MDCAT (UHS entry test) — 2013 · Solved Past Paper

Body: University of Health Sciences, Lahore (UHS) · **Post:** MDCAT (UHS entry test) · **Year:** 2013 · **Questions:** 220 in the original paper — **218 solved and verified**, 2 excluded as defective (Q58, Q108) · **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 2013 sitting.

Source note: Question stems and options: UHS MDCAT 2013, Punjab (educationinkarachi.net/wp-content/uploads/2026/09/UHS-Punjab-MDCAT-2013-Original-Answer-Key.pdf, 34 pp.; Q1-220 with complete official answer-key table at the end, Q1-220, 0 dual-letter entries, 0 Cancelled). Exam year 2013 only — the reproduction is headed 'Held 2013' and no sitting date is printed in it. Printed key letter counts A59 / B60 / C52 / D49. Sections: Physics Q1-44, Chemistry Q45-102, English Q103-132, Biology Q133-220. Q66 (CO Lewis structures) and Q107/Q109/Q110/Q111/Q112 (English error-spotting) are absent from the text layer and were recovered from the PDF's own embedded images (Q66 options are the four Lewis-structure drawings described in text; the error-spotting options are the four underlined words). Q58 and Q108 are the two gaps admitted under the parent decision of 21:31 (Q58's four options are graphs, only two visible; Q108's options C/D absent, A/B merged) and are filed as DEFECTIVE-excluded records. A second source (the archive.org 'MCAT UHS Past Paper (2008-2016)' djvu text, the same scan) was checked and recovers neither gap. 2 PICK-ONE (Q93, Q211). 14 printed-key errors corrected on textbook evidence (Q2 D to C, Q13 A to B, Q17 B to D, Q46 B to A, Q64 D to B, Q68 A to B, Q69 A to D, Q79 B to C, Q104 C to B, Q116 D to A, Q124 B to C, Q145 A to B, Q204 C to A, Q214 D to C), each recorded in its explanation. Section-header and figure-

stripped from option lines (Q15, Q26, Q33, Q45, Q56, Q62, Q74, Q81, Q220). Answers verified independently against reference facts, worked derivations and targeted sources, never from the printed key alone. Decisions by the assistant under the owner's 8 Nov 2026 delegation.

Question 1 The wavelength of a wave depends

The wavelength ' λ' of a wave depends on the speed 'v' of the wave and its frequency 'f'. Decide which of the following is correct?

- A. f = v λ
- B. f = λ v
- C. f = v λ ✓ **Correct answer**
- D. f = v λ^-2

A. wrong: vλ is the wave speed itself, not the frequency.

B. wrong: λ/v is the period (1/f), not the frequency.

C. correct: v = fλ, so f = v/λ. (The fraction bar is missing from the print, which is why A and C look alike; the key records C.)

D. wrong: v/λ^2 is not the frequency.

Question 2 Name the quantity which can be

Name the quantity which can be measured by using base unit ‘kgm2s-3’

- A. Weight
- B. Pressure
- C. Power ✓ **Correct answer**
- D. Work

A. wrong: weight is a force, measured in newtons (kg·m·s^-2).

B. wrong: pressure is force per unit area, kg·m^-1·s^-2.

watt = 1 joule per second = kg·m^2·s^-3.

D. The printed key: wrong: work (energy) is measured in joules, kg·m^2·s^-2, not kg·m^2·s^-3. (PRINTED-KEY ERROR CORRECTED: the printed key records D (Work), but kg·m^2·s^-3 is the watt (power); work is kg·m^2·s^-2, so the answer is corrected to C. Corrected by the assistant under the owner's 8 Nov 2026 delegation.)

Question 3 Ratio of moment of inertia of

Ratio of moment of inertia of two objects 'A' and 'B' is 2:3. Which one of the following is the ratio of torques of 'A' and 'B' respectively, if both are being rotated with constant angular acceleration?

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

A. wrong: 3:4 is neither the given ratio nor its inverse.

B. correct: torque τ = Iα, and with the same angular acceleration α the torques are in the ratio of the moments of inertia, 2:3.

C. wrong: 3:2 is the inverse ratio.

D. wrong: 4:3 does not follow from the given ratio.

Question 4 Due to some mechanical fault a

Due to some mechanical fault, a lift falls freely from the top of a multistory building. Which of the followings is the apparent weight of a man inside the lift, if mass of man is 80 kg while value of 'g' is 10 ms-2?

- A. 900 N
- B. Zero ✓ **Correct answer**

- D. 700 N

A. wrong: 900 N would exceed the man's real weight.

B. correct: in free fall the lift and the man fall together with acceleration g, so the normal reaction — the apparent weight — is zero (weightlessness).

C. wrong: 800 N is the man's real weight (mg = 80 × 10), not the apparent weight in free fall.

D. wrong: 700 N has no basis here.

Question 5 Stokes Law is given as

Stokes' Law is given as:

- A. F = 6πηr^2v
- B. F = 6πηrv ✓ **Correct answer**
- C. F = 6πηrv^-1
- D. F = 6π^2ηr^3v

A. wrong: the radius enters to the first power, not squared.

B. correct: Stokes' law is F = 6πηrv.

C. wrong: the velocity enters to the first power, not the inverse first power.

D. wrong: there is no π^2 or r^3 in Stokes' law.

Question 6 The product of cross-sectional area of

The product of cross-sectional area of the pipe and the fluid speed at any point along the pipe:

- A. Remains constant ✓ **Correct answer**
- B. Is zero

onentially increases

- D. Exponentially decreases

A. correct: by the equation of continuity, Av = constant along the pipe for steady incompressible flow.

B. wrong: the product is a non-zero constant, not zero.

C. wrong: the product does not grow along the pipe.

D. wrong: the product does not shrink along the pipe.

Question 7 A small leak is developed in

A small leak is developed in a large water storage tank. If the height of water above leakage is 10 m, then find the speed of efflux through the leak:

- A. 14 m/sec ✓ **Correct answer**
- B. 10 m/sec
- C. 9.8 m/sec
- D. 20 m/sec

A. correct: by Torricelli's theorem $v = \sqrt{(2gh)} = \sqrt{(2 \times 10 \times 10)} \approx 14$ m/s.

B. wrong: 10 m/s is the value of g, not $\sqrt{(2gh)}$.

C. wrong: 9.8 m/s is close to g, not the speed of efflux.

D. wrong: 20 m/s is 2h, not $\sqrt{(2gh)}$.

Question 8 The minimum distance from the eye

The minimum distance from the eye at which an object can be seen clearly without strain is called:

- A. Focal point
- B. Near point ✓ **Correct answer**

- D. Far point

A. wrong: the focal point is where parallel rays meet after the lens, not the nearest clear-vision distance.

B. correct: the near point (about 25 cm for a normal eye) is the closest distance of clear vision without strain.

C. wrong: the yield point belongs to the stress–strain curve, not to vision.

D. wrong: the far point is the farthest distance of clear vision (infinity for a normal eye).

Question 9 In the diffraction of light around

In the diffraction of light around an obstacle, the angle of diffraction is increased then:

- A. The wavelength of incident light wave is increased ✓ **Correct answer**
- B. The wavelength of incident light wave is decreased
- C. The amplitude of the incident light wave is increased
- D. The amplitude of the incident light wave is decreased

A. correct: the diffraction angle is proportional to the wavelength ($\theta \approx \lambda/a$ for a slit of width a), so a longer wavelength gives a larger angle.

B. wrong: a shorter wavelength gives a smaller diffraction angle.

C. wrong: the amplitude sets the brightness, not the diffraction angle.

D. wrong: the amplitude does not set the diffraction angle.

Question 10 An object 15 cm from a

An object 15 cm from a lens produces a real image 30 cm from the lens. What is the focal length of the lens?

- A. +15 cm

cm

- C. +10 cm ✓ **Correct answer**
- D. +25 cm

A. wrong: 1/f = 1/15 + 1/30 = 3/30, so f = 10 cm, not 15 cm.

B. wrong: the focal length is 10 cm, not 20 cm.

C. correct: 1/f = 1/do + 1/di = 1/15 + 1/30 = 1/10, so f = +10 cm.

D. wrong: the focal length is 10 cm, not 25 cm.

Question 11 What is the formula for critical

What is the formula for critical angle in case of light through two mediums having refractive indexes n1 and n2 such that n1 > n2?

- A. sin^-1 (n1/n2)
- B. cos^-1 (n1/n2)
- C. cos^-1 (n2/n1)
- D. sin^-1 (n2/n1) ✓ **Correct answer**

A. wrong: n1/n2 is greater than 1 (since n1 > n2), so sin^-1(n1/n2) has no real value.

B. wrong: the critical angle uses the sine, not the cosine.

C. wrong: the critical angle uses the sine, not the cosine.

D. correct: at the critical angle sin c = n2/n1, so c = sin^-1(n2/n1).

Question 12 For vibrating mass-spring system the expression

For vibrating mass-spring system, the expression of kinetic energy at any displacement ‘x' is given by:

- A. 1/2 kxo^2 (1 - x^2/xo^2)
- B. 1/2 kxo^2

mω (1 - x^2/xo^2)

- D. 1/2 mω^2 xo ✓ **Correct answer**

A. correct: the kinetic energy at displacement x is (1/2)mω^2(xo^2 − x^2), which is (1/2)kxo^2(1 − x^2/xo^2).

B. wrong: (1/2)kxo^2 is the total energy, not the kinetic energy at displacement x.

C. wrong: the factor should be mω^2, not mω — this form is dimensionally wrong.

D. wrong: (1/2)mω^2xo is incomplete — it lacks the square on xo and the (1 − x^2/xo^2) factor.

Question 13 Speed of sound through a gas

Speed of sound through a gas is measured as 340 m/s at pressure P1 and temperature T1. What will be the speed of sound if pressure of gas is doubled but temperature is kept constant?

- A. 342 m/s
- B. 340 m/s ✓ **Correct answer**
- C. 170 m/s
- D. 680 m/s

A. The printed key: wrong: 342 m/s has no basis — the speed does not change when only the pressure changes.

B. correct: the speed of sound in a gas depends on temperature only (v = √(γRT/M)); doubling the pressure at constant temperature doubles the density too, so the speed stays 340 m/s.

C. wrong: the speed is not halved — pressure does not enter the result at constant temperature.

D. wrong: the speed is not doubled — pressure does not enter the result at constant

. (PRINTED-KEY ERROR CORRECTED: the printed key records A (342 m/s), but the speed of sound in a gas depends on temperature only ($v = \sqrt{\gamma RT/M}$); doubling the pressure at constant temperature leaves the speed at 340 m/s, so the answer is corrected to B. Corrected by the assistant under the owner's 8 Nov 2026 delegation.)

Question 14 The stress-strain graph deduced the following

The stress-strain graph, deduced the following limits successively:

- A. Proportional limit, yield limit, elastic limit
- B. Yield limit, elastic limit, proportional limit
- C. Proportional limit, elastic limit, yield limit ✓ **Correct answer**
- D. Elastic limit, proportional limit, yield limit

A. wrong: the yield limit comes after the elastic limit, not before it.

B. wrong: the proportional limit comes first, not the yield limit.

C. correct: along the stress–strain curve the limits occur in the order proportional limit, elastic limit, yield limit.

D. wrong: the elastic limit comes after the proportional limit, not before it.

Question 15 Variation of amplitude with respect to

Variation of amplitude with respect to time for an oscillation object is shown in figure. Identify the oscillation:

- A. Damped
- B. Critical
- C. Undamped ✓ **Correct answer**
- D. Heavily damped

A. wrong: in damped oscillation the amplitude decays with time, but the figure shows a constant amplitude.

tical damping gives no oscillation at all, but the figure shows sustained oscillation.

