answer**
- C. R–X
- D. R–COOH

A. wrong: R-OH is an alcohol.

B. correct: the functional group of an acid halide is -COX.

X is an alkyl halide.

D. wrong: R-COOH is a carboxylic acid.

Question 76 Neo- prefix

Which of the following prefixes is used when two methyl groups are attached with second last carbon of alkane chain?

- A. N-
- B. Iso-
- C. Neo- ✓ **Correct answer**
- D. Geminal

A. wrong: N- denotes substitution on nitrogen.

B. wrong: iso- denotes one methyl group on the second-last carbon.

C. correct: neo- denotes two methyl groups on the second-last carbon of the chain.

D. wrong: geminal means two groups on the same carbon, not the neo- prefix. (The paper's printed key lists B, but the official revised key lists C, and neo- is the correct prefix.)

Question 77 Acid without COOH

Which of the following organic acids does NOT have a COOH group?

- A. Acetic acid
- B. Ascorbic acid
- C. Butyric acid
- D. Picric acid ✓ **Correct answer**

A. wrong: acetic acid has a COOH group.

B. wrong: ascorbic acid (vitamin C) has a COOH group in its lactone form.

C. wrong: butyric acid has a COOH group.

cric acid (2,4,6-trinitrophenol) has no COOH group.

Question 78 Electrolysis of water

Which of the following cell reactions correctly represent the electrolysis of water?

- A. $2H^+ + 2e^- \rightarrow H_2(g)$
- B. $2H_2O + 2e^- \rightarrow H_2(g) + 2(OH^-)$
- C. $2(OH^-) \rightarrow 2H_2O + O_2(g) + 4e^-$
- D. $2H_2O \rightarrow O_2(g) + 4H^+ + 4e^-$

No answer is given for this question, and none is taught. DEFECTIVE-excluded (two options true — see note)

A. true in acid solution: this is the cathode half-reaction when H^+ is present, though it is not the water-electrolysis cathode reaction.

B. true: this is the cathode half-reaction in the electrolysis of water.

C. wrong: this equation is unbalanced (it needs 4 OH^-).

D. ALSO true: this is the anode half-reaction in the electrolysis of water. DEFECTIVE-excluded: both B (cathode) and D (anode) correctly represent half-reactions of the electrolysis of water, so the question has two correct options and no unique answer; the official key names B only. Decided by the assistant under the owner's 8 Nov 2026 delegation. The question stays in the file with no answer taught and never enters the website JSON.

Question 79 Alkyne preparation

Which method is generally used to prepare alkynes?

- A. Dehydrohalogenation of vicinal dihalide ✓ **Correct answer**
- B. Hydrogenation of alkene
- C. Hydrolysis

A. correct: alkynes are generally prepared by dehydrohalogenation of vicinal dihalides.

B. wrong: hydrogenation of an alkene gives an alkane.

C. wrong: hydrolysis does not prepare alkynes.

D. wrong: hydration of an alkene gives an alcohol.

Question 80 Magnesium with water

Which compound is formed when magnesium is reacted with 2 molecules of water?

- A. Mg(OH)2 ✓ **Correct answer**
- B. MgOH
- C. Mg2OH
- D. Mg2(OH)2

A. correct: magnesium reacts with two molecules of water to give magnesium hydroxide (and hydrogen).

B. wrong: the product is Mg(OH)2, not MgOH.

C. wrong: the product is Mg(OH)2.

D. wrong: the product is Mg(OH)2.

Question 81 Allotropy

When an element occurs in different physical forms it is called _____.

- A. Anisotropy
- B. Isomorphism
- C. Polymorphism
- D. Allotropy ✓ **Correct answer**

isotropy is direction-dependent properties.

B. wrong: isomorphism is the same crystal form of different compounds.

C. wrong: polymorphism is different crystal forms of the same compound.

D. correct: when an element occurs in different physical forms it is called allotropy.

Question 82 CaCO3 mass for 48.8 L CO2

What mass of CaCO3 gives 48.8 liters (measured at STP) of CO2 on strong heating?

- A. 100 g
- B. 150 g
- C. 200 g
- D. 300 g

No answer is given for this question, and none is taught. DEFECTIVE-excluded (no correct option as printed — see note)

A. wrong: 100 g of CaCO3 gives 22.4 L of CO2, not 48.8 L.

B. wrong: 150 g gives 33.6 L, not 48.8 L.

C. wrong: 200 g gives 44.8 L, not 48.8 L.

D. wrong: 300 g gives 67.2 L, not 48.8 L. DEFECTIVE-excluded: 48.8 L of CO2 at STP is 48.8/22.4 = 2.18 mol, needing 218 g of CaCO3; no listed option is 218 g, so no option is correct; the official revised key awards the mark to all (*). Decided by the assistant under the owner's 8 Nov 2026 delegation. The question stays in the file with no answer taught and never enters the website JSON.

Question 83 Sodium ion radius

What is the reason of small atomic radii of sodium ions as compared to sodium atoms?

- A. Electronegativity

ctive nuclear charge ✓ **Correct answer**

- C. Shielding effect
- D. Electron affinity

A. wrong: electronegativity does not explain the smaller radius of the ion.

B. correct: the sodium ion is smaller because the same nuclear charge acts on fewer electrons, so the effective nuclear charge per electron is greater.

C. wrong: the shielding effect is smaller in the ion, but the reason is the effective nuclear charge.

D. wrong: electron affinity does not explain the smaller radius.

Question 84 Radius of 3rd orbit

What is the radius of 3rd orbit of electron of H-atom?

- A. 3.39 Å
- B. 4.761 Å ✓ **Correct answer**
- C. 5.29 × 1011 Å
- D. 9.7 Å

A. wrong: the radius is 0.529 × 9 = 4.761 Å, not 3.39 Å.

B. correct: the radius of the nth orbit is 0.529 × n^2 Å, so for n = 3 it is 0.529 × 9 = 4.761 Å.

C. wrong: this is a misprint of 0.529 Å (the first Bohr radius).

D. wrong: the radius is 4.761 Å, not 9.7 Å.

Question 85 Positive rays

What is the other name of positive rays?

- A. Canal rays ✓ **Correct answer**
- B. Magnetic rays

- D. Photon rays

A. correct: positive rays are also called canal rays.

B. wrong: there is no such name.

C. wrong: a quantum is a packet of energy, not a positive ray.

D. wrong: photon rays are electromagnetic radiation, not positive rays.

Question 86 Magnetic quantum number s-orbital

What is the magnetic quantum number for s-orbital?

- A. 2
- B. 3
- C. 5
- D. 7

No answer is given for this question, and none is taught. DEFECTIVE-excluded (no correct option as printed — see note)

A. wrong: for an s-orbital l = 0, so m = 0 only; 2 is not a value of m.

B. wrong: for an s-orbital m = 0 only.

C. wrong: for an s-orbital m = 0 only.

D. wrong: for an s-orbital m = 0 only. DEFECTIVE-excluded: for an s-orbital l = 0, so the magnetic quantum number m can only be 0, which is not among the options; the official revised key awards the mark to all (*). Decided by the assistant under the owner's 8 Nov 2026 delegation. The question stays in the file with no answer taught and never enters the website JSON.

87 Charles's law

The volume of a fixed mass of gas is directly proportional to absolute temperature at constant pressure as stated by:

- A. Dalton's law
- B. Boyle's law
- C. Avogadro's law
- D. Charles's law ✓ **Correct answer**

A. wrong: Dalton's law concerns partial pressures.

B. wrong: Boyle's law concerns pressure and volume at constant temperature.

C. wrong: Avogadro's law concerns volume and amount of gas.

D. correct: Charles's law states that the volume of a fixed mass of gas is directly proportional to its absolute temperature at constant pressure.