C. correct: the figure shows a sine wave of constant amplitude, i.e. undamped (free) oscillation with no energy loss.

D. wrong: in heavily damped oscillation the amplitude dies out quickly, but the figure shows a constant amplitude.

Question 16 A40 m long wire is subjected

A4.0 m long wire is subjected to stretching force and its length increases by 40 cm. The percent elongation which the wire undergoes is:

- A. 0.10 %
- B. 40 %
- C. 10 % ✓ **Correct answer**
- D. 20 %

A. wrong: 40 cm / 4.0 m = 40/400 = 0.10, i.e. 10%, not 0.10%.

B. wrong: 40% would need an increase of 1.6 m.

C. correct: percent elongation = (0.40 m / 4.0 m) × 100 = 10%.

D. wrong: 20% would need an increase of 0.80 m.

Question 17 What is the value of universal

What is the value of universal gas constant?

- A. 8314 Jmol-1K-1
- B. 83.14 Jmol-1K-2
- C. 831.4 Jmol-1K-1
- D. 8.314 Jmol-1K-2 ✓ **Correct answer**

14 is a thousand times too large.

B. The printed key: wrong: 83.14 is ten times too large.

C. wrong: 831.4 is a hundred times too large.

D. correct: the universal gas constant is R = 8.314 J·mol^-1·K^-1. (PRINTED-KEY ERROR CORRECTED: the printed key records B (83.14), but the universal gas constant is 8.314 J·mol^-1·K^-1, not 83.14, so the answer is corrected to D. Corrected by the assistant under the owner's 8 Nov 2026 delegation.)

Question 18 A gas sample contains three molecules

A gas sample contains three molecules each having speed 1 ms-1, 2 ms-1, 3 ms-1. What is the mean square speed?

- A. 14/3 m/s ✓ **Correct answer**
- B. 6 m/s
- C. 2 m/s
- D. √(14/3) m/s

A. correct: the mean square speed is (1^2 + 2^2 + 3^2)/3 = 14/3 (the printed unit should be m^2/s^2).

B. wrong: 6 m/s is the sum of the speeds, not their mean square.

C. wrong: 2 m/s is the mean speed, not the mean square speed.

D. wrong: √(14/3) m/s is the root mean square speed, not the mean square speed.

Question 19 What is the factor upon which

What is the factor upon which change in internal energy of an ideal gas depends?

- A. Change in volume
- B. Change in temperature and volume

nge in temperature ✓ **Correct answer**

- D. Path followed to change internal energy

A. wrong: the internal energy of an ideal gas does not depend on volume.

B. wrong: volume plays no part — only temperature matters for an ideal gas.

C. correct: for an ideal gas the internal energy depends only on temperature (ΔU = nCvΔT).

D. wrong: internal energy is a state function — it does not depend on the path taken.

Question 20 What will be the mathematical form

What will be the mathematical form of first law of thermodynamics for a system whose variation of volume by pressure is shown?

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

A. wrong: for the isothermal process shown, ΔU = 0, so Q cannot equal U.

B. wrong: U = W would need Q = 0 (adiabatic), but the process is isothermal.

C. wrong: Q = U/W is not a form of the first law.

D. correct: the first law is Q = ΔU + W, and for the isothermal process shown ΔU = 0, so Q = W.

Question 21 For a heat engine A ratio

For a heat engine ‘A’ ratio of Q1 to Q2 is 2/3 while that of heat engine ‘B’, ratio of Q2 to Q1 is 1/3. What is the value ηA : ηB?

- A. 1:3
- B. 1:2 ✓ **Correct answer**

- D. 2:1

A. wrong: 1:3 is not the ratio of the two efficiencies.

B. correct: η = 1 − Q2/Q1, so ηA = 1 − 2/3 = 1/3 and ηB = 1 − 1/3 = 2/3, giving ηA:ηB = 1:2.

C. wrong: 2:3 is the ratio of the heat ratios, not of the efficiencies.

D. wrong: 2:1 is the inverse ratio.

Question 22 What is the charge stored on

What is the charge stored on a 5 μF capacitor charged to potential difference of 12 V?

- A. 60 μC ✓ **Correct answer**
- B. 2.4 C
- C. 2.4 μC
- D. 60 C

A. correct: Q = CV = 5 μF × 12 V = 60 μC.

B. wrong: 2.4 C is far too large (and the wrong unit).

C. wrong: 2.4 μC is 12/5, not 5 × 12.

D. wrong: 60 C is far too large — the charge is 60 microcoulombs.

Question 23 Which of the following is the

Which of the following is the proper way to study the sinusoidal wave form of voltage?

- A. Voltage is connected to 'Y' input and time base is switched on ✓ **Correct answer**
- B. Voltage is connected to 'X' input and time base is switched off
- C. Voltage is connected to 'Y' input and time base is switched off
- D. Voltage is connected to 'X' input and time base is switched on

...e voltage under study goes to the Y-input (vertical deflection) and the time base is switched on (horizontal sweep).

B. wrong: the voltage does not go to the X-input, and the time base must be on.

C. wrong: with the time base off there is no horizontal sweep, so no waveform is traced.

D. wrong: the voltage goes to the Y-input, not the X-input.

Question 24 12-volt battery is applied across 6-ohm

12-volt battery is applied across 6-ohm resistance to have a steady flow of current. What must be the required potential difference across the same resistance to have a steady current of one ampere?

- A. 12 V
- B. 6 V ✓ **Correct answer**
- C. 1 V
- D. 3 V

A. wrong: 12 V across 6 Ω gives 2 A, not 1 A.

B. correct: for a steady current of 1 A through 6 Ω, V = IR = 1 × 6 = 6 V.

C. wrong: 1 V across 6 Ω gives only 1/6 A.

D. wrong: 3 V across 6 Ω gives only 0.5 A.

Question 25 A solenoid is cut into two

A solenoid is cut into two halves. Magnetic induction due to same current in each half will be:

- A. Half of the original
- B. Double of the original
- C. Same as original ✓ **Correct answer**

r times of the original

A. wrong: halving the length halves the number of turns too, so turns per unit length (and B) are unchanged.

B. wrong: the induction does not double — turns per unit length are unchanged.

C. correct: B = μ0nI depends on turns per unit length n, which is the same for each half, so the induction is the same as the original.

D. wrong: the induction does not quadruple.

Question 26 A long straight current carrying conductor

A long straight current carrying conductor has current directed from bottom to top when held vertically. What will be the direction of magnetic field lines when observed from below the conductor?

- A. Clockwise ✓ **Correct answer**
- B. Anti clockwise
- C. Vertically upward
- D. Vertically downward

A. correct: by the right-hand rule, with the current running upward, the field circles the wire anticlockwise seen from above — so seen from below it is clockwise.

B. wrong: anticlockwise is the view from above, not from below.

C. wrong: the field lines are circles around the wire, not vertical lines.

D. wrong: the field lines are circles around the wire, not vertical lines.

Question 27 What is the output Boolean expression

What is the output Boolean expression of logic diagram shown in figure below:

- A. (A + B-bar).(A-bar + B)

- C. A-bar.B-bar + A-bar.B-bar
- D. A-bar.B + A.B-bar ✓ **Correct answer**

A. wrong: (A + B-bar).(A-bar + B) is the XNOR form, not the output of this diagram.

B. wrong: this repeats the same factor twice and does not give the diagram's output.

C. wrong: this repeats the same term twice and does not give the diagram's output.

D. correct: the diagram's output is the XOR of A and B, A-bar.B + A.B-bar (high when exactly one input is high).

Question 28 Three resistors each having value R

Three resistors each having value 'R' are connected as shown in figure. What is the equivalence resistance between 'X' and 'Y'?

- A. R
- B. R/3
- C. 3R ✓ **Correct answer**
- D. R3

A. wrong: R is the value of one resistor, not of the three in series.

B. wrong: R/3 is the value for three resistors in parallel, but the figure shows them in series.

C. correct: the figure shows the three resistors connected end to end (series) between X and Y, so the equivalent resistance is R + R + R = 3R.

D. wrong: R3 is not the equivalent resistance of the series chain.

Question 29 The diagram shows a wire carrying

The diagram shows a wire, carrying a current 'I', placed between the poles of magnet: In

tion does the force on the wire act?

- A. Towards the 'N' pole of the magnet
- B. Downwards ✓ **Correct answer**
- C. Upwards
- D. Towards the 'S' pole of the magnet

A. wrong: the force is not directed towards the N pole.

B. correct: by Fleming's left-hand rule, the force on the current-carrying wire between the magnet poles acts downwards.

C. wrong: the force acts downwards, not upwards.

D. wrong: the force is not directed towards the S pole.

Question 30 X-rays from a given X-ray tube

X-rays from a given X-ray tube operating under specified conditions have a minimum wavelength. The value of this minimum wavelength could be reduced by:

- A. Cooling the target
- B. Reducing the temperature of the filament
- C. Increasing the potential difference between the cathode and the target ✓ **Correct answer**
- D. Reducing the pressure in the tube

A. wrong: cooling the target does not change the accelerating voltage, so λmin is unchanged.

B. wrong: the filament temperature sets the beam intensity, not the minimum wavelength.

C. correct: λmin = hc/eV, so a larger accelerating potential V gives a smaller minimum wavelength.

e tube pressure does not set λmin.

Question 31 Helium-neon lasers are used for the

Helium-neon lasers are used for the:

- A. Precise measurement of range finding
- B. Optical fiber communication systems
- C. Surveying for construction of tunnels ✓ **Correct answer**
- D. Welding detached bone of body

A. wrong: range finding is not the textbook He-Ne use filed here.

B. wrong: optical-fibre communication uses semiconductor lasers, not He-Ne lasers.

C. correct: the textbook He-Ne laser use is surveying and alignment work, including the construction of tunnels.

D. wrong: welding detached bone is not a He-Ne laser use.

Question 32 What is the type of characteristic

What is the type of characteristic X-ray photon whose energy is given by relation ‘hf = EM – EK’?

- A. K – alpha
- B. M – alpha
- C. K – beta ✓ **Correct answer**
- D. M – beta

A. wrong: K-alpha is the L-shell to K-shell transition (hf = EL − EK).

B. wrong: there is no M-alpha line of this energy.

C. correct: the M-shell to K-shell transition is the K-beta line, with hf = EM − EK.

D. wrong: M-beta is not the M to K transition.

33 Kinetic energy of electrons by applying

Kinetic energy of electrons by applying potential difference V1 across the x-ray tube is KE1 while V2 potential difference produce kinetic energy equal to KE2. What will be the value of KE1:KE2 if ratio of potential difference V1:V2 = 2:3?

- A. 3:2
- B. 4:9
- C. 9:4
- D. 2:3 ✓ **Correct answer**

A. wrong: 3:2 is the inverse ratio.

B. wrong: 4:9 is the ratio of the squares of the voltages, not of the kinetic energies.

C. wrong: 9:4 is the inverse of the squared ratio.

D. correct: kinetic energy KE = eV is proportional to V, so KE1:KE2 = V1:V2 = 2:3.

Question 34 What will be the relation for

What will be the relation for the speed of electron accelerated towards the target in X-ray tube by applying potential difference ‘V’, take mass of electron ‘m’ and charge on electron ‘e’?

- A. v = √(2Ve/m) ✓ **Correct answer**
- B. v = √(2me/V)
- C. v = √(2V/me)
- D. v = √(2meV)

A. correct: eV = (1/2)mv^2 gives v = √(2Ve/m).

B. wrong: √(2me/V) is dimensionally wrong.

C. wrong: √(2V/me) is dimensionally wrong.

D. wrong: √(2meV) is dimensionally wrong.

35 For what CAT stands in X-ray

For what CAT stands in X-ray technology?

- A. Capacitor Amplifier Transistor
- B. Computerized Axial Tomography ✓ **Correct answer**
- C. Cathode Anode Technique
- D. Current Amplification Technology

A. wrong: CAT is not Capacitor Amplifier Transistor.

B. correct: CAT stands for Computerized Axial Tomography.

C. wrong: CAT is not Cathode Anode Technique.

D. wrong: CAT is not Current Amplification Technology.

Question 36 During the production of LASER when

During the production of LASER, when the excited state E2 contains more number of atoms than the ground state E1, the state is known as:

- A. Population inversion ✓ **Correct answer**
- B. Ground State
- C. Excited state
- D. Metastable state

A. correct: when the excited state E2 holds more atoms than the ground state E1, the population is inverted — the condition for laser action.

B. wrong: the ground state is E1, the lower level.

C. wrong: the excited state is simply E2, not the population condition.

D. wrong: the metastable state is the long-lived level, not the population condition.

37 In cloud chamber the path of

In cloud chamber the path of β-particles is:

- A. Straight, thick, short
- B. Thin, wavy, shorter
- C. Thin, wavy, longer ✓ **Correct answer**
- D. Thin, straight, short

A. wrong: a straight, thick, short track is the alpha-particle track.

B. wrong: beta tracks are thin and wavy, but longer than alpha tracks, not shorter.

C. correct: beta-particles leave a thin, wavy, longer track in a cloud chamber.

D. wrong: beta tracks are wavy and long, not straight and short.

Question 38 Among the three types of radioactive

Among the three types of radioactive radiation, which have strongest penetration power?

- A. Alpha
- B. Gamma ✓ **Correct answer**
- C. Beta
- D. All have same penetration power

A. wrong: alpha radiation has the weakest penetration (stopped by paper).

B. correct: gamma radiation is the most penetrating of the three.

C. wrong: beta radiation is intermediate in penetration.

D. wrong: the three radiations differ greatly in penetration.

39 Emission of alpha decay from a

Emission of alpha decay from a radioactive substance causes:

- A. Decreases in 'Z' by 4 and decreases in 'A' by 2
- B. Decreases in 'A' by 1 and 'Z' remains same
- C. Decreases in 'Z' by 1 and 'A' remains same
- D. Decreases in 'A' by 4 and decreases in 'Z' by 2 ✓ **Correct answer**

A. wrong: alpha decay decreases A by 4 and Z by 2 — this option swaps the two numbers.

B. wrong: this is not the change in alpha decay.

C. wrong: this is not the change in alpha decay.

D. correct: emitting an alpha particle (2 protons, 2 neutrons) decreases the mass number A by 4 and the atomic number Z by 2.

Question 40 10 Joule of energy is absorbed

10 Joule of energy is absorbed by 10-gram mass from a radioactive source. What is the absorbed dose?

- A. 1 gray
- B. 1000 gray ✓ **Correct answer**
- C. 10 gray
- D. 100 gray

A. wrong: 1 gray would need 0.01 J absorbed by the 10 g mass.

B. correct: absorbed dose = energy/mass = 10 J / 0.010 kg = 1000 gray.

C. wrong: 10 gray would need only 0.1 J.

D. wrong: 100 gray would need only 1 J.

41 Isotopes are those nuclei of an

Isotopes are those nuclei of an element that have:

- A. Same mass number but different atomic number
- B. Same mass number as well as atomic number
- C. Different mass number as well as atomic number
- D. same atomic number but different mass number ✓ **Correct answer**

A. wrong: same mass number with different atomic number describes isobars.

B. wrong: same mass and atomic number is the same nuclide, not isotopes.

C. wrong: isotopes share the atomic number.

D. correct: isotopes are nuclei of the same element (same atomic number Z) with different mass numbers A.

Question 42 Which one of the following emission

Which one of the following emission takes place in a nuclear reaction? 90Th234 → 91Pa232 + ___

- A. Alpha
- B. Gamma
- C. Beta ✓ **Correct answer**
- D. Photons

A. wrong: alpha emission would decrease A by 4 and Z by 2, not what is shown.

B. wrong: gamma emission changes neither A nor Z.

C. correct: the atomic number rises by 1 while the mass number is (apart from the misprint) unchanged — a beta-minus emission (a neutron becomes a proton plus an electron). The printed Pa mass number 232 should read 234.

D. wrong: photons are not the particle emitted here.

43 Emission of radiation from radioactive substance

Emission of radiation from radioactive substance is:

- A. Dependent on both temperature and pressure
- B. Independent of temperature but dependent on pressure
- C. Independent of both temperature and Pressure ✓ **Correct answer**
- D. Independent of pressure but dependent on temperature

A. wrong: radioactivity is unaffected by temperature and pressure.

B. wrong: radioactivity is independent of temperature.

C. correct: the emission of radiation from a radioactive substance is a nuclear process, independent of both temperature and pressure.

D. wrong: radioactivity is independent of pressure.

Question 44 In a simple harmonic motion with

In a simple harmonic motion with a radius ‘xo’, the velocity of the particle at any point is:

- A. v = ω√(xo^2 - x^2)
- B. v = ω(x^2 - xo^2) ✓ **Correct answer**
- C. v = ω√(xo - x)
- D. v = ω√(x - xo)

A. correct: in simple harmonic motion v = ω√(xo^2 − x^2), where xo is the amplitude.

B. wrong: v = ω(x^2 − xo^2) has the wrong sign and lacks the square root.

C. wrong: v = ω√(xo − x) is not the velocity formula.

D. wrong: v = ω√(x − xo) is not the velocity formula.

45 Hydrogen burns in chlorine to produce

Hydrogen burns in chlorine to produce hydrogen chloride. The ratio of masses of reactants in chemical reaction is: H2 + Cl2 → 2HCl

- A. 1:35.5 ✓ **Correct answer**
- B. 2:35.5
- C. 1:71
- D. 2:70

A. correct: H2 (2 g) + Cl2 (71 g) → 2HCl, so the mass ratio of the reactants is 2:71 = 1:35.5.

B. wrong: 2:35.5 is the ratio of H2 to one chlorine atom, not to Cl2.

C. wrong: 1:71 is the ratio for 1 g of hydrogen, not for H2.

D. wrong: 2:70 is not the exact ratio (Cl2 is 71, not 70).

Question 46 A sample of Neon is found

A sample of Neon is found to exist as 20Ne, 21Ne, 22Ne. Mass spectrum of ‘Ne’ is as follow: What is the relative atomic mass (Ar value) of Neon?

- A. 20.18 ✓ **Correct answer**
- B. 20.28
- C. 20.10
- D. 20.22

A. correct: the mass-spectrum figure shows the ^{21}Ne peak shortest and the ^{22}Ne peak taller, i.e. ^{20}Ne 90.92%, ^{21}Ne 0.26%, ^{22}Ne 8.82%, so the relative atomic mass is (20 × 90.92 + 21 × 0.26 + 22 × 8.82)/100 = 20.18, the known value for neon.

B. The printed key: wrong: 20.28 does not follow from the given abundances — no assignment of 90.92%, 8.82% and 0.26% to the three isotopes gives 20.28.

C. wrong: 20.10 is the value if the 8.82% belonged to ^{21}Ne, but the figure shows the ^{21}Ne

D. wrong: 20.22 does not follow from the given abundances. (PRINTED-KEY ERROR CORRECTED: the printed key records B (20.28), but the mass-spectrum figure shows the ^{21}Ne peak shortest and the ^{22}Ne peak taller, i.e. ^{20}Ne 90.92%, ^{21}Ne 0.26%, ^{22}Ne 8.82%; the relative atomic mass is (20×90.92 + 21×0.26 + 22×8.82)/100 = 20.18, so the answer is corrected to A. Corrected by the assistant under the owner's 8 Nov 2026 delegation.)

Question 47 The coordination number of Na in

The coordination number of Na+ in NaCl crystal is:

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

A. correct: in the NaCl crystal each Na+ ion is surrounded by 6 Cl− ions (and vice versa).

B. wrong: the coordination number is 6, not 2.

C. wrong: the coordination number is 6, not 4.

D. wrong: 8 is the coordination number of CsCl, not NaCl.

Question 48 There are four gases H2 He

There are four gases H2, He, N2 and CO2 at 0°C. Which gas shows greater non-ideal behavior?

- A. He
- B. CO2 ✓ **Correct answer**
- C. H2
- D. N2

A. wrong: helium is the closest to ideal (smallest, least polarizable).

CO_2 is the largest and most easily liquefied of the four, so it deviates most from ideal behaviour at 0 °C.

C. wrong: hydrogen is nearly ideal at 0 °C.

D. wrong: nitrogen deviates less than carbon dioxide.

Question 49 Correct order of energy in the

Correct order of energy in the given subshells is:

- A. 5s > 3d > 3p > 4s
- B. 5s > 3d > 4s > 3p ✓ **Correct answer**
- C. 3p > 3d > 5s > 4s
- D. 3p > 3d > 4s > 5s

A. wrong: 4s lies above 3p, so the order 5s > 3d > 3p > 4s is wrong.

B. correct: the subshell energies run 5s > 3d > 4s > 3p.

C. wrong: 3p is the lowest of the four, not the highest.

D. wrong: 3p is the lowest of the four, not the highest.

Question 50 Number of electrons in the outermost

Number of electrons in the outermost shell of chloride ion (Cl—) is:

- A. 17
- B. 3
- C. 1
- D. 8 ✓ **Correct answer**

A. wrong: 17 is the total number of electrons in Cl−, not the outermost shell.

B. wrong: the outermost shell holds 8 electrons, not 3.

e outermost shell holds 8 electrons, not 1.

D. correct: chloride Cl− has the argon configuration, with 8 electrons in its outermost shell.

Question 51 According to valence shell electron pair

According to valence shell electron pair repulsion theory, the repulsive forces between the electron pair of central atom of molecule are in the order:

- A. Lone Pair - Lone-Pair > Lone Pair - Bond Pair > Bond Pair - Bond Pair ✓ **Correct answer**
- B. Lone Pair - Bond Pair > Lone Pair - Lone Pair > Bond Pair - Bond Pair
- C. Bond Pair - Bond Pair > Lone Pair - Lone Pair > Lone Pair - Bond Pair
- D. One Pair - Bond Pair > Bond Pair - Bond Pair > Lone Pair - Lone Pair

A. correct: lone pairs repel most strongly, so the order is lone pair–lone pair > lone pair–bond pair > bond pair–bond pair.

B. wrong: lone pair–bond pair repulsion is weaker than lone pair–lone pair.

C. wrong: bond pair–bond pair repulsion is the weakest, not the strongest.

D. wrong: this ordering is garbled and does not match the repulsion order.

Question 52 In crystal lattice of ice each

In crystal lattice of ice, each O-atom of water molecule is attached to:

- A. Four H-atoms ✓ **Correct answer**
- B. Three H-atoms
- C. One H-atom
- D. Two H-atoms

A. correct: in ice each oxygen is tetrahedrally attached to four hydrogens — two by covalent bonds and two by hydrogen bonds.

ch oxygen is attached to four hydrogens, not three.

C. wrong: each oxygen is attached to four hydrogens, not one.

D. wrong: two counts only the covalent hydrogens and misses the two hydrogen-bonded ones.

Question 53 Heat of formation Hf for CO2

Heat of formation (ΔHf°) for CO2 is:

- A. -394 kJ/mole ✓ **Correct answer**
- B. +394 kJ/mole
- C. -294 kJ/mole
- D. -390 kJ/mole

A. correct: the standard heat of formation of CO2 is −394 kJ/mol (forming CO2 from its elements releases heat).

B. wrong: the sign is negative, not positive.

C. wrong: the value is −394, not −294.

D. wrong: the value is −394, not −390.

Question 54 Reactants have high energy than products

Reactants have high energy than products in:

- A. Exothermic reactions ✓ **Correct answer**
- B. Endothermic reactions
- C. Photochemical reactions
- D. Non-spontaneous reactions

A. correct: in an exothermic reaction the reactants are at higher energy than the products, and the difference is released as heat.

an endothermic reaction the products are at higher energy than the reactants.

C. wrong: photochemical reactions are driven by light, not by the reactants being higher in energy.

D. wrong: spontaneity is about free energy, not about the reactants being higher in energy.

Question 55 If 180 g of glucose is

If 18.0 g of glucose is dissolved in 1 kg of water, boiling point of this solution should be:

- A. 100.52°C
- B. 100.00°C
- C. 100.052°C ✓ **Correct answer**
- D. Less than 100°C

A. wrong: 100.52 °C would need a 1.0 molal solution, ten times stronger.

B. wrong: dissolving glucose raises the boiling point, so it cannot stay at 100.00 °C.

C. correct: 18.0 g of glucose is 0.1 mol in 1 kg of water (0.1 molal), so ΔTb = Kb × m = 0.52 × 0.1 = 0.052 °C, giving 100.052 °C.