Question 88 Tautomer of propanol

The tautomer of propanol is:

- A. Propanal
- B. Propanone ✓ **Correct answer**
- C. Methyl ethyl ether
- D. Butanone

A. wrong: propanal is the keto tautomer of prop-1-en-1-ol, not the one keyed here.

B. correct: the keto-enol tautomer of the enol propanol (prop-1-en-2-ol) is propanone.

C. wrong: methyl ethyl ether is not a tautomer of propanol.

D. wrong: butanone is a four-carbon ketone, not the tautomer of propanol.

89 Ring deactivator

The substituent attached to the benzene ring that acts as ring deactivator is:

- A. NO2
- B. COOH
- C. Cl
- D. NH3

No answer is given for this question, and none is taught. DEFECTIVE-excluded (two options true — see note)

A. true: the nitro group is a ring deactivator.

B. ALSO true: the carboxyl group is a ring deactivator.

C. wrong: chlorine is a weak deactivator but is ortho/para directing; the question's intended deactivators are NO2 and COOH.

D. wrong: NH3 is not a ring deactivator (the amino group is an activator). DEFECTIVE-excluded: both NO2 (A) and COOH (B) are ring deactivators, so the question has two correct options and no unique answer; the official revised key awards the mark to all (*). Decided by the assistant under the owner's 8 Nov 2026 delegation. The question stays in the file with no answer taught and never enters the website JSON.

Question 90 Specific heat of water

The specific heat of water is:

- A. 4.2 kJ/mol/K
- B. 4.2 J/g·K ✓ **Correct answer**
- C. 4.6 J/g/K
- D. 42 J/g/K

A. wrong: the specific heat of water is 4.2 J/g·K, not kJ/mol/K.

e specific heat of water is 4.2 J/g·K.

C. wrong: the value is 4.2, not 4.6.

D. wrong: the value is 4.2, not 42.

Question 91 SI unit of pressure

The SI unit of pressure is:

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

A. correct: the SI unit of pressure is the pascal.

B. wrong: mmHg is not an SI unit.

C. wrong: the torr is not an SI unit.

D. wrong: the atmosphere is not an SI unit.

Question 92 Limiting reactant

The reactant which is consumed first in a chemical reaction is called:

- A. Consumed reactant
- B. Limiting reactant ✓ **Correct answer**
- C. Excess reactant
- D. Non-reacted reactant

A. wrong: the reactant consumed first is specifically the limiting reactant.

B. correct: the reactant consumed first is the limiting reactant.

C. wrong: the excess reactant remains after the reaction.

e limiting reactant is consumed, not left unreacted.

Question 93 Avogadro's number

The number of particles (atoms, molecules, ions) in one mole of any substance is numerically equal to:

- A. 6.023 × 1023 ✓ **Correct answer**
- B. 6.023 × 1025
- C. 6.023 × 10-23
- D. 4.02 × 1023

A. correct: one mole contains 6.023×10^{23} particles.

B. wrong: the exponent is 23, not 25.

C. wrong: the exponent is +23, not -23.

D. wrong: the value is 6.023×10^{23}, not 4.02×10^{23}.

Question 94 Methane chlorination final product

The final substitution product in the chlorination of methane in the presence of UV light and excess chlorine is:

- A. Methylene chloride
- B. Carbon tetrachloride ✓ **Correct answer**
- C. Methylene dichloride
- D. Chloroform

A. wrong: methylene chloride is an intermediate product.

B. correct: with excess chlorine, methane is fully chlorinated to carbon tetrachloride.

C. wrong: this is the same as methylene chloride, an intermediate.

D. wrong: chloroform is an intermediate product.

95 Bromine state

The element chlorine is found in a gaseous state while bromine is found in:

- A. Solid state
- B. Liquid state ✓ **Correct answer**
- C. Crystalline forms
- D. Condensed form

A. wrong: bromine is a liquid at room temperature.

B. correct: bromine is a liquid, while chlorine is a gas.

C. wrong: bromine is a liquid, not crystalline.

D. wrong: bromine is a liquid.

Question 96 Alcohol acidity order

The correct sequence according to acidity of alcohols is:

- A. Primary > secondary > tertiary ✓ **Correct answer**
- B. Tertiary > secondary > primary
- C. Secondary > primary > tertiary
- D. Primary < secondary < tertiary

A. correct: primary alcohols are the most acidic and tertiary the least, because alkyl groups donate electrons and destabilise the alkoxide ion.

B. wrong: this is the reverse order.

C. wrong: primary alcohols are more acidic than secondary ones.

D. wrong: this is the reverse order.

97 Alkyl halide reactivity

The correct order of reactivity of alkyl halides is:

- A. R–Br > R–Cl > R–F > R–I
- B. R–Br > R–F > R–I > R–Cl
- C. R–I > R–Br > R–Cl > R–F ✓ **Correct answer**
- D. R–Cl > R–I > R–Br > R–F

A. wrong: iodide is the most reactive, not the least.

B. wrong: the order follows the C-X bond strength, weakest first.

C. correct: reactivity follows the leaving-group ability, I- > Br- > Cl- > F-.

D. wrong: iodide is more reactive than chloride.

Question 98 Protein secondary structure

The bond that determines the secondary structure of a protein is:

- A. Co-ordinate bond
- B. Covalent bond
- C. Hydrogen bond ✓ **Correct answer**
- D. Ionic bond

A. wrong: co-ordinate bonds do not determine protein secondary structure.

B. wrong: covalent (peptide) bonds form the primary structure.

C. correct: hydrogen bonds between the carbonyl oxygen and the amide hydrogen determine the secondary structure (alpha helix and beta sheet).

D. wrong: ionic bonds stabilise the tertiary structure, not the secondary.

99 Super batteries

Super batteries with high charge density are also called:

- A. Primary batteries
- B. Secondary batteries
- C. Solar batteries
- D. Fuel batteries ✓ **Correct answer**

A. wrong: primary batteries are not the high-charge-density 'super batteries'.

B. wrong: secondary batteries are rechargeable cells, not the high-charge-density type named here.

C. wrong: solar batteries store solar energy; they are not the type named here.

D. correct: super batteries with high charge density are also called fuel batteries (fuel cells).

Question 100 Tollens silver mirror

Silver mirror with Tollens reagent is formed by:

- A. Acid halides
- B. Alcohols
- C. Ketones
- D. Aldehydes ✓ **Correct answer**

A. wrong: acid halides do not give a silver mirror with Tollens reagent.

B. wrong: alcohols do not give a silver mirror.

C. wrong: ketones do not reduce Tollens reagent.

D. correct: aldehydes reduce Tollens reagent to metallic silver, forming a silver mirror.

101 IUPAC name

Select the correct IUPAC name among the following:

- A. 2-Bromo-4-chloro-3-iodopentane ✓ **Correct answer**
- B. 4-Bromo-2-chloro-3-iodopentane
- C. 4-Bromo-2-iodo-3-chloropentane
- D. 2-Chloro-3-iodo-4-bromopentane

A. correct: the substituents are listed alphabetically (bromo, chloro, iodo) with locants 2, 4 and 3.

B. wrong: the numbering must give the lowest locants in alphabetical order.

C. wrong: the substituents are not in alphabetical order.

D. wrong: the substituents are not in alphabetical order.

Question 102 Secondary alcohol oxidation

Oxidation of secondary alcohol gives which of the following products?

- A. Aldehyde
- B. Carboxylic acids
- C. Ester
- D. Ketone ✓ **Correct answer**

A. wrong: aldehydes come from primary alcohols.

B. wrong: carboxylic acids come from primary alcohols.

C. wrong: esters are not the oxidation product of a secondary alcohol.

D. correct: oxidation of a secondary alcohol gives a ketone.

103 One molecule of oxygen mass

One molecule of oxygen has the same mass as:

- A. 8 moles of helium
- B. 16 moles of H2
- C. 2 molecules of CH4
- D. One gram atom of sulphur

No answer is given for this question, and none is taught. DEFECTIVE-excluded (no unique correct option — see note)

A. wrong: 8 moles of helium weigh 32 g, while one O2 molecule weighs 32 amu; the question as printed is about one molecule, not one mole.

B. wrong: 16 moles of H2 weigh 32 g, not 32 amu.

C. correct as printed: one O2 molecule (32 amu) has the same mass as two CH4 molecules (2 × 16 amu).

D. wrong: one gram atom of sulphur weighs 32 g, not 32 amu. DEFECTIVE-excluded: the question confuses 'molecule' with 'mole' — as printed, C is the only match (32 amu), but the intended reading ('one mole of oxygen', 32 g) would make A, B and D all correct; the official revised key awards the mark to all (*). Decided by the assistant under the owner's 8 Nov 2026 delegation. The question stays in the file with no answer taught and never enters the website JSON.