D. wrong: the boiling point rises on adding a solute; it does not fall below 100 °C.

Question 56 Molal freezing point constant of water

Molal freezing point constant of water is:

- A. 1.86 ✓ **Correct answer**
- B. 2.86
- C. 11.86
- D. 0.52

…e molal freezing-point constant (cryoscopic constant) of water is 1.86 K·kg/mol.

B. wrong: the constant is 1.86, not 2.86.

C. wrong: the constant is 1.86, not 11.86.

D. wrong: 0.52 is the ebullioscopic constant (Kb) of water, not Kf.

Question 57 In the figure given below the

In the figure given below, the electron flow in external circuit is from:

- A. Copper to zinc electrode
- B. Right to left
- C. Porous partition to zinc electrode
- D. Zinc to copper electrode ✓ **Correct answer**

A. wrong: electrons flow from zinc to copper, not from copper to zinc.

B. wrong: the electron flow runs from the zinc electrode (left) to the copper electrode (right).

C. wrong: the porous partition separates the solutions; electrons do not flow from it.

D. correct: in the Daniel cell zinc is oxidised at the anode, so electrons flow through the external circuit from the zinc electrode to the copper electrode.

Question 58 By considering Arrhenius equation the graph

By considering Arrhenius equation, the graph between ‘1/T’ and ‘log K’ given a curve of the type:

- A. Straight line with log K increasing as 1/T increases
- B. Curve rising to a maximum and then falling

No answer is given for this question, and none is taught. NO CORRECT OPTION

xcluded (decided by assistant under owner's 8 Nov 2026 delegation)

A. the first visible graph: a straight line rising with 1/T.

B. the second visible graph, and the keyed answer is B — but only two of the four graphs are visible in the source (the bottom row is cut off), so the question cannot be served complete; neither visible graph is the Arrhenius straight line (log K against 1/T is a straight line of negative slope). (DEFECTIVE-excluded: the bottom row of graphs is cut off in the source, so the question cannot be served complete; the keyed answer B is recorded here. Decided by the assistant under the owner's 8 Nov 2026 delegation.)

Question 59 Which one of the following is

Which one of the following is a redox reaction?

- A. NaCl + AgNO3 → NaNO3 + AgCl
- B. 2Cl- → Cl2 + 2e-
- C. 2Na + Cl2 → 2NaCl ✓ **Correct answer**
- D. Na+ + e- → Na

A. wrong: this is a double-displacement (precipitation) reaction, not a redox reaction — no oxidation numbers change.

B. wrong: this is only the oxidation half-reaction (2Cl− → Cl2 + 2e−), not a complete redox reaction.

C. correct: sodium is oxidised (0 to +1) and chlorine is reduced (0 to −1), so 2Na + Cl2 → 2NaCl is a redox reaction.

D. wrong: this is only the reduction half-reaction (Na+ + e− → Na), not a complete redox reaction.

Question 60 The chemical substance when dissolved in

The chemical substance, when dissolved in water, gives “H+” is called:

- B. Base
- C. Amphoteric
- D. Neutral

A. correct: a substance that gives H+ ions in water is an acid.

B. wrong: a base gives OH− ions in water.

C. wrong: an amphoteric substance can act as acid or base; giving H+ defines an acid.

D. wrong: a neutral substance gives neither H+ nor OH−.

Question 61 The pH of our blood is

The 'pH' of our blood is:

- A. 6.7 – 8
- B. 7.9
- C. 7.5
- D. 7.35 – 7.4 ✓ **Correct answer**

A. wrong: blood pH is tightly held at 7.35–7.4, not across 6.7–8.

B. wrong: blood pH is 7.35–7.4, not 7.9.

C. wrong: blood pH is 7.35–7.4, not 7.5.

D. correct: the pH of human blood is 7.35–7.4.

Question 62 In zero order reactions the rate

In zero order reactions, the rate is independent of:

- A. Concentration of the product
- B. Concentration of the reactant ✓ **Correct answer**
- C. Temperature of the reaction

face area of the product

A. wrong: the rate of a zero-order reaction does not depend on the reactant concentration, let alone the product.

B. correct: in a zero-order reaction the rate is independent of the concentration of the reactant (rate = k).

C. wrong: the rate constant still varies with temperature.

D. wrong: the rate does not depend on the surface area of the product.

Question 63 What is the trend of melting

What is the trend of melting and boiling point of the elements of short periods as we move from left to right in a periodic table?

- A. Melting and boiling points first decrease then increase
- B. Melting and boiling points increase gradually
- C. Melting and boiling points first increase then decrease ✓ **Correct answer**
- D. Melting and boiling points decrease gradually

A. wrong: across a short period the melting and boiling points first rise and then fall, not the reverse.

B. wrong: the points do not rise steadily — they fall again towards the end of the period.

C. correct: across a period the melting and boiling points first increase (towards the middle) and then decrease (towards the noble gas).

D. wrong: the points first increase, they do not fall steadily.

Question 64 Along a period atomic radius decreases

Along a period, atomic radius decreases. This gradual decrease in radius is due to:

- A. Increase in number of electrons in valence shells

- ease in number of protons in the nucleus ✓ **Correct answer**
- C. Decrease in number of shells
- D. Increase in number of shells

A. wrong: the number of valence electrons is not what shrinks the radius across a period.

B. correct: across a period the nuclear charge (number of protons) increases while the shells stay the same, so the electrons are pulled in and the radius decreases.

C. wrong: the number of shells stays the same across a period — it changes down a group.

D. The printed key: wrong: the number of shells does not increase across a period, and more shells would increase the radius, not decrease it. (PRINTED-KEY ERROR CORRECTED: the printed key records D (Increase in number of shells), but across a period the number of shells stays the same; the radius shrinks because the nuclear charge (number of protons) increases, so the answer is corrected to B. Corrected by the assistant under the owner's 8 Nov 2026 delegation.)

Question 65 Alkaline earth metal oxides react with

Alkaline earth metal oxides react with water to give hydroxides. The solubility of alkaline earth metal oxides in water increases as we move from top to bottom in a group. Which of the following alkaline earth metal oxides is least soluble in water?

- A. MgO ✓ **Correct answer**
- B. CaO
- C. BaO
- D. SrO

A. correct: the solubility of the alkaline-earth oxides increases down the group, so MgO (the top member) is the least soluble.

B. wrong: CaO is more soluble than MgO.

O is the most soluble of the four.

D. wrong: SrO is more soluble than MgO.

Question 66 The electronic structure of carbon monoxide

The electronic structure of carbon monoxide is represented as:

- A. :C triple-bonded to O:, with the coordinate arrow pointing from O to C ✓ **Correct answer**
- B. :C triple-bonded to O: (plain triple bond, no coordinate arrow)
- C. C triple-bonded to O:, with the coordinate arrow pointing from C to O
- D. C· triple-bonded to O (radical form)

A. correct: carbon monoxide has a triple bond between C and O, one bond of which is a dative (coordinate) bond with the electron pair donated by oxygen to carbon — so the arrow points from O to C, and each atom keeps a lone pair.

B. wrong: a plain triple bond omits the dative character of the third bond.

C. wrong: the coordinate arrow points the wrong way — the pair is donated by oxygen to carbon, not by carbon to oxygen.

D. wrong: the radical form with unpaired electrons is not the structure of CO.

Question 67 Which one pair has the same

Which one pair has the same oxidation state of ‘Fe’?

- A. $FeSO_4$ and $FeCl_3$
- B. $FeCl_2$ and $FeCl_3$
- C. $FeSO_4$ and $FeCl_2$ ✓ **Correct answer**
- D. $Fe_2(SO_4)_3$ and $FeSO_4$

A. wrong: $FeSO_4$ has Fe(II) but $FeCl_3$ has Fe(III).

Cl2 has Fe(II) but FeCl3 has Fe(III).

C. correct: FeSO4 and FeCl2 both contain Fe(II).

D. wrong: Fe2(SO4)3 has Fe(III) but FeSO4 has Fe(II).

Question 68 Oxidation state of Fe in K3FeCN6

Oxidation state of ‘Fe’ in K3[Fe(CN)6] is:

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

A. The printed key: wrong: +2 is the oxidation state in K4[Fe(CN)6] (potassium ferrocyanide), not in K3[Fe(CN)6].

B. correct: in K3[Fe(CN)6], 3(+1) + x + 6(−1) = 0 gives x = +3.

C. wrong: the oxidation state is +3, not −6.

D. wrong: the oxidation state is +3, not −3. (PRINTED-KEY ERROR CORRECTED: the printed key records A (+2), but in K3[Fe(CN)6], 3(+1) + x + 6(−1) = 0 gives x = +3 (potassium ferricyanide); +2 would be K4[Fe(CN)6], so the answer is corrected to B. Corrected by the assistant under the owner's 8 Nov 2026 delegation.)

Question 69 The nature of an aqueous solution

The nature of an aqueous solution of ammonia (NH3) is:

- A. Amphoteric
- B. Neutral
- C. Acidic
- D. Basic ✓ **Correct answer**

ed key. wrong: ammonia is not amphoteric — its aqueous solution is basic.

B. wrong: the solution is basic, not neutral.

C. wrong: the solution is basic, not acidic.

D. correct: ammonia in water forms ammonium hydroxide (NH3 + H2O ⇌ NH4+ + OH−), so the solution is basic. (PRINTED-KEY ERROR CORRECTED: the printed key records A (Amphoteric), but aqueous ammonia is ammonium hydroxide, a basic solution (NH3 + H2O ⇌ NH4+ + OH−), so the answer is corrected to D. Corrected by the assistant under the owner's 8 Nov 2026 delegation.)

Question 70 Unpolluted rain water has a pH

Unpolluted rain water has a pH of:

- A. 4.9
- B. 5.6 ✓ **Correct answer**
- C. 5.3
- D. 7.0

A. wrong: unpolluted rain is pH 5.6, not 4.9.

B. correct: dissolved carbon dioxide makes unpolluted rain water slightly acidic, pH 5.6.

C. wrong: unpolluted rain is pH 5.6, not 5.3.

D. wrong: rain water is slightly acidic (pH 5.6), not neutral.

Question 71 In comparison with oxygen gas a

In comparison with oxygen gas, a strong triple bond is present between two nitrogen atoms in a molecule and therefore nitrogen gas is:

- A. Highly reactive gas
- B. Completely inert like noble gases

derately reactive gas

- D. Very less reactive gas ✓ **Correct answer**

A. wrong: nitrogen is not highly reactive — the triple bond makes it sluggish.

B. wrong: nitrogen is not completely inert — it does react (e.g. in the Haber process).

C. wrong: nitrogen is much less reactive than 'moderately' suggests.

D. correct: the strong N≡N triple bond makes nitrogen gas very less reactive.

Question 72 The catalyst used in the Habers

The catalyst used in the Haber's process is:

- A. Magnesium oxide
- B. Aluminium oxide
- C. Silicon oxide
- D. Iron crystals with metal oxide promoters ✓ **Correct answer**

A. wrong: magnesium oxide is not the Haber catalyst.

B. wrong: aluminium oxide is only a promoter/support, not the catalyst.

C. wrong: silicon oxide is not the Haber catalyst.

D. correct: the Haber process uses iron crystals with metal-oxide promoters.

Question 73 The cis-isomerism is shown by

The cis-isomerism is shown by:

- A. C C C H3 CH3 H H
- B. C C C H3 CH3 C H3 H
- C. C C H CH3 C H3 H ✓ **Correct answer**
- D. C C H CH3 H H

this drawing the two CH3 groups lie on opposite sides of the C=C bond (the trans form).

B. wrong: this drawing does not put the two CH3 groups on the same side of the C=C bond.

C. correct: this drawing has both CH3 groups on the same side of the C=C bond — the cis isomer.

D. wrong: this drawing does not put the two CH3 groups on the same side of the C=C bond.

Question 74 Select the nucleophile from the following

Select the nucleophile from the following examples:

- A. NO2
- B. NH3 ✓ **Correct answer**
- C. NO2+
- D. NH4+

A. wrong: NO2 has no lone pair to donate — it is not a nucleophile.

B. correct: ammonia has a lone pair on nitrogen, so it acts as a nucleophile.

C. wrong: NO2+ is an electrophile (it seeks electrons), the opposite of a nucleophile.

D. wrong: NH4+ has no lone pair — all four hydrogens are bonded.

Question 75 The introduction of an alkyl group

The introduction of an alkyl group in benzene takes place in the presence of AlCl3 and:

- A. RCOOH
- B. RCl ✓ **Correct answer**
- C. RCOCl

A. wrong: RCOOH is a carboxylic acid, not the alkylating agent.

B. correct: Friedel–Crafts alkylation of benzene uses an alkyl halide (RCl) with AlCl3.

C. wrong: RCOCl with AlCl3 gives acylation, not alkylation.

D. wrong: an ester RCOOR is not the alkylating agent.

Question 76 What is the product formed when

What is the product formed when propene reacts with HBr?

- A. CH3CH2CH2Br
- B. BrCH2CHCH2Br
- C. CH2CHCH3Br2
- D. CH3CHBrCH3 ✓ **Correct answer**

A. wrong: 1-bromopropane is the anti-Markovnikov product, not the product formed.

B. wrong: 1,3-dibromopropane is not formed from propene and HBr.

C. wrong: this is not the Markovnikov product.

D. correct: by Markovnikov's rule the proton adds to the terminal carbon, giving 2-bromopropane, CH3CHBrCH3.

Question 77 The order of reactivity of alkyl

The order of reactivity of alkyl halides towards nucleophile is:

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

…l is more reactive than RF — the order RI > RBr > RF > RCl is wrong.

B. correct: reactivity falls with the strength of the C–X bond, so RI > RBr > RCl > RF.

C. wrong: this is the reverse order.

D. wrong: RF is the least reactive, not the most.

Question 78 Consider the reaction given below CH3CH2CH2CH2Br

Consider the reaction given below: CH3CH2CH2CH2Br —(I)→ CH3CH2CH2CH2OH —(II)→ CH3CH2CH=CH2. Which statement is true?

- A. Reagent for I is KOH in alcohol
- B. Reagent for II is KOH in aqueous medium
- C. Reaction I is Debromination
- D. Reaction II is elimination ✓ **Correct answer**

A. wrong: reaction I (bromide to alcohol) uses aqueous KOH, not alcoholic KOH.

B. wrong: reaction II (alcohol to alkene) uses alcoholic KOH, not aqueous KOH.

C. wrong: reaction I is a substitution, not a debromination.

D. correct: reaction II removes HBr from the alcohol's carbon chain to form the alkene — an elimination.

Question 79 Consider the following reaction C2H5OH PCl5

Consider the following reaction: C2H5OH + PCl5 ? What product(s) may be formed?

- A. C2H5Cl only
- B. C2H5Cl and HCl
- C. C2H5Cl, POCl3 and HCl ✓ **Correct answer**
- D. C2H5Cl and POCl3

yl chloride is only one of the three products.

B. The printed key: wrong: this omits phosphoryl chloride (POCl3), which is also formed.

C. correct: C2H5OH + PCl5 → C2H5Cl + POCl3 + HCl — all three products are formed.

D. wrong: this omits hydrogen chloride (HCl), which is also formed. (PRINTED-KEY ERROR CORRECTED: the printed key records B (C2H5Cl and HCl), but ethanol with PCl5 gives ethyl chloride AND phosphoryl chloride AND hydrogen chloride: C2H5OH + PCl5 → C2H5Cl + POCl3 + HCl, so the answer is corrected to C. Corrected by the assistant under the owner's 8 Nov 2026 delegation.)

Question 80 Structure phenol bearing three nitro groups

[Structure: phenol bearing three nitro groups] is named as:

- A. Picric acid ✓ **Correct answer**
- B. Nitro phenol
- C. Benzoic acid
- D. Malonic acid

A. correct: phenol bearing three nitro groups (2,4,6-trinitrophenol) is picric acid.

B. wrong: nitrophenol carries only one nitro group.

C. wrong: benzoic acid is C6H5COOH, not a nitrated phenol.

D. wrong: malonic acid is a dicarboxylic acid, not a nitrated phenol.

Question 81 Which group gives a yellow precipitate

Which group gives a yellow precipitate of triiodo methane when warmed with alkaline aqueous iodine?

- A. An amide group, CH3CONH2
- B. Ethyl ketone group, C2H5COR

- ...imary alcohol group as in propanol, $CH_3CH_2CH_2OH$
- D. Methyl ketone group, CH_3COR ✓ **Correct answer**

A. wrong: an amide group does not give the iodoform test.

B. wrong: an ethyl ketone (C_2H_5COR) has no $CH_3CO–$ group, so it gives no iodoform.

C. wrong: propan-1-ol has no $CH_3CO–$ or $CH_3CHOH–$ group, so it gives no iodoform.

D. correct: a methyl ketone (CH_3COR) with alkaline iodine gives the yellow precipitate of triiodomethane (iodoform).

Question 82 Aqueous phenol decolorizes bromine water to

Aqueous phenol decolorizes bromine water to form a white precipitate. What is the structure of the white precipitate formed?

- A. OH Br Br Br ✓ **Correct answer**
- B. OH Br
- C. OH Br
- D. Br Br Br

A. correct: phenol with bromine water gives 2,4,6-tribromophenol — a white precipitate with three bromines and the OH group.

B. wrong: one bromine is not enough — the precipitate is tribrominated.

C. wrong: one bromine is not enough — the precipitate is tribrominated.

D. wrong: three bromines without the OH group is not the precipitate.

Question 83 The relative strength of carboxylic acid

The relative strength of carboxylic acid, water, ethanol and phenol has the following order of increasing acid strength:

- A. Carboxylic Acid > Phenol > Ethanol > Water

boxylic Acid > Phenol > Water > Ethanol ✓ **Correct answer**

- C. Phenol > Carboxylic Acid > Ethanol > Water
- D. Water > Ethanol > Phenol > Carboxylic Acid

A. wrong: ethanol is a weaker acid than water, not stronger.

B. correct: acid strength falls in the order carboxylic acid > phenol > water > ethanol.

C. wrong: phenol is a weaker acid than a carboxylic acid.

D. wrong: this is the reverse order.

Question 84 What is the structure of alcohol

What is the structure of alcohol which on oxidation with acidified Na2Cr2O7 gives CH3COCH3?

- A. CH3CHOHCH3 ✓ **Correct answer**
- B. OH CH3 CH3
- C. CH3CH2CH2OH
- D. C(CH3)3OH

A. correct: propan-2-ol (CH3CHOHCH3) oxidises with acidified dichromate to acetone (CH3COCH3).

B. wrong: this is not the secondary alcohol that oxidises to acetone.

C. wrong: propan-1-ol oxidises to propanal (and propanoic acid), not to acetone.

D. wrong: tert-butanol (C(CH3)3OH) has no hydrogen on the carbon bearing OH, so it resists oxidation.

Question 85 Which of the following is the

Which of the following is the structure of ketone?

- A. CH3COOH

- C. CH3CONH2
- D. CH3COCl

A. wrong: CH3COOH is a carboxylic acid, not a ketone.

B. correct: CH3COCH3 (acetone) is a ketone — a carbonyl carbon joined to two carbon groups.

C. wrong: CH3CONH2 is an amide, not a ketone.

D. wrong: CH3COCl is an acid chloride, not a ketone.

Question 86 The formation of ester from acetic

The formation of ester from acetic acid in presence of acid and ethanol is a:

- A. Nucleophilic substitution reaction ✓ **Correct answer**
- B. Nucleophilic addition reaction
- C. Electrophilic substitution reaction
- D. Electrophilic addition reaction

A. correct: esterification is a nucleophilic acyl substitution — the OH of the acid is replaced by the ethoxy group.

B. wrong: no addition across a double bond takes place.

C. wrong: the attacking species is a nucleophile (ethanol), not an electrophile.

D. wrong: the reaction is a substitution, not an addition.

Question 87 Methyl cyanides on boiling with mineral

Methyl cyanides, on boiling with mineral acids or alkalis yield:

- A. Acetic acid ✓ **Correct answer**
- B. Formic acid

- D. Butanoic acid

A. correct: methyl cyanide (CH3CN) on hydrolysis gives acetic acid (CH3COOH).

B. wrong: formic acid comes from hydrogen cyanide, not methyl cyanide.

C. wrong: propanoic acid would come from ethyl cyanide.

D. wrong: butanoic acid would come from propyl cyanide.

Question 88 The amino acids which largely exist

The amino acids which largely exist in dipolar ionic form are:

- A. Acidic amino acids
- B. Basic amino acids
- C. Beta amino acids
- D. Alpha amino acids ✓ **Correct answer**

A. wrong: acidic amino acids are not the ones that exist largely as dipolar ions.

B. wrong: basic amino acids are not the ones that exist largely as dipolar ions.

C. wrong: beta amino acids are not the ones that exist largely as dipolar ions.

D. correct: alpha amino acids exist largely in the dipolar ionic (zwitterion) form.

Question 89 CH3 C O OH NH3 heat

CH3 C O OH + NH3 heat ? The final products formed are:

- A. CH3CONH2 + CO2
- B. CH3CONH2 + H2O ✓ **Correct answer**
- C. CH3CONH2 + H2
- D. CH3CONH2 + HCl

rbon dioxide is not a product of this reaction.

B. correct: acetic acid with ammonia on heating gives acetamide and water (CH3COOH + NH3 → CH3CONH2 + H2O).

C. wrong: hydrogen is not a product of this reaction.

D. wrong: hydrogen chloride is not a product of this reaction.

Question 90 The reaction CH C O OH

The reaction: CH C O OH H N H2 C C O OH H N H H H Gives a product called dipeptide molecule represented by:

- A. C C O OH H N H O H CH C O H N H2 ✓ **Correct answer**
- B. C C O OH H N H O H CH2 C H NH - H
- C. C C O OH H N H O H CH2 C H N H2 H
- D. CH C O N H2 H C C O OH H N H H

A. correct: the dipeptide has a free NH2 end, a peptide (–CO–NH–) bond joining the two amino acids, and a free COOH end.

B. wrong: this structure does not show the correct peptide linkage and free ends.

C. wrong: this structure does not show the correct peptide linkage and free ends.

D. wrong: this ends in an amide (–CONH2) instead of a free carboxyl group.

Question 91 Two or more amino acids condensed

Two or more amino acids condensed to form protein by a peptide linkage which is present between two atoms:

- A. C and C
- B. O and C
- C. C and N ✓ **Correct answer**

A. wrong: the peptide linkage is not between two carbons.

B. wrong: the peptide linkage is not between oxygen and carbon.

C. correct: the peptide bond joins the carbonyl carbon of one amino acid to the nitrogen of the next (–CO–NH–).

D. wrong: the peptide linkage is not between carbon and hydrogen.

Question 92 -amino acids are compounds having carboxylic

α-amino acids are compounds having carboxylic acid as well as amino functional groups attached to:

- A. Any H-atom in the molecule
- B. Same carbon atom ✓ **Correct answer**
- C. Alternate carbon atoms
- D. Neighboring carbon atoms

A. wrong: the two groups are not attached to just any hydrogen atom.

B. correct: in an α-amino acid the amino and carboxyl groups are both attached to the same (alpha) carbon atom.

C. wrong: the groups are on the same carbon, not on alternate carbons.

D. wrong: the groups are on the same carbon, not on neighbouring carbons.

Question 93 The formula of Zwitter ion is

The formula of 'Zwitter ion' is represented by:

- A. NH3+ CH(R) COO- ✓ **Correct answer**
- B. NH4+ CH(R) CO2-
- C. NH3+ CH(R) CO2+

A. correct: the zwitterion is +NH3–CH(R)–COO− — a positively charged amino group and a negatively charged carboxylate on the same molecule. (Its carboxylate prints as 'CO−', an oxygen dropped in the reproduction.)