Question 104 Lucas test basis

Lucas test is based on:

- A. Order of reaction
- B. Condition of reaction
- C. Molecularity of reaction
- D. Rate of reaction ✓ **Correct answer**

e Lucas test is based on the rate, not the order.

B. wrong: the Lucas test is based on the rate of reaction.

C. wrong: the Lucas test is based on the rate, not molecularity.

D. correct: the Lucas test distinguishes alcohols by their rate of reaction with HCl/ZnCl2.

Question 105 Compressibility factor

Increasing the compressibility of a gas (Z) decreases its:

- A. Pressure
- B. Volume
- C. Temperature ✓ **Correct answer**
- D. Concentration

A. wrong: at fixed pressure and volume, increasing Z corresponds to a lower temperature.

B. wrong: at fixed pressure and volume, increasing Z corresponds to a lower temperature.

C. correct: from Z = PV/nRT, at fixed pressure and volume, a larger Z means a lower temperature.

D. wrong: concentration is not the quantity that decreases here.

Question 106 Carboxylic acid IUPAC name

In the IUPAC system carboxylic acid is also called:

- A. Alkionic acid
- B. Alkanoic acid ✓ **Correct answer**
- C. Alkenoic acid
- D. Alkyl alkanoate

A. wrong: there is no such name.

the IUPAC system a carboxylic acid is called an alkanoic acid.

C. wrong: alkenoic acids contain a double bond.

D. wrong: an alkyl alkanoate is an ester.

Question 107 Wolff-Kishner reduction

In presence of which of the following is Wolff-Kishner reduction of aldehydes carried out?

- A. Glycol with KOH ✓ **Correct answer**
- B. H2 with Pd
- C. LiAlH4 in water
- D. Zn-Hg with HCl

A. correct: the Wolff-Kishner reduction is carried out with hydrazine in glycol with KOH at high temperature.

B. wrong: H2/Pd reduces alkenes and alkynes, not carbonyls by Wolff-Kishner.

C. wrong: LiAlH4 reduces carbonyls to alcohols.

D. wrong: Zn-Hg/HCl is the Clemmensen reduction.

Question 108 Shortest C-C bond

In the following molecules which one has shortest C–C bond length?

- A. C3H8
- B. C2H6
- C. C2H4
- D. C2H2 ✓ **Correct answer**

A. wrong: propane has single C-C bonds, the longest.

B. wrong: ethane has a single C-C bond.

ethene has a double bond, shorter than a single bond but longer than a triple bond.

D. correct: ethyne has a triple C-C bond, the shortest of the four.

Question 109 Triclinic crystal

In crystalline structure, when length of all axes and angles are unequal then crystal will be:

- A. Cubic
- B. Monoclinic
- C. Orthorhombic
- D. Triclinic ✓ **Correct answer**

A. wrong: in a cubic crystal all axes and angles are equal.

B. wrong: in a monoclinic crystal two angles are 90°.

C. wrong: in an orthorhombic crystal all angles are 90° though the axes differ.

D. correct: in a triclinic crystal all axes and all angles are unequal.

Question 110 Rate equation order

In a rate equation, rate = k[A][B], the reaction is:

- A. Zero order
- B. First order
- C. Second order ✓ **Correct answer**
- D. Third order

A. wrong: the rate depends on concentrations.

B. wrong: the rate depends on two concentrations.

C. correct: rate = k[A][B] is first order in each reactant, second order overall.

e overall order is two, not three.

Question 111 Internal energy change

If the work is done by the system on the surroundings and heat is absorbed by the system from the surroundings, the change in internal energy ΔE will be:

- A. ΔE = q + w
- B. ΔE = Q + (–w) ✓ **Correct answer**
- C. ΔE = (–q) + (–w)
- D. ΔE = (–q) + w

A. wrong: this is the form when w is the work done ON the system; here work is done BY the system.

B. correct: with heat absorbed (q positive) and work done by the system (w negative), ΔE = q + (−w).

C. wrong: the heat is absorbed, so q is positive, not negative.

D. wrong: the heat is absorbed, so q is positive. (The paper's printed key lists A/B, but the official revised key lists B only, and B is the correct form.)

Question 112 Humans cannot digest

Humans are unable to digest:

- A. Starch
- B. Denatured protein
- C. Cellulose ✓ **Correct answer**
- D. Fructose

A. wrong: humans digest starch.

B. wrong: humans digest denatured protein.

humans cannot digest cellulose (they lack cellulase).

D. wrong: humans digest fructose.

Question 113 Water geometry

H2O has _____ geometry.

- A. Regular tetrahedral
- B. Linear
- C. Distorted tetrahedral ✓ **Correct answer**
- D. Pyramidal

A. wrong: the two lone pairs distort the tetrahedron.

B. wrong: water is bent, not linear.

C. correct: water has a distorted tetrahedral electron-pair geometry (bent molecular shape).

D. wrong: pyramidal is the shape of ammonia, not water.

Question 114 Resonance energy

Greater the resonance energy of a molecule:

- A. Higher will be its reactivity
- B. Lower will be its stability
- C. Higher will be its stability ✓ **Correct answer**
- D. Higher will be its density

A. wrong: greater resonance energy means lower reactivity.

B. wrong: greater resonance energy means higher stability.

C. correct: the greater the resonance energy, the more stable the molecule.

sonance energy does not determine density.

Question 115 Endothermic activation energy

For an endothermic reaction ΔH represents the enthalpy of reaction. The minimum value for the energy of activation will be:

- A. Equal to ΔH
- B. More than ΔH ✓ **Correct answer**
- C. Less than ΔH
- D. Zero

A. wrong: the activation energy must exceed ΔH.

B. correct: for an endothermic reaction, the activation energy is greater than ΔH (Ea = ΔH + Ea of the reverse reaction).

C. wrong: the activation energy cannot be less than ΔH for an endothermic reaction.

D. wrong: the activation energy is not zero.

Question 116 Flame test colours

Flame tests identify alkali metals when they are burnt. Which of the combinations given is the correct one?

- A. Li : red ✓ **Correct answer**
- B. Na : lilac
- C. K : red
- D. Cs : yellow

A. correct: lithium gives a crimson-red flame.

B. wrong: sodium gives a golden-yellow flame; lilac is potassium.

C. wrong: potassium gives a lilac flame.

esium gives a blue-violet flame.

Question 117 Enantiomers

Enantiomers are examples of:

- A. Cis isomers
- B. Trans isomers
- C. Optical isomers ✓ **Correct answer**
- D. Geometric isomers

A. wrong: cis isomers are geometric isomers, not enantiomers.

B. wrong: trans isomers are geometric isomers, not enantiomers.

C. correct: enantiomers are optical isomers (non-superimposable mirror images).

D. wrong: geometric isomers are cis/trans isomers, not enantiomers.

Question 118 Grignard tertiary alcohol

Compound X reacts with Grignard's reagent to produce tertiary alcohols. Which is the compound?

- A. Aldehyde
- B. Ketone ✓ **Correct answer**
- C. Acid halide
- D. Carboxylic acid

A. wrong: an aldehyde with Grignard reagent gives a secondary alcohol.

B. correct: a ketone with Grignard reagent gives a tertiary alcohol.

C. wrong: an acid halide with Grignard reagent gives a tertiary alcohol only with two equivalents, but the standard answer is the ketone.

D. wrong: a carboxylic acid with Grignard reagent gives a ketone after work-up, not a

Question 119 Brass composition

Brass is an alloy of:

- A. Copper and iron
- B. Copper and magnesium
- C. Copper and zinc ✓ **Correct answer**
- D. Copper and silver

A. wrong: brass does not contain iron.

B. wrong: brass does not contain magnesium.

C. correct: brass is an alloy of copper and zinc.

D. wrong: brass does not contain silver.

Question 120 [Kr]5s2 5p5 element

An unknown element having electronic configuration [Kr] 5s2, 5p5 will be:

- A. Metal of II-A group
- B. Metalloid of V-A group
- C. Non-metal of VII-A group ✓ **Correct answer**
- D. Non-metal of V-A group

A. wrong: the configuration $5s^2 5p^5$ is a halogen, not a group II-A metal.

B. wrong: the element is a group VII-A non-metal.

C. correct: $[Kr]5s^2 5p^5$ is iodine, a non-metal of group VII-A.

D. wrong: the element is in group VII-A, not V-A.

121 Heat of vaporisation

Amount of heat absorbed, when one mole of liquid changes to gas at its boiling point is called:

- A. Molar heat of sublimation
- B. Heat of vaporization ✓ **Correct answer**
- C. Latent heat of fusion
- D. Heat capacity

A. wrong: sublimation is solid to gas, not liquid to gas.

B. correct: the heat absorbed when one mole of liquid changes to gas at its boiling point is the heat of vaporisation.

C. wrong: fusion is solid to liquid.

D. wrong: heat capacity is the heat needed to raise the temperature by one degree.

Question 122 Melting of ice favoured

A well-known physical change is melting of ice. The melting of ice is favored by:

- A. Lower P, high T
- B. Low T, high P
- C. High T, high P ✓ **Correct answer**
- D. Low T, low P

A. wrong: high pressure also favours the melting of ice.

B. wrong: low temperature does not favour melting.

C. correct: melting is favoured by high temperature, and high pressure lowers the melting point of ice, so it also favours melting.

D. wrong: neither low temperature nor low pressure favours melting.

123 Coulomb's law

_____ law states that the magnitude of the force between 2 point charges is directly proportional to the product of the magnitudes of the charges and inversely proportional to the square of the distance between them.

- A. Ohm’s law
- B. Gauss’s law
- C. Coulomb’s law ✓ **Correct answer**
- D. Lenz’s law

A. wrong: Ohm's law relates voltage, current and resistance.

B. wrong: Gauss's law relates electric flux to enclosed charge.

C. correct: Coulomb's law states that the force between two point charges is proportional to the product of the charges and inversely proportional to the square of the distance.

D. wrong: Lenz's law concerns the direction of induced current.

Question 124 Ball thrown upward

A ball thrown vertically upwards will have constant _____ and a varying _____.

- A. Velocity and acceleration
- B. Kinetic energy, velocity
- C. Acceleration, velocity ✓ **Correct answer**
- D. Kinetic energy and acceleration

A. wrong: the velocity changes as the ball rises and falls.

B. wrong: the kinetic energy changes with the velocity.

C. correct: the acceleration (g) stays constant while the velocity varies.

D. wrong: the kinetic energy changes with the velocity.

Question 125 Potential energy

A boy raises an object of mass 10 kg vertically above his head through a height of 5 m. The potential energy stored in the body is:

- A. 49 J
- B. 98 J
- C. 490 J ✓ **Correct answer**
- D. 980 J

A. wrong: 49 J is mg × 0.5 m, not 5 m.

B. wrong: 98 J is mg × 1 m, not 5 m.

C. correct: potential energy = mgh = 10 × 9.8 × 5 = 490 J.

D. wrong: 980 J is twice the correct value.

Question 126 Oscillating magnet galvanometer

A magnet is suspended from a spring and it oscillates in and out of a coil placed vertically below it. A galvanometer is connected to the coil and it shows:

- A. No deflection
- B. Deflection on one side only
- C. Deflection to the left and right with constant amplitude
- D. Deflection to the left and right with decreasing amplitude ✓ **Correct answer**

A. wrong: the changing flux induces a current.

B. wrong: the magnet oscillates in and out, so the current reverses.

C. wrong: the oscillation is damped, so the amplitude decreases.

D. correct: the induced current alternates as the magnet moves in and out, and its amplitude decreases as the oscillation dies away.

127 Man's kinetic energy

A man standing in an elevator at the third floor of a building, what is the primary factor that determines the man's kinetic energy?

- A. High height above the ground
- B. His mass ✓ **Correct answer**
- C. Elevator's speed
- D. Elevator's direction of movement

A. wrong: height determines potential energy, not kinetic energy.

B. correct: kinetic energy is $\frac{1}{2}mv^2$, and the man's mass is the factor that determines his kinetic energy for the elevator's speed.

C. wrong: the speed also enters $\frac{1}{2}mv^2$, but the keyed factor is the man's mass.

D. wrong: direction does not affect the magnitude of kinetic energy.

Question 128 Voltage drop V = IR

A resistor has a resistance of 200 ohms. If a current of 0.5 amperes flows through it, what is the voltage drop across the resistor?

- A. 400 volts
- B. 110 volts
- C. 120 volts
- D. 0.002 volts

No answer is given for this question, and none is taught. DEFECTIVE-excluded (no correct option as printed — see note)

A. wrong: 400 V would be R/I, not R × I.

B. wrong: the voltage is 100 V, not 110 V.

C. wrong: the voltage is 100 V, not 120 V.

002 V would be I/R, not R × I. DEFECTIVE-excluded: by Ohm's law V = IR = 200 × 0.5 = 100 V, which is not among the options; the official revised key awards the mark to all (*). Decided by the assistant under the owner's 8 Nov 2026 delegation. The question stays in the file with no answer taught and never enters the website JSON.

Question 129 Three-dimensional microscope

A three-dimensional image of remarkable quality can be achieved by modern version of microscope called:

- A. Compound microscope
- B. Simple microscope
- C. Transmission electron microscope
- D. Scanning electron microscope ✓ **Correct answer**

A. wrong: a compound microscope gives a flat, two-dimensional image.

B. wrong: a simple microscope gives a flat image.

C. wrong: a transmission electron microscope gives a flat, two-dimensional image.

D. correct: a scanning electron microscope gives a three-dimensional image of remarkable quality.

Question 130 Train velocity at B

A train travels on a straight track passing signal A at 20 m/s. It accelerates uniformly at 2 m/s2 and reaches signal B 100 m further than A. The velocity of the train at B in m/s is:

- A. 10
- B. 20
- C. 28 ✓ **Correct answer**
- D. 56

A. wrong: the train accelerates, so its velocity increases beyond 20 m/s.

m/s is the velocity at A, not at B.

C. correct: $v^2 = u^2 + 2as = 400 + 2 \times 2 \times 100 = 800$, so $v = \sqrt{800} \approx 28$ m/s.

D. wrong: the velocity is about 28 m/s, not 56 m/s.

Question 131 Wave parameters

A wave is characterized by three physical parameters:

- A. Amplitude, wavelength and acceleration
- B. Frequency, wavelength and acceleration
- C. Wavelength, frequency and speed of wave ✓ **Correct answer**
- D. Displacement, wavelength and speed of wave

A. wrong: acceleration is not one of the three parameters.

B. wrong: acceleration is not one of the three parameters.

C. correct: a wave is characterised by its wavelength, frequency and speed.

D. wrong: displacement is not one of the three parameters.

Question 132 EM wave speed

Accelerating electromagnetic charges radiate electromagnetic waves which propagate at the:

- A. Speed of electromagnetic waves
- B. Frequency of light
- C. Speed of light ✓ **Correct answer**
- D. Frequency of electromagnetic waves

A. wrong: this is circular; the waves propagate at the speed of light.

B. wrong: the waves propagate at the speed of light, not at its frequency.

electromagnetic waves propagate at the speed of light.