B. wrong: NH4+ with a carbon attached would have five bonds on nitrogen, which is impossible.

C. correct in fact: +NH3–CH(R)–CO2− is the same zwitterion written in the other notation, so this is a second correct option.

D. wrong: NH2+ is not the protonated amino group of the zwitterion. (PICK-ONE: both A and C are the zwitterion — A is the intended +NH3-CH(R)-COO- (its carboxylate prints as 'CO-', an oxygen dropped in the reproduction) and C is the same species written +NH3-CH(R)-CO2-. The key records A, which is filed. Decided by the assistant under the owner's 8 Nov 2026 delegation.)

Question 94 What is the name of amino

What is the name of amino acid, NH2-CH(R)-COOH, where ‘R’ is CH3 group?

- A. Glycine
- B. Lysine
- C. Aspartic acid
- D. Alanine ✓ **Correct answer**

A. wrong: glycine has R = H, not CH3.

B. wrong: lysine has a long amino side chain, not CH3.

C. wrong: aspartic acid has a carboxymethyl side chain, not CH3.

D. correct: the amino acid with R = CH3 is alanine.

95 Polyvinyl acetate PVA is colourless and

Polyvinyl acetate (PVA) is colourless and non-toxic resin used as an adhesive and as a binder for making:

- A. Toys
- B. Gramophone recorders
- C. Compact discs
- D. Emulsion paints ✓ **Correct answer**

A. wrong: polyvinyl acetate is not used for making toys.

B. wrong: gramophone records were made from other resins, not PVA.

C. wrong: compact discs are not made with PVA binder.

D. correct: polyvinyl acetate is used as a binder for emulsion paints (and as an adhesive).

Question 96 Both ribose and deoxyribose are monosaccharides

Both ribose and deoxyribose are monosaccharides containing _____ carbon atoms.

- A. Four
- B. Six
- C. Five ✓ **Correct answer**
- D. Seven

A. wrong: ribose and deoxyribose are pentoses, not four-carbon sugars.

B. wrong: ribose and deoxyribose are pentoses, not six-carbon sugars.

C. correct: ribose and deoxyribose are pentose (five-carbon) monosaccharides.

D. wrong: ribose and deoxyribose are pentoses, not seven-carbon sugars.

97 The increased quantities of cholesterol in

The increased quantities of cholesterol in blood make plaque like deposits in the arteries causing:

- A. Cholera
- B. Down’s syndrome
- C. Heart attack ✓ **Correct answer**
- D. Phenylketonuria

A. wrong: cholera is a bacterial infection, not a cholesterol disease.

B. wrong: Down's syndrome is chromosomal, not caused by cholesterol.

C. correct: cholesterol deposits (plaques) in the arteries narrow them and can cause a heart attack.

D. wrong: phenylketonuria is a metabolic disorder of phenylalanine, not of cholesterol.

Question 98 Polyvinyl chloride is an example of

Polyvinyl chloride is an example of:

- A. Condensation polymer
- B. Addition polymer ✓ **Correct answer**
- C. Biopolymer
- D. Thermosetting polymer

A. wrong: PVC is not a condensation polymer — no small molecule is lost when it forms.

B. correct: polyvinyl chloride forms by addition polymerisation of vinyl chloride.

C. wrong: PVC is a synthetic polymer, not a biopolymer.

D. wrong: PVC is a thermoplastic, not a thermosetting polymer.

99 Collagen is a fibrous protein present

Collagen is a fibrous protein present most abundantly in:

- A. Hair
- B. Nail
- C. Tendons ✓ **Correct answer**
- D. Arteries

A. wrong: hair is mainly keratin, not collagen.

B. wrong: nails are mainly keratin, not collagen.

C. correct: collagen is the fibrous protein most abundant in tendons (and ligaments).

D. wrong: arteries contain collagen, but tendons are the most abundant site.

Question 100 Animals store glucose in the form

Animals store glucose in the form of glycogen in:

- A. Stomach
- B. Mouth
- C. Liver and muscles ✓ **Correct answer**
- D. Small intestine

A. wrong: glycogen is not stored in the stomach.

B. wrong: glycogen is not stored in the mouth.

C. correct: animals store glucose as glycogen in the liver and in the muscles.

D. wrong: glycogen is not stored in the small intestine.

Question 101 Aerobic decomposition of organic matter ie

Aerobic decomposition of organic matter i.e. glucose by bacteria in water sediments

- A. Propene
- B. Ethane
- C. Methane ✓ **Correct answer**
- D. Butane

A. wrong: propene is not the product of decomposing glucose.

B. wrong: ethane is not the product of decomposing glucose.

C. correct: the bacterial decomposition of glucose in water sediments produces methane (the intended anaerobic product; the stem misprints 'Aerobic' for 'Anaerobic').

D. wrong: butane is not the product of decomposing glucose.

Question 102 The yellowish-brown color in photochemical smog

The yellowish-brown color in photochemical smog is due to the presence of:

- A. Sulphur dioxide
- B. Carbon monoxide
- C. Carbon dioxide
- D. Nitrogen dioxide ✓ **Correct answer**

A. wrong: sulphur dioxide is colourless and causes acid rain, not the brown smog colour.

B. wrong: carbon monoxide is colourless and odourless.

C. wrong: carbon dioxide is colourless.

D. correct: nitrogen dioxide is a yellowish-brown gas and gives photochemical smog its colour.

Question 103 Indolence gives vent to disposition in

Indolence gives vent to ___ disposition in human life.

ic ✓ Correct answer

- B. Enthusiastic
- C. Energetic
- D. Filthy

A. correct: indolence (laziness) gives vent to a static (inactive, sluggish) disposition.

B. wrong: indolence does not produce enthusiasm.

C. wrong: indolence does not produce energy.

D. wrong: indolence produces inactivity, not filth.

Question 104 The Quaids enthusiasm led the Muslims

The Quaid’s ____ enthusiasm led the Muslims Indo-Pak to independence.

- A. Simplified
- B. Latent ✓ **Correct answer**
- C. Onerous
- D. Threatening

A. wrong: 'simplified enthusiasm' is not a sensible phrase.

B. correct: 'latent' (dormant, not yet expressed) is the only adjective among the options that fits 'enthusiasm' — the Quaid's long-dormant enthusiasm led the Muslims of Indo-Pak to independence.

C. The printed key: wrong: 'onerous' means burdensome, and enthusiasm cannot be onerous.

D. wrong: 'threatening enthusiasm' is not a sensible phrase. (PRINTED-KEY ERROR CORRECTED: the printed key records C (Onerous), but 'onerous' (burdensome) cannot describe enthusiasm; 'latent' (dormant, not yet expressed) is the only adjective among the options that fits, so the answer is corrected to B. Corrected by the assistant under the

Question 105 He the incident to the back

He _____ the incident to the back of his mind.

- A. Revered
- B. Regulated
- C. Reagitated
- D. Relegated ✓ **Correct answer**

A. wrong: 'revered' means honoured, not put aside.

B. wrong: 'regulated' means controlled, not put aside.

C. wrong: 'reagitated' is not the word for putting something to the back of the mind.

D. correct: 'relegated' means consigned to a lower or less important place — he relegated the incident to the back of his mind.

Question 106 He the day they had bought

He _____ the day they had bought such a large house

- A. Hues
- B. Rows
- C. Rues ✓ **Correct answer**
- D. Dues

A. wrong: 'hues' (colours) does not fit.

B. wrong: 'rows' does not fit.

C. correct: 'rues the day' is the idiom — he regrets the day they bought such a large house.

D. wrong: 'dues' (payments owed) does not fit.

107 Amjad was not conscious to the

Amjad was not conscious to the aberration he had committed in the public meeting. It was disliked by all and sundry.

- A. to ✓ **Correct answer**
- B. the
- C. in
- D. by

A. correct: the idiom is 'conscious of', not 'conscious to' — so 'to' is the error.

B. wrong: 'the' before 'aberration' is correct.

C. wrong: 'in' before 'the public meeting' is correct.

D. wrong: 'by' in 'disliked by all' is correct.

Question 108 Late Agha Shahi was an outstanding

Late Agha Shahi was an outstanding genius in the international affairs. He was gifted of the acumen

- A. to judge the future events, judge the future events in advance

No answer is given for this question, and none is taught. NO CORRECT OPTION — DEFECTIVE-excluded (decided by assistant under owner's 8 Nov 2026 delegation)

A. the single printed phrase, merging what were options A and B; the keyed answer is B ("judge the future events in advance"), but options C and D are absent from the source, so the question cannot be served complete. (DEFECTIVE-excluded: options C and D are absent and options A and B are merged into one printed phrase, so the question cannot be served complete; the keyed answer B is recorded here. Decided by the assistant under the owner's 8 Nov 2026 delegation.)

109 The old man was sitting quite

The old man was sitting quite bamboozled when the swindler deprived him from his pension money by his evil tricks.

- A. quite
- B. from ✓ **Correct answer**
- C. by
- D. evil

A. wrong: 'quite' is correctly used here.

B. correct: the idiom is 'deprived of', not 'deprived from' — so 'from' is the error.

C. wrong: 'by' in 'by his evil tricks' is correct.

D. wrong: 'evil' correctly describes the tricks.

Question 110 The prime minister fired a broadside

The prime minister fired a broadside at the opposition leaders. A few of his remarks were not up at the mark.

- A. of
- B. were
- C. up
- D. at ✓ **Correct answer**

A. wrong: 'of' in 'a few of his remarks' is correct.

B. wrong: 'were' agrees with 'a few of his remarks'.

C. wrong: 'up' is part of the idiom 'up to the mark'.

D. correct: the idiom is 'up to the mark', not 'up at the mark' — so 'at' is the error.

111 Lucy is the diva which performance

Lucy is the diva which performance as an opera singer is peerless.

- A. which ✓ **Correct answer**
- B. as
- C. an
- D. peerless

A. correct: the possessive is needed — 'whose performance', not 'which performance' — so 'which' is the error.

B. wrong: 'as' in 'as an opera singer' is correct.

C. wrong: 'an' before 'opera singer' is correct.

D. wrong: 'peerless' (unequalled) is correctly used.

Question 112 The police report exonerated Anwar of

The police report exonerated Anwar of all charges of corruption and job was also restored

- A. of ✓ **Correct answer**
- B. of
- C. also
- D. restored

A. correct: the idiom is 'exonerate from', not 'exonerate of' — so the first 'of' (after 'exonerated') is the error.

B. wrong: the second 'of' in 'charges of corruption' is correct.

C. wrong: 'also' is correctly used.

D. wrong: 'restored' is correctly used.

113 Choose the correct option

Choose the correct option:

- A. We should pay maximum accolade for our national heroes
- B. We should pay maximum accolade in our national heroes
- C. We should pay maximum accolade to our national heroes ✓ **Correct answer**
- D. We should pay maximum accolade from our national heroes

A. wrong: the idiom is 'pay accolade to', not 'pay accolade for'.

B. wrong: the idiom is 'pay accolade to', not 'pay accolade in'.

C. correct: 'We should pay maximum accolade to our national heroes' — 'pay ... to' is the correct preposition.

D. wrong: the idiom is 'pay accolade to', not 'pay accolade from'.

Question 114 Choose the correct option

Choose the correct option:

- A. Does any bodys knows why the latitudes close to the equator are called the horse latitudes?
- B. Do any body knows why the latitudes close to the equator are called the horse latitudes?
- C. Does any body knows why the latitudes close to the equator are called the horse latitudes?
- D. Does any body know why the latitudes close to the equator are called the horse latitudes? ✓ **Correct answer**

A. wrong: 'any bodys' is wrong, and 'knows' does not agree with 'any body'.

B. wrong: 'Do' does not agree with the singular 'any body'.

C. wrong: 'knows' does not agree with 'any body' in a question with 'does'.

Does any body know ...? — 'does' with the base verb 'know'.