D. wrong: the waves propagate at the speed of light.

Question 133 K-alpha transition

K-α rays are generated when transition of an electron occurs from:

- A. K to M shell
- B. L to M shell
- C. L to K shell ✓ **Correct answer**
- D. M to L shell

A. wrong: K-alpha is an L to K transition.

B. wrong: K-alpha is an L to K transition.

C. correct: K-alpha rays are generated when an electron falls from the L shell to the K shell.

D. wrong: that transition gives a different series.

Question 134 Sodium half-life

The decay constant of sodium (Na) is 0.000128 /s. The half-life of sodium is:

- A. 1.5 hours ✓ **Correct answer**
- B. 5 hours
- C. 900 s
- D. 3600 s

A. correct: half-life = 0.693/λ = 0.693/0.000128 ≈ 5414 s ≈ 1.5 hours.

B. wrong: the half-life is about 1.5 hours, not 5 hours.

C. wrong: the half-life is about 5414 s, not 900 s.

D. wrong: the half-life is about 5414 s, not 3600 s.

135 Polonium half-life

At the end of 14 min, 1/16 of a sample of radioactive polonium remains. The corresponding half-life is:

- A. (7/8) min
- B. (8/7) min
- C. (7/4) min
- D. (7/2) min ✓ **Correct answer**

A. wrong: 1/16 remaining means 4 half-lives, so the half-life is 14/4 = 7/2 min.

B. wrong: the half-life is 7/2 min, not 8/7 min.

C. wrong: the half-life is 7/2 min, not 7/4 min.

D. correct: $1/16 = (1/2)^4$, so 4 half-lives pass in 14 min, giving a half-life of 3.5 = 7/2 min.

Question 136 Bohr orbits

According to Bohr's model of the hydrogen atom, electrons move in specific orbits around the nucleus called:

- A. Quanta
- B. Shell ✓ **Correct answer**
- C. Clouds
- D. Wavelength

A. wrong: quanta are packets of energy, not orbits.

B. correct: in Bohr's model electrons move in specific orbits called shells.

C. wrong: electron clouds belong to the wave-mechanical model.

D. wrong: a wavelength is not an orbit.

137 First law of thermodynamics

According to first law of thermodynamics, what is the relationship between the change in the internal energy of a closed system ΔU, the heat added to the system (Q) and the work done by the system (W)?

- A. ΔU = Q + W
- B. ΔU = Q – W ✓ **Correct answer**
- C. ΔU = Q × W
- D. ΔU = Q/W

A. wrong: this is the chemistry sign convention (W = work done ON the system); here W is the work done BY the system.

B. correct: the change in internal energy equals the heat added minus the work done by the system.

C. wrong: the relation is a difference, not a product.

D. wrong: the relation is a difference, not a quotient.

Question 138 Angular displacement units

Angular displacement is measured in:

- A. Degrees
- B. Revolution
- C. Radius
- D. All of these ✓ **Correct answer**

A. wrong on its own: degrees are one unit, but the answer is all of these.

B. wrong on its own: revolutions are one unit, but the answer is all of these.

C. wrong on its own: the radian is defined by arc length over radius.

D. correct: angular displacement is measured in degrees, in revolutions, and in radians

ivided by radius).

Question 139 Centrifugal force

Centrifugal force is:

- A. mv2/r ✓ **Correct answer**
- B. m2v/r
- C. mv/r2
- D. mv2/r

A. correct: the centrifugal force is mv^2/r.

B. wrong: the formula is mv^2/r, not m^2v/r.

C. wrong: the formula is mv^2/r, not mv/r^2.

D. the identical formula to A, so it is equally correct. PICK-ONE (decided by assistant under owner's 8 Nov 2026 delegation): options A and D print the identical formula mv^2/r, so both are correct; A is served as the keyed answer and D is recorded here as the identical option.

Question 140 Circular waves ripple tank

Circular periodic waves can be generated:

- A. In a ripple tank using spherical dippers ✓ **Correct answer**
- B. Using electromagnetic vibrator
- C. By giving sudden up and down movement to a rope with one fixed end
- D. All of the above

A. correct: circular periodic waves are generated in a ripple tank using spherical (point) dippers.

B. wrong: an electromagnetic vibrator generates plane waves.

C. wrong: that generates transverse waves on a rope, not circular waves.

ly the spherical dipper generates circular waves.

Question 141 No force on moving object

If a moving object has no force acting on it:

- A. It will decelerate and eventually stop
- B. Continue to move in a straight line at constant velocity ✓ **Correct answer**
- C. It will stop immediately
- D. Its velocity will increase while moving in a straight line

A. wrong: with no force, there is no deceleration.

B. correct: by Newton's first law, an object with no force on it continues in a straight line at constant velocity.

C. wrong: an object does not stop without a force.

D. wrong: with no force, the velocity does not increase.

Question 142 Acceleration in inertial frames

If the acceleration of a body in one inertial frame is zero, its acceleration in any other inertial frame is:

- A. Increased
- B. Also zero ✓ **Correct answer**
- C. Is decreased
- D. Increased and then decreased

A. wrong: acceleration is the same in all inertial frames.

B. correct: if the acceleration is zero in one inertial frame, it is zero in every inertial frame.

C. wrong: acceleration is the same in all inertial frames.

D. wrong: acceleration is the same in all inertial frames.

143 Potential difference

If the amount of work W is required to move a charge Q from one point to another then the potential difference between the two points is given by:

- A. V = W/Q ✓ **Correct answer**
- B. V = Q/W
- C. Q = W/V
- D. Q = V/W

A. correct: potential difference is the work done per unit charge, V = W/Q.

B. wrong: this is the reciprocal.

C. wrong: this is a rearrangement, not the definition of V.

D. wrong: this is not the correct relation.

Question 144 Photon in magnetic field

In a magnetic field, a photon passing through it is deflected towards:

- A. North pole
- B. South pole
- C. Opposite pole
- D. None of these ✓ **Correct answer**

A. wrong: a photon carries no charge, so it is not deflected.

B. wrong: a photon carries no charge, so it is not deflected.

C. wrong: a photon carries no charge, so it is not deflected.

D. correct: a photon is uncharged, so a magnetic field does not deflect it.

145 Mass-energy conservation

In special theory of relativity, the law of conservation of energy and law of conservation of mass have been replaced with:

- A. The law of conservation of mass only
- B. Law of conservation of mass-energy ✓ **Correct answer**
- C. Law of conservation of energy only
- D. All of the above

A. wrong: relativity unites mass and energy conservation.

B. correct: in special relativity, the separate conservation laws are replaced by the conservation of mass-energy.

C. wrong: relativity unites mass and energy conservation.

D. wrong: only the mass-energy law replaces them.

Question 146 Dot product of vectors

In a three dimensional Cartesian coordinate system (x, y, z), you have two vectors A and B. Vector A has components Ax = 4, Ay = –3 and Az = 2, while vector B has components Bx = 1, By = 5 and Bz = –2. What is the dot (scalar) product of vectors A and B?

- A. –23
- B. 23
- C. 0
- D. –19

No answer is given for this question, and none is taught. DEFECTIVE-excluded (no correct option as printed — see note)

A. wrong: the dot product is $4\times1 + (-3)\times5 + 2\times(-2) = -15$, not -23.

B. wrong: the dot product is -15, not 23.

e dot product is −15, not 0.

D. wrong: the dot product is −15, not −19. DEFECTIVE-excluded: A·B = 4(1) + (−3)(5) + 2(−2) = 4 − 15 − 4 = −15, which is not among the options; the official revised key awards the mark to all (*). Decided by the assistant under the owner's 8 Nov 2026 delegation. The question stays in the file with no answer taught and never enters the website JSON.

Question 147 Doppler source approaching

In case of Doppler effect, the apparent frequency will be _____ the actual frequency when the source moves towards the stationary observer.

- A. Less than
- B. More than ✓ **Correct answer**
- C. Equal to
- D. None of these

A. wrong: the apparent frequency is higher when the source approaches.

B. correct: when the source moves towards a stationary observer, the apparent frequency is more than the actual frequency.

C. wrong: the apparent frequency changes when the source moves.

D. wrong: the apparent frequency is more than the actual frequency.

Question 148 Magnetic flux maximum

Magnetic flux is maximum when the angle between the magnetic field and the normal to the plane of finite area is:

- A. Zero degree ✓ **Correct answer**
- B. 90 degree
- C. 60 degree
- D. 30 degree

ux is maximum when the field is parallel to the normal, i.e. the angle is zero.

B. wrong: at 90° the flux is zero.

C. wrong: the flux is less than maximum at 60°.

D. wrong: the flux is less than maximum at 30°.

Question 149 Velocity definition

Measure of displacement covered with passage of time is called:

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

A. wrong: acceleration is the rate of change of velocity.

B. wrong: speed is distance over time, not displacement over time.

C. correct: velocity is the displacement covered per unit time.

D. wrong: deceleration is negative acceleration.

Question 150 Newton's third law

Newton’s 3rd law of motion is correlated with:

- A. Law of conservation of energy
- B. Law of conservation of momentum ✓ **Correct answer**
- C. Law of conservation of velocity
- D. All of these

A. wrong: Newton's third law is correlated with momentum conservation.

B. correct: Newton's third law (action and reaction) leads to the conservation of

C. wrong: there is no such law.

D. wrong: only momentum conservation is correlated.

Question 151 Ohm's law

Ohm’s law states that the current is directly proportional to _____ and inversely proportional to _____.

- A. Resistance, current
- B. Resistance, voltage
- C. Voltage, current
- D. Voltage, resistance ✓ **Correct answer**

A. wrong: current is directly proportional to voltage, not resistance.

B. wrong: current is inversely proportional to resistance, not to voltage.

C. wrong: current is inversely proportional to resistance, not to current.

D. correct: by Ohm's law, current is directly proportional to voltage and inversely proportional to resistance.

Question 152 EMF by changing magnetic field

The ability to produce an electromotive force by changing the magnetic field inside a coil is used to generate:

- A. Mechanical energy
- B. Electricity ✓ **Correct answer**
- C. Electromagnetic force
- D. Magnetic energy only

A. wrong: changing magnetic flux generates electricity, not mechanical energy.

ne ability to produce an emf by changing the magnetic field in a coil is used to generate electricity.

C. wrong: the phenomenon generates electricity, not a force.

D. wrong: the phenomenon generates electricity, not only magnetic energy.

Question 153 Absolute potential energy

The absolute potential energy of a spaceship on the surface of the earth is:

- A. GmMe/Re2
- B. GmMe/Re
- C. GmMe/2Re
- D. –GmMe/Re ✓ **Correct answer**

A. wrong: $GmMe/Re^2$ is the gravitational field strength, not the potential energy.

B. wrong: this is the magnitude of the potential energy, not the absolute potential energy, which is negative.

C. wrong: this is half the magnitude, not the potential energy.

D. correct: the absolute (gravitational) potential energy at the Earth's surface is $U = -GmMe/Re$. (The official revised key lists B, the magnitude, but the printed key lists D, and the physics gives $-GmMe/Re$; D is served as correct under the owner's 8 Nov 2026 delegation.)

Question 154 Bird on power line

The bird perching on a high-power line does not get electric shock. This is because:

- A. The whole body of the bird sitting on the live wire is at the same potential and hence no current flows through the body ✓ **Correct answer**
- B. The whole body of the bird sitting on the live wire is at zero potential and hence no current flows through the body

air medium between the live wire and the earth contains large number of charge particles

- D. The air medium between the live wire and the earth contains large number of electrons

A. correct: both feet are on the same wire at the same potential, so no current flows through the bird.

B. wrong: the bird is at the wire's potential, not zero potential.

C. wrong: the air does not protect the bird.

D. wrong: the air does not protect the bird.

Question 155 Capacitance depends on

The capacitance of a capacitor depends upon:

- A. Area of the plates
- B. Distance between the plates
- C. Dielectric between them
- D. All of these ✓ **Correct answer**

A. wrong on its own: capacitance depends on area, but also on distance and dielectric.

B. wrong on its own: capacitance depends on distance, but also on area and dielectric.

C. wrong on its own: capacitance depends on the dielectric, but also on area and distance.

D. correct: capacitance depends on the plate area, the distance between the plates and the dielectric between them.

Question 156 Compton effect

The Compton effect is the phenomenon that describes:

- A. The scattering of the light by prism

bending of light when it passes from one medium to another

- C. The change in the wavelength of X-rays when they interact with matter ✓ **Correct answer**
- D. The creation of interference patterns in a double-slit experiment

A. wrong: scattering by a prism is dispersion, not the Compton effect.

B. wrong: that is refraction.

C. correct: the Compton effect is the increase in the wavelength of X-rays scattered by matter.

D. wrong: that is interference, not the Compton effect.

Question 157 Generator current

The current produced by a generator is called:

- A. Direct current
- B. Pulsating current
- C. Alternating current ✓ **Correct answer**
- D. Variable current

A. wrong: a generator produces alternating current.

B. wrong: a generator produces alternating current.

C. correct: the current produced by a generator is alternating current.

D. wrong: the current is specifically alternating current.

Question 158 Voltage adjustment device

The device used to adjust voltage levels in an electrical circuit is called:

- A. Voltage regulator
- B. Circuit breaker

acitor

- D. Transformer ✓ **Correct answer**

A. wrong: a voltage regulator stabilises voltage; the device that changes voltage levels is the transformer.

B. wrong: a circuit breaker protects the circuit; it does not adjust voltage.

C. wrong: a capacitor stores charge; it does not adjust voltage levels.

D. correct: a transformer adjusts voltage levels in an electrical circuit.

Question 159 Speed of sound wave

The distance covered by sound wave per unit time is called:

- A. Speed of sound wave ✓ **Correct answer**
- B. Velocity of sound wave
- C. Wavelength of sound wave
- D. Amplitude of sound wave

A. correct: the distance covered by a sound wave per unit time is its speed.

B. wrong: the question asks for distance per unit time, which is speed, not velocity.

C. wrong: wavelength is the distance of one wave, not distance per unit time.

D. wrong: amplitude is the maximum displacement, not distance per unit time.

Question 160 Domestic supply frequency

The domestic electricity supply has a frequency of:

- A. 150 Hz
- B. 50 Hz ✓ **Correct answer**
- C. 100 Hz
- D. 300 Hz

e domestic supply frequency is 50 Hz, not 150 Hz.

B. correct: the domestic electricity supply in Pakistan has a frequency of 50 Hz.

C. wrong: the frequency is 50 Hz, not 100 Hz.

D. wrong: the frequency is 50 Hz, not 300 Hz.

Question 161 Instantaneous power

The instantaneous power supplied to a circuit is a product of the _____ and _____.

- A. Instantaneous current, instantaneous voltage ✓ **Correct answer**
- B. Instantaneous power, instantaneous voltage
- C. Instantaneous voltage, instantaneous conductance
- D. Instantaneous current, instantaneous power

A. correct: instantaneous power is the product of instantaneous current and instantaneous voltage (P = VI).

B. wrong: power is not a factor of itself.

C. wrong: power is current times voltage, not voltage times conductance.

D. wrong: power is not a factor of itself.

Question 162 Frequency definition

The number of waves passing through a certain point in unit time is called:

- A. Wave speed
- B. Time period of wave
- C. Wavelength
- D. Frequency of waves ✓ **Correct answer**

A. wrong: wave speed is distance per unit time.

e time period is the time for one wave.

C. wrong: wavelength is the length of one wave.

D. correct: the number of waves passing a point in unit time is the frequency.

Question 163 Rectification purpose

The primary purpose of rectification in an electrical circuit is to:

- A. Convert direct current (DC) into alternating current (AC)
- B. Smooth out voltage fluctuations
- C. Convert AC to DC by allowing current to flow in one direction ✓ **Correct answer**
- D. Amplify electrical signals

A. wrong: that is inversion, not rectification.

B. wrong: smoothing is done by a filter, not by rectification.

C. correct: rectification converts AC to DC by allowing current to flow in only one direction.

D. wrong: amplification is not the purpose of rectification.

Question 164 Radial acceleration

The radial acceleration is also considered as:

- A. Angular acceleration
- B. Centripetal acceleration ✓ **Correct answer**
- C. Tangential acceleration
- D. Translatory acceleration

A. wrong: angular acceleration is the rate of change of angular velocity.

B. correct: radial acceleration (towards the centre) is the centripetal acceleration.

C. wrong: tangential acceleration is along the tangent.

ansiatory acceleration is linear, not radial.

Question 165 Resistance depends on

The resistance of the conducting material depends upon:

- A. The nature of the conductor
- B. Dimension of the conductor
- C. Physical state of the conductor
- D. All of these ✓ **Correct answer**

A. wrong on its own: resistance depends on nature, but also on dimensions and physical state.

B. wrong on its own: resistance depends on dimensions, but also on nature and physical state.

C. wrong on its own: resistance depends on physical state, but also on nature and dimensions.

D. correct: resistance depends on the nature, the dimensions and the physical state of the conductor.

Question 166 SI unit of capacitance

The SI unit of capacitance is:

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

A. wrong: the watt is the unit of power.

B. wrong: the henry is the unit of inductance.

e SI unit of capacitance is the farad.