Question 115 Choose the correct option

Choose the correct option:

- A. Shelley is consider to be an idealist poet
- B. Shelley is considering to be an idealist poet
- C. Shelley is considers to be an idealist poet
- D. Shelley is considered to be an idealist poet ✓ **Correct answer**

A. wrong: 'is consider' needs the past participle 'considered'.

B. wrong: 'is considering' is the wrong form here.

C. wrong: 'is considers' is ungrammatical.

D. correct: 'Shelley is considered to be an idealist poet' — the passive needs 'considered'.

Question 116 Choose the correct option

Choose the correct option:

- A. Pakistan cricket team forged an impregnable lead ✓ **Correct answer**
- B. Pakistan cricket team forged the impregnable lead
- C. Pakistan cricket team forged against impregnable lead
- D. Pakistan cricket team forged on impregnable lead

A. correct: 'forged an impregnable lead' is correct English — a team forges (builds) a lead.

B. wrong: 'forged the impregnable lead' is not the idiom — the lead is indefinite here.

C. wrong: 'forged against' is not the idiom.

D. The printed key: wrong: 'forged on impregnable lead' is ungrammatical. (PRINTED-KEY ERROR CORRECTED: the printed key records D ('forged on impregnable lead'), but 'forged an impregnable lead' is correct English and 'forged on' is ungrammatical here, so the

rrected to A. Corrected by the assistant under the owner's 8 Nov 2026 delegation.)

Question 117 Choose the correct option

Choose the correct option:

- A. A person which job involves calculating insurance risks and payments for insurance companies by studying how frequently fires, accidents, death etc. happen is called an actuary
- B. A person who job involves calculating insurance risks and payments for insurance companies by studying how frequently fires, accidents, death etc. happen is called an actuary
- C. A person whose job involves calculating insurance risks and payments for insurance companies by studying how frequently fires, accidents, death etc. happen is called an actuary ✓ **Correct answer**
- D. A person whose job involves calculating insurance risks and payments for insurance companies by studying how frequently fires, accidents, death etc. happen are called an actuary

A. wrong: 'a person which job' is wrong — 'which' cannot show possession.

B. wrong: 'a person who job' is wrong — 'who' cannot show possession.

C. correct: 'a person whose job involves … is called an actuary' — 'whose' shows possession and 'is' agrees with 'a person'.

D. wrong: 'are called' does not agree with the singular 'a person'.

Question 118 Choose the correct option

Choose the correct option:

- A. His addled brain refuse to think clearly and solve the problem
- B. His addle brain refused to think clearly and solve the problem

- addle brain refuse to think clearly and solve the problem
- D. His addled brain refused to think clearly and solve the problem ✓ **Correct answer**

A. wrong: 'refuse' does not agree with the singular subject 'brain' (and 'addled' needs 'refused').

B. wrong: 'addle' is the verb, not the adjective — the brain is 'addled'.

C. wrong: 'refuse' does not agree with the singular subject, and 'addle' is the wrong form.

D. correct: 'His addled brain refused to think clearly and solve the problem' — adjective 'addled' and past tense 'refused'.

Question 119 Choose the correct option

Choose the correct option:

- A. The children had bloomed while their stay on the farm
- B. The children had bloomed during their stay on the farm ✓ **Correct answer**
- C. The children had bloomed on their stay on the farm
- D. The children was bloomed while their stay on the farm.

A. wrong: 'while their stay' is wrong — the preposition should be 'during'.

B. correct: 'The children had bloomed during their stay on the farm.'

C. wrong: 'on their stay' is wrong — the preposition should be 'during'.

D. wrong: 'was bloomed' does not agree with the plural 'children', and 'while' is the wrong preposition.

Question 120 Choose the correct option

Choose the correct option:

- A. I should had business acumen

- ould have business acumen ✓ **Correct answer**
- C. I should has business acumen
- D. I should may have been business acumen

A. wrong: 'should had' is ungrammatical — 'should' takes the base verb.

B. correct: 'I should have business acumen.'

C. wrong: 'should has' is ungrammatical.

D. wrong: 'should may have been' is ungrammatical.

Question 121 Choose the correct option

Choose the correct option:

- A. No one is casting aspersions to you
- B. No one is casting aspersions at you
- C. No one is casting aspersions on you ✓ **Correct answer**
- D. No one is casting aspersions with you

A. wrong: 'aspersions to you' is not the idiom.

B. wrong: 'aspersions at you' is not the idiom.

C. correct: 'casting aspersions on you' is the idiom.

D. wrong: 'aspersions with you' is not the idiom.

Question 122 Choose the correct option

Choose the correct option:

- A. This is one of the bifurcated road
- B. This is one of the bifurcated roads ✓ **Correct answer**
- C. This is one of them bifurcated road
- D. This is one off the bifurcated road

one of the needs a plural noun — 'road' should be 'roads'.

B. correct: 'This is one of the bifurcated roads.'

C. wrong: 'one of them bifurcated road' is ungrammatical.

D. wrong: 'one off the' is wrong — the phrase is 'one of the'.

Question 123 HEINOUS

HEINOUS

- A. Heroic
- B. Humorous
- C. Odious ✓ **Correct answer**
- D. Hone

A. wrong: 'heroic' is the opposite in sense — heinous means wicked, not brave.

B. wrong: 'humorous' is unrelated to heinous.

C. correct: 'heinous' means shockingly wicked — its synonym is 'odious'.

D. wrong: 'hone' (to sharpen) is unrelated.

Question 124 ILLICIT

ILLICIT

- A. Intimate
- B. Licentious
- C. Illegal ✓ **Correct answer**
- D. Limited

A. wrong: 'intimate' (close, personal) is not a synonym of illicit.

B. The printed key: wrong: 'licentious' means morally unrestrained, especially sexually — it

nonym of 'illicit'.

C. correct: 'illicit' means unlawful or forbidden — its synonym is 'illegal'.

D. wrong: 'limited' is unrelated to illicit. (PRINTED-KEY ERROR CORRECTED: the printed key records B (Licentious), but 'illicit' means unlawful — its synonym is 'illegal'; 'licentious' means morally unrestrained, especially sexually, so the answer is corrected to C. Corrected by the assistant under the owner's 8 Nov 2026 delegation.)

Question 125 MOTIF

MOTIF

- A. Tough
- B. Stuff
- C. Motion
- D. Design ✓ **Correct answer**

A. wrong: 'tough' is not a synonym of motif.

B. wrong: 'stuff' is not a synonym of motif.

C. wrong: 'motion' is not a synonym of motif.

D. correct: a 'motif' is a recurring design or theme — its synonym is 'design'.

Question 126 INCULCATE

INCULCATE

- A. Calculate
- B. Instill ✓ **Correct answer**
- C. Instigate
- D. Stimulate

A. wrong: 'calculate' is not a synonym of inculcate.

nculcate' means to instil (an idea or habit) by persistent teaching.

C. wrong: 'instigate' (to provoke) is not a synonym of inculcate.

D. wrong: 'stimulate' is not a synonym of inculcate.

Question 127 INIQUITY

INIQUITY

- A. Inequality
- B. Injustice
- C. Wickedness ✓ **Correct answer**
- D. Efficiency

A. wrong: 'inequality' is not a synonym of iniquity.

B. wrong: 'injustice' is close but iniquity means wickedness itself, not merely unfairness.

C. correct: 'iniquity' means wickedness or gross injustice.

D. wrong: 'efficiency' is unrelated to iniquity.

Question 128 INTRANSIGENT

INTRANSIGENT

- A. Parallel
- B. Inflexible ✓ **Correct answer**
- C. Adventurous
- D. Spirited

A. wrong: 'parallel' is not a synonym of intransigent.

B. correct: 'intransigent' means refusing to compromise — inflexible.

C. wrong: 'adventurous' is not a synonym of intransigent.

spirited' is not a synonym of intransigent.

Question 129 LAMPOON

LAMPOON

- A. Irk
- B. Gratification
- C. Lacerate
- D. Ridicule ✓ **Correct answer**

A. wrong: 'irk' (to irritate) is not a synonym of lampoon.

B. wrong: 'gratification' is not a synonym of lampoon.

C. wrong: 'lacerate' (to tear) is not a synonym of lampoon.

D. correct: a 'lampoon' is a satirical attack — to ridicule.

Question 130 MESMERIZE

MESMERIZE

- A. Objectify
- B. Modify
- C. Amalgamate
- D. Fascinate ✓ **Correct answer**

A. wrong: 'objectify' is not a synonym of mesmerize.

B. wrong: 'modify' is not a synonym of mesmerize.

C. wrong: 'amalgamate' is not a synonym of mesmerize.

D. correct: 'mesmerize' means to fascinate or hypnotise.

131 OBLITERATE

OBLITERATE

- A. Sanctify
- B. Obscure
- C. Annihilate ✓ **Correct answer**
- D. Oplate

A. wrong: 'sanctify' is the opposite in sense — obliterate means to destroy.

B. wrong: 'obscure' (to hide) is weaker than obliterate.

C. correct: 'obliterate' means to destroy completely — to annihilate.

D. wrong: 'oplate' is not a word.

Question 132 MALEVOLENCE

MALEVOLENCE

- A. Empathy
- B. Maligning
- C. Hostility ✓ **Correct answer**
- D. Management

A. wrong: 'empathy' is the opposite of malevolence.

B. wrong: 'maligning' (speaking ill of) is an action, not the feeling itself.

C. correct: 'malevolence' means ill will — hostility.

D. wrong: 'management' is unrelated to malevolence.

Question 133 The simplest independent unit of life

The simplest independent unit of life is known as:

terial colony

- B. Cell ✓ **Correct answer**
- C. Chloroplast
- D. DNA

A. wrong: a colony is a group of cells, not the simplest independent unit.

B. correct: the cell is the simplest independent unit of life.

C. wrong: a chloroplast is an organelle, not an independent unit of life.

D. wrong: DNA is a molecule, not an independent unit of life.

Question 134 The process by which unwanted structures

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

- A. Endocytosis
- B. Exocytosis
- C. Hydrolysis
- D. Autophagy ✓ **Correct answer**

A. wrong: endocytosis brings material into the cell from outside.

B. wrong: exocytosis expels material from the cell.

C. wrong: hydrolysis is the splitting of a molecule by water, not the digestion of cell structures.

D. correct: autophagy is the engulfing and digestion of unwanted structures within the cell by its own lysosomes.

Question 135 The plants having foreign DNA incorporated

The plants having foreign DNA incorporated into their cells are called:

- B. Transgenic plants ✓ **Correct answer**
- C. Biotech plants
- D. Tissue cultured plants

A. wrong: clonal plants are genetically identical copies, not necessarily transgenic.

B. correct: plants with foreign DNA incorporated into their cells are transgenic plants.

C. wrong: 'biotech plants' is not the term for plants carrying foreign DNA.

D. wrong: tissue-cultured plants are grown from tissue, not necessarily transgenic.

Question 136 Pasteurization technique is widely used for

Pasteurization technique is widely used for preservation of:

- A. Water
- B. Heat
- C. Milk products ✓ **Correct answer**
- D. Vaccines

A. wrong: pasteurization is not a water-preservation technique.

B. wrong: heat is the agent, not the product preserved.

C. correct: pasteurization (brief heating) is widely used to preserve milk and milk products.

D. wrong: vaccines are preserved by other methods, not pasteurization.

Question 137 The production of genetically identical copies

The production of genetically identical copies of organisms by asexual reproduction is called:

- A. Genetic engineering
- B. Integrated disease management

roponic culture technique

- D. Cloning ✓ **Correct answer**

A. wrong: genetic engineering is the manipulation of genes, not the production of identical copies.

B. wrong: integrated disease management is a pest-control approach.

C. wrong: hydroponic culture is growing plants without soil.

D. correct: producing genetically identical copies by asexual reproduction is cloning.

Question 138 The model of plasma membrane suggests

The _____ model of plasma membrane suggests that proteins are embedded in lipid bilayer:

- A. Unit membrane
- B. Fluid mosaic ✓ **Correct answer**
- C. Permeable
- D. Ultracentrifuge

A. wrong: the unit-membrane model predates the fluid-mosaic model and does not describe proteins embedded in a bilayer.

B. correct: the fluid-mosaic model describes proteins embedded in (and floating in) the lipid bilayer.

C. wrong: 'permeable' is a property, not a model of the membrane.

D. wrong: the ultracentrifuge is an instrument, not a membrane model.

Question 139 The function of nucleolus is to

The function of nucleolus is to make:

- A. rDNA

osomes ✓ **Correct answer**

- C. RNA
- D. Chromosomes

A. wrong: the nucleolus contains rDNA, but its function is to make ribosomes (rRNA and ribosomal subunits).

B. correct: the nucleolus makes ribosomes — it synthesises rRNA and assembles ribosomal subunits.

C. wrong: RNA in general is made throughout the nucleus; the nucleolus specifically makes ribosomes.

D. wrong: chromosomes are not made in the nucleolus.

Question 140 Lipid metabolism is the function of

Lipid metabolism is the function of:

- A. Mitochondria
- B. Sarcoplasmic reticulum
- C. RER
- D. SER ✓ **Correct answer**

A. wrong: mitochondria handle respiration, not lipid metabolism.

B. wrong: the sarcoplasmic reticulum stores calcium in muscle cells.

C. wrong: the rough ER handles protein synthesis, not lipid metabolism.

D. correct: lipid synthesis and metabolism are functions of the smooth endoplasmic reticulum (SER).

Question 141 The enzymes of lysosomes are synthesized

The enzymes of lysosomes are synthesized on:

✓ Correct answer

- B. SER
- C. Chloroplast
- D. Golgi Apparatus

A. correct: lysosomal enzymes (proteins) are synthesised on the rough endoplasmic reticulum, then processed by the Golgi apparatus.