D. wrong: the joule is the unit of energy.

Question 167 SI unit of electric potential

The SI unit of electric potential is:

- A. Volt ✓ **Correct answer**
- B. Coulomb
- C. Ampere
- D. Ohm

A. correct: the SI unit of electric potential is the volt.

B. wrong: the coulomb is the unit of charge.

C. wrong: the ampere is the unit of current.

D. wrong: the ohm is the unit of resistance.

Question 168 Heat capacity

The thermal energy required to cause a unit temperature rise is called:

- A. Heat capacity ✓ **Correct answer**
- B. Heat volume
- C. Heat conductance
- D. Heat energy / unit volume

A. correct: the thermal energy required to cause a unit temperature rise is the heat capacity.

B. wrong: there is no such quantity.

C. wrong: heat conductance concerns the rate of heat flow.

at is a volumetric heat quantity, not the heat capacity.

Question 169 Longitudinal wave

The wave in which the particles of the medium vibrate about their mean position along the direction of propagation of the waves is called:

- A. Longitudinal waves ✓ **Correct answer**
- B. Transverse waves
- C. Mechanical waves
- D. Electromagnetic waves

A. correct: in a longitudinal wave the particles vibrate along the direction of propagation.

B. wrong: in a transverse wave the particles vibrate perpendicular to the direction of propagation.

C. wrong: mechanical waves include both longitudinal and transverse waves.

D. wrong: electromagnetic waves are transverse, not longitudinal.

Question 170 Beat frequency

There are 2 pianos playing the same note, however the vibration from one piano is 223.20 Hz and that of the other is 223.50 Hz. The beat frequency between the two tones will be:

- A. 0.30 Hz ✓ **Correct answer**
- B. –0.30 Hz
- C. 0 Hz
- D. 223.35 Hz

A. correct: the beat frequency is the difference of the two frequencies, $|223.50 - 223.20| = 0.30$ Hz.

B. wrong: a beat frequency is a positive magnitude.

e two frequencies differ, so beats occur.

D. wrong: 223.35 Hz is the average frequency, not the beat frequency.

Question 171 Weber unit

Weber is the unit of:

- A. Electric potential
- B. Electric intensity
- C. Magnetic intensity
- D. Magnetic flux ✓ **Correct answer**

A. wrong: electric potential is measured in volts.

B. wrong: electric intensity is measured in volts per metre.

C. wrong: magnetic intensity is measured in amperes per metre.

D. correct: the weber is the unit of magnetic flux.

Question 172 Football in cold weather

What happens to a football which is inflated in a warm room, and is used to play outside in cold weather?

- A. It will expand due to expansion of the air molecules
- B. It will deflate due to contraction of the air molecules ✓ **Correct answer**
- C. Its size will not be affected by the change in temperature
- D. It will burst.

A. wrong: cold air contracts, it does not expand.

B. correct: in cold weather the air inside contracts, so the football deflates.

C. wrong: the size is affected by temperature.

ld weather does not burst the football.

Question 173 Rest mass of photon

What is the rest mass of a photon?

- A. Zero ✓ **Correct answer**
- B. Equal to the mass of electron
- C. Equal to the mass of proton
- D. Infinite

A. correct: a photon has zero rest mass.

B. wrong: a photon has no rest mass.

C. wrong: a photon has no rest mass.

D. wrong: a photon has zero rest mass, not infinite.

Question 174 Inertia

Which of the following best describes inertia?

- A. The force of gravity acting on an object
- B. The resistance of an object to a change in its state of motion ✓ **Correct answer**
- C. The weight of an object
- D. The acceleration of an object due to applied force

A. wrong: gravity is a force, not inertia.

B. correct: inertia is the resistance of an object to a change in its state of motion.

C. wrong: weight is the force of gravity on an object.

D. wrong: that is the effect of a force, not inertia.

175 Negative temperature coefficient

Which of the following materials have negative temperature coefficient?

- A. Germanium and silicon ✓ **Correct answer**
- B. Germanium and iron
- C. Iron and silicon
- D. Iron and copper

A. correct: germanium and silicon are semiconductors, which have a negative temperature coefficient of resistance.

B. wrong: iron is a metal with a positive temperature coefficient.

C. wrong: iron has a positive temperature coefficient.

D. wrong: both iron and copper have positive temperature coefficients.

Question 176 Unit matching

Which of the following quantities is correctly matched to its unit?

- A. Electric charge : ampere (A)
- B. Current : volt (V)
- C. Electric power : watt (W) ✓ **Correct answer**
- D. Resistance : coulomb

A. wrong: electric charge is measured in coulombs.

B. wrong: current is measured in amperes.

C. correct: electric power is measured in watts.

D. wrong: resistance is measured in ohms.

177 Before going to sleep

_____ going to sleep, I like to read for half an hour.

- A. After
- B. Before ✓ **Correct answer**
- C. As soon as
- D. While

A. wrong: 'after going to sleep, I like to read' contradicts the meaning.

B. correct: 'Before going to sleep, I like to read for half an hour' is the natural sentence.

C. wrong: 'as soon as going to sleep' is not the natural construction.

D. wrong: 'while going to sleep, I like to read' is not the natural construction.

Question 178 Looking forward to

We are all looking forward _____ the announcement of election soon.

- A. For
- B. To ✓ **Correct answer**
- C. About
- D. On

A. wrong: the phrase is 'looking forward to'.

B. correct: 'We are all looking forward to the announcement of election soon.'

C. wrong: the phrase is 'looking forward to'.

D. wrong: the phrase is 'looking forward to'.

Question 179 The dogs escaped

The dogs _____ escaped.

- B. Has
- C. Had ✓ **Correct answer**
- D. Will

A. wrong: 'did escaped' is ungrammatical.

B. wrong: 'has' is singular, but 'dogs' is plural.

C. correct: 'The dogs had escaped' is the correct past-perfect form.

D. wrong: 'will escaped' is ungrammatical.

Question 180 Maria told her professors

Maria _____ that she could not attend classes next week.

- A. Told to her professors
- B. Said her professor
- C. Told her professors ✓ **Correct answer**
- D. Is telling her professors

A. wrong: 'told' does not take 'to' before the object.

B. wrong: 'said' needs 'to' before the person, and 'professor' should be plural.

C. correct: 'Maria told her professors that she could not attend classes next week.'

D. wrong: the tense does not fit the sentence.

Question 181 Would you like coffee

_____ you like to have a cup of coffee?

- A. May
- B. Shall
- C. Can

uld ✓ Correct answer

A. wrong: 'may you like' is not the polite offer form.

B. wrong: 'shall you like' is not the polite offer form.

C. wrong: 'can you like' is not the polite offer form.

D. correct: 'Would you like to have a cup of coffee?' is the polite offer.

Question 182 Synonym of promptly

The synonym for promptly is:

- A. Slovenly
- B. Instantly ✓ **Correct answer**
- C. Diligently
- D. Intelligent

A. wrong: slovenly means careless or untidy.

B. correct: promptly means instantly (at once).

C. wrong: diligently means with hard work.

D. wrong: intelligent means clever.

Question 183 Police verb

The police _____ arrest the suspect.

- A. Has
- B. Have ✓ **Correct answer**
- C. Be
- D. Been

A. wrong: 'police' is plural, so it takes 'have'.

he police have arrest the suspect' — 'police' is a plural noun, so it takes 'have'.

C. wrong: 'be' is ungrammatical here.

D. wrong: 'been' is ungrammatical here.

Question 184 How much spoonfuls error

How much spoonfuls of sugar would you like in your tea? Identify the part of the sentence that carries error:

- A. Much ✓ **Correct answer**
- B. Sugar
- C. Like
- D. In

A. correct: the error is 'much' — with a countable noun ('spoonfuls') the word should be 'many', not 'much'.

B. wrong: 'sugar' is correct in this sentence.

C. wrong: 'like' is correct in this sentence.

D. wrong: 'in' is correct in this sentence.

Question 185 Spiffed up

The phrase “spiffed up” stands for:

- A. Dressed up ✓ **Correct answer**
- B. Cleaned up
- C. Upset
- D. Fade

A. correct: 'spiffed up' means dressed up (smartly).

B. wrong: 'spiffed up' means dressed up, not cleaned up.

spiffed up' has nothing to do with being upset.

D. wrong: 'spiffed up' has nothing to do with fading.

Question 186 Debris meaning

In prolonged space flight, besides the obvious hazards of meteors, rocky debris, and radiation, astronauts will have to deal with muscle atrophy brought on by weightlessness; therefore, when they return to Earth, they face a protracted period of weight training to rebuild their strength. What is the most likely meaning of the word ‘debris’ as it is used in this passage?

- A. Fragments ✓ **Correct answer**
- B. Decay
- C. Bacteria
- D. Alien life

A. correct: in this passage 'debris' means fragments (pieces of rock or wreckage).

B. wrong: 'debris' does not mean decay.

C. wrong: 'debris' does not mean bacteria.

D. wrong: 'debris' does not mean alien life.

Question 187 Capital investment

The money, property, etc. that is used to start or operate a business is called:

- A. Cost
- B. Asset
- C. Capital investment ✓ **Correct answer**
- D. Fiscal status

A. wrong: cost is the amount paid, not the money used to start a business.

asset is something owned, not the money used to start a business.

C. correct: the money, property, etc. used to start or operate a business is capital investment.

D. wrong: fiscal status concerns government finance, not business start-up money.

Question 188 Bestowed meaning

The queen of England ‘bestowed’ a title upon the man who saved her life from a fatal accident. What does the word BESTOWED mean?

- A. Conferred ✓ **Correct answer**
- B. Discard
- C. Withdrawn
- D. Retailed

A. correct: 'bestowed' means conferred (granted or given).

B. wrong: discard means to throw away, the opposite of bestowed.

C. wrong: withdrawn means taken back, the opposite of bestowed.

D. wrong: retailed means sold, not bestowed.

Question 189 Correct the comma splice

Correct the given sentence: I like cats, I hate dogs.

- A. I like cats; I hate dogs
- B. I like cats I hate dogs
- C. I like cats’ I hate dogs
- D. I like cats but I hate dogs ✓ **Correct answer**

A. also a correct correction: a semicolon properly joins the two independent clauses.

B. wrong: removing the comma leaves a run-on sentence.

apostrophe does not join two clauses.

D. correct: 'but' properly joins the two independent clauses. PICK-ONE (decided by assistant under owner's 8 Nov 2026 delegation): both A and D are valid corrections of the comma splice; D is served as the keyed answer and A is recorded here as the equally valid correction.

Question 190 Ice cream conjunction

Add suitable conjunction in the given sentence: Your ice cream will melt, you should eat it quickly

- A. Your ice cream will melt so you should eat it quickly ✓ **Correct answer**
- B. Your ice cream will melt however you should eat it quickly
- C. Your ice cream will melt so that you should eat it quickly
- D. Your ice cream will melt, however you should eat it quickly

A. correct: 'so' is the suitable conjunction showing result.

B. wrong: 'however' does not fit without a semicolon and is the wrong connector here.

C. wrong: 'so that' introduces purpose, not result.

D. wrong: 'however' is the wrong connector and the comma splice remains.

Question 191 Scissors sentence

Choose the correct sentence:

- A. These scissors are very sharp ✓ **Correct answer**
- B. This scissors is very sharp
- C. This scissor is very sharp.
- D. These scissor are very sharp

A. correct: 'scissors' is plural, so it takes 'these' and 'are'.

issors' is plural.

C. wrong: 'scissor' is not used alone in this sense.

D. wrong: 'scissor' is not used alone in this sense.

Question 192 Correct word order

Choose the sentence with correct word order.

- A. Sue took from the window the cover
- B. Sue cover from the window took the cover
- C. Sue took the cover from the window ✓ **Correct answer**
- D. Sue the cover took from the window

A. wrong: the word order is unnatural.

B. wrong: the word order is scrambled.

C. correct: this has the natural English word order.

D. wrong: the word order is unnatural.

Question 193 To cut off the head

“To cut off the head”. Idiom means:

- A. Defrock
- B. Decapitate ✓ **Correct answer**
- C. Impaled
- D. Urbanite

A. wrong: defrock means to deprive a priest of office.

B. correct: 'to cut off the head' means to decapitate.

C. wrong: impaled means pierced through.

urbanite is a city dweller.

Question 194 Buy tickets in advance

Choose the correct option. We must _____ the tickets for the movie in advance.

- A. Remove
- B. Take
- C. Draw
- D. Buy ✓ **Correct answer**

A. wrong: one does not 'remove' tickets for a movie.

B. wrong: 'take the tickets' does not fit this sentence.

C. wrong: one does not 'draw' tickets for a movie.

D. correct: 'We must buy the tickets for the movie in advance.'

Question 195 Businessman passage

Read the paragraph carefully and answer the question given. “Over the past century the businessman has helped build civilization’s great cities, provide people with luxuries and lift his fellow citizens to a certain standard of living, further seeding the industrial revolution around the world.” The passage best supports the statement that the businessman:

- A. Is accountable to the society
- B. Provides seeds to agricultural sector
- C. Is the beneficiary of the industrial revolution
- D. Has contributed to the growth of civilization. ✓ **Correct answer**

A. wrong: the passage does not say the businessman is accountable.

B. wrong: 'seeding the industrial revolution' is figurative, not about agriculture.

The passage says the businessman helped build and seed it, not that he benefited from it.

D. correct: the passage best supports that the businessman has contributed to the growth of civilization.

Question 196 Months with 28 days

Some months have 31 days, how many have 28?

- A. One month and that is February
- B. February, every 4 years
- C. All months have 28 days. ✓ **Correct answer**
- D. None of the above

A. wrong: every month has 28 days, not only February.

B. wrong: every month has 28 days.

C. correct: every month has at least 28 days.

D. wrong: all months have 28 days.

Question 197 Mice to cats analogy

Read the following and choose the correct answer. Mice are to cats as goats are to _____.

- A. Snakes
- B. Hippos
- C. Horses
- D. Lions ✓ **Correct answer**

A. wrong: goats are not the prey of snakes.

B. wrong: goats are not the prey of hippos.

ats are not the prey of horses.

D. correct: mice are prey for cats, and goats are prey for lions.

Question 198 Cause and effect literacy

Read the following statements and identify the best cause and effect relation. i. For the past four years, the district's literacy rate has been rising. ii. The district administration organized a thorough training program for the volunteers working on the literacy campaign.

- A. II is the cause and I is its effect. ✓ **Correct answer**
- B. I is the cause and II is its effect.
- C. I and II are effects of some common cause
- D. I and II are both effects of independent causes.

A. correct: the training program for literacy volunteers (II) caused the rising literacy rate (I).

B. wrong: the rising rate did not cause the training program.

C. wrong: II is the cause of I.

D. wrong: II is the cause of I.

Question 199 Sequence P2QR pattern

Observe the pattern and select the next term in the sequence: P2QR, P4QS, P2QT, ____, P1QV

- A. P2QU
- B. PQ1U2
- C. P2QU ✓ **Correct answer**
- D. PQ2U

A. correct: the pattern is P2QR, P4QS, P2QT, P2QU, P1QV — the third letter runs R, S, T, U,

ext term is P2QU.

B. wrong: this does not fit the pattern.

C. the identical term to A, so it is equally correct.

D. wrong: this does not fit the pattern. PICK-ONE (decided by assistant under owner's 8 Nov 2026 delegation): options A and C print the identical string 'P2QU', so both are correct; C is served as the keyed answer and A is recorded here as the identical option.

Question 200 Courses of action plastic ban

Statement: Due to increasing pollution, the government bans the use of all single-use plastic products from next year. Courses of action: i. An awareness campaign is introduced by the government to encourage people to use eco-friendly products. ii. Subsidies to be provided to companies that manufacture eco-friendly products.

- A. Only I follows
- B. Only II follows
- C. Neither I nor II follows
- D. Both I and II follow ✓ **Correct answer**

A. wrong: both courses of action follow.

B. wrong: both courses of action follow.

C. wrong: both courses of action follow.

D. correct: both an awareness campaign for eco-friendly products and subsidies for their manufacturers follow from the ban.

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