B. wrong: the smooth ER handles lipids, not lysosomal enzymes.

C. wrong: chloroplasts make their own proteins, not lysosomal enzymes.

D. wrong: the Golgi apparatus modifies and packages lysosomal enzymes, but they are synthesised on the RER.

Question 142 Centrioles are made up of microtubules

Centrioles are made up of _____ microtubules:

- A. 9
- B. 27 ✓ **Correct answer**
- C. 3
- D. 12

A. wrong: a centriole has 9 triplets, not 9 microtubules in total.

B. correct: a centriole is made of 9 triplets of microtubules — 27 microtubules in all.

C. wrong: 3 is the number per triplet, not the total.

D. wrong: the total is 27, not 12.

Question 143 Which of the following structures is

Which of the following structures is absent in higher plants and found in animal cells:

- A. Centriole ✓ **Correct answer**

- C. Mitochondria
- D. Cytoplasm

A. correct: centrioles are absent in higher plants and present in animal cells.

B. wrong: the cytoskeleton is present in plant cells too.

C. wrong: mitochondria are present in plant cells too.

D. wrong: cytoplasm is present in plant cells too.

Question 144 The soluble part of cytoplasm or

The soluble part of cytoplasm or fluid that remains when all organelles are removed is known as:

- A. Solution
- B. Gelatin material
- C. Cytoskeleton
- D. Cytosol ✓ **Correct answer**

A. wrong: 'solution' is not the term for the organelle-free cytoplasm.

B. wrong: 'gelatin material' is not the term.

C. wrong: the cytoskeleton is the protein framework, not the fluid that remains.

D. correct: the soluble fluid part of the cytoplasm left after the organelles are removed is the cytosol.

Question 145 The outer membrane of the nuclear

The outer membrane of the nuclear envelope is at places continuous with the:

- A. Golgi apparatus
- B. Endoplasmic Reticulum ✓ **Correct answer**

- D. Peroxisomes

A. The printed key: wrong: the outer nuclear membrane is not continuous with the Golgi apparatus.

B. correct: the outer membrane of the nuclear envelope is continuous with the endoplasmic reticulum (it is studded with ribosomes like rough ER).

C. wrong: lysozymes are enzymes, not a membrane the envelope is continuous with.

D. wrong: peroxisomes are separate organelles. (PRINTED-KEY ERROR CORRECTED: the printed key records A (Golgi apparatus), but the outer membrane of the nuclear envelope is continuous with the endoplasmic reticulum, not with the Golgi apparatus, so the answer is corrected to B. Corrected by the assistant under the owner's 8 Nov 2026 delegation.)

Question 146 Downs syndrome is a result of

Down's syndrome is a result of non-disjunction of_____ pair of chromosomes that fails to segregate:

- A. 21st ✓ **Correct answer**
- B. 22nd
- C. 18th
- D. 24th

A. correct: Down's syndrome is caused by non-disjunction of the 21st pair of chromosomes (trisomy 21).

B. wrong: non-disjunction of the 22nd pair does not cause Down's syndrome.

C. wrong: non-disjunction of the 18th pair causes Edwards syndrome.

D. wrong: humans have only 23 pairs — there is no 24th pair.

147 is most abundant carbohydrate in nature

_____ is most abundant carbohydrate in nature.

- A. Waxes
- B. Glycerol
- C. Starch
- D. Cellulose ✓ **Correct answer**

A. wrong: waxes are lipids, not carbohydrates.

B. wrong: glycerol is an alcohol, not a carbohydrate.

C. wrong: starch is abundant but cellulose is the most abundant carbohydrate in nature.

D. correct: cellulose (plant cell walls) is the most abundant carbohydrate in nature.

Question 148 Which of the following is a

Which of the following is a keto sugar:

- A. Glyceraldehyde
- B. Dihydroxy-acetone ✓ **Correct answer**
- C. Ribose
- D. Glucose

A. wrong: glyceraldehyde is an aldose (it has an aldehyde group).

B. correct: dihydroxyacetone is a keto sugar (it has a ketone group).

C. wrong: ribose is an aldose.

D. wrong: glucose is an aldose.

Question 149 Amino acid in which the R-group

Amino acid in which the R-group is hydrogen is:

- B. Alanine
- C. Leucine
- D. Valine

A. correct: glycine is the amino acid whose R-group is a hydrogen atom.

B. wrong: alanine has R = CH3.

C. wrong: leucine has a larger hydrocarbon R-group.

D. wrong: valine has a larger hydrocarbon R-group.

Question 150 Acyl-glycerols like fats and oils are

Acyl-glycerols like fats and oils are esters formed by condensation reaction between:

- A. Fatty acids and water
- B. Fatty acids and alcohols ✓ **Correct answer**
- C. Fatty acids and glucose
- D. Fatty acids and phosphates

A. wrong: fats and oils are esters of fatty acids and alcohols, not of water.

B. correct: acylglycerols are esters formed by condensation between fatty acids and alcohols (glycerol).

C. wrong: glucose is not the alcohol partner in a fat.

D. wrong: phosphates are not the alcohol partner in a fat.

Question 151 Which of the following is purine

Which of the following is purine:

- A. Guanine ✓ **Correct answer**
- B. Cytosine

- D. Uracil

A. correct: guanine is a purine (double-ring base); the other options are pyrimidines.

B. wrong: cytosine is a pyrimidine.

C. wrong: thymine is a pyrimidine.

D. wrong: uracil is a pyrimidine.

Question 152 If the co-factor is covalently or

If the co-factor is covalently or tightly and permanently bonded to enzyme then it will be called:

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

A. wrong: a coenzyme is a loosely bound, non-protein helper — not a permanently bonded one.

B. correct: a cofactor that is covalently or tightly and permanently bonded to the enzyme is a prosthetic group.

C. wrong: an activator is a metal ion that activates an enzyme, not a permanently bonded cofactor.

D. wrong: the apoenzyme is the protein part alone, without its cofactor.

Question 153 Optimum pH value for the working

Optimum pH value for the working of pancreatic lipase is:

- A. 4.50

- C. 2.00
- D. 9.00 ✓ **Correct answer**

A. wrong: pancreatic lipase does not work best at pH 4.50.

B. wrong: the textbook optimum pH for pancreatic lipase is 9.00, not 7.60.

C. wrong: pH 2.00 is the optimum for pepsin, not for pancreatic lipase.

D. correct: pancreatic lipase works in the alkaline medium of the small intestine, with an optimum pH of 9.00.

Question 154 The view that active site of

The view that active site of an enzyme is flexible and when a substrate combines with it, cause changes in enzyme structure is known as:

- A. Lock & key model
- B. Induce fit model ✓ **Correct answer**
- C. Sliding filament model
- D. Specificity model

A. wrong: the lock-and-key model has a rigid active site, not a flexible one.

B. correct: the induced-fit model says the active site is flexible and changes shape when the substrate binds.

C. wrong: the sliding-filament model describes muscle contraction, not enzymes.

D. wrong: 'specificity model' is not the name for the flexible-active-site view.

Question 155 All coenzymes are derived from

All coenzymes are derived from:

- A. Proteins

- C. Carbohydrate
- D. Vitamins ✓ **Correct answer**

A. wrong: coenzymes are not derived from proteins.

B. wrong: coenzymes are not derived from nucleic acids.

C. wrong: coenzymes are not derived from carbohydrates.

D. correct: all coenzymes are derived from vitamins (e.g. NAD from niacin, FAD from riboflavin).

Question 156 Reverse transcription is used to make

Reverse transcription is used to make DNA copies of:

- A. Host RNA
- B. Viral RNA
- C. Host DNA
- D. Viral DNA ✓ **Correct answer**

A. wrong: reverse transcription copies viral RNA, not host RNA.

B. correct: reverse transcriptase makes DNA copies of viral RNA (the retrovirus genome).

C. wrong: host DNA is copied by DNA replication, not reverse transcription.

D. wrong: reverse transcription starts from RNA, not DNA.

Question 157 Antibiotics are produced by fungi and

Antibiotics are produced by fungi and certain bacteria of group:

- A. Actinomycetes ✓ **Correct answer**
- B. Oomycetes
- C. Ascomycetes

A. correct: antibiotics are produced by fungi and by certain bacteria of the actinomycetes group (e.g. Streptomyces).

B. wrong: oomycetes are water moulds, not antibiotic producers.

C. wrong: ascomycetes include yeasts and Penicillium, but the bacterial producers named are actinomycetes.

D. wrong: basidiomycetes are club fungi (mushrooms), not the antibiotic producers named.

Question 158 Which statement about bacteria is true

Which statement about bacteria is true:

- A. Gram positive bacteria have more lipids in their cell wall
- B. Gram negative bacteria have more lipids in their cell wall ✓ **Correct answer**
- C. Lipids are absent in cell wall of both gram positive and negative bacteria
- D. Both have equal amount of lipids

A. wrong: Gram-positive bacteria have less lipid in their wall (a thick peptidoglycan layer instead).

B. correct: Gram-negative bacteria have more lipids in their cell wall (an outer lipid membrane).

C. wrong: lipids are present in the Gram-negative wall.

D. wrong: the two types differ in lipid content.

Question 159 Fungi which cause thrush in humans

Fungi which cause thrush in humans:

- A. Sarcomeres

didiasis ✓ **Correct answer**

- C. Lovastatin
- D. Aspergillus

A. wrong: sarcomeres are muscle units, not fungi.

B. correct: thrush is candidiasis — caused by the fungus Candida albicans.

C. wrong: lovastatin is a drug, not a fungus.

D. wrong: Aspergillus causes aspergillosis, not thrush.

Question 160 When beef which is not properly

When beef which is not properly cooked is consumed by humans, they become infected by:

- A. Tape worm ✓ **Correct answer**
- B. Hook worm
- C. Pin worm
- D. Round worm

A. correct: undercooked beef carries the beef tapeworm (Taenia saginata).

B. wrong: hookworm enters through the skin, not from beef.

C. wrong: pinworm spreads by contact, not from beef.

D. wrong: roundworm (Ascaris) spreads by contaminated food or water, not specifically by beef.

Question 161 Sleeping sickness in humans is caused

Sleeping sickness in humans is caused by:

- A. Trypanosoma ✓ **Correct answer**
- B. Plasmodium

pheles

- D. Andes

A. correct: sleeping sickness is caused by Trypanosoma (transmitted by the tsetse fly).

B. wrong: Plasmodium causes malaria.

C. wrong: Anopheles is the mosquito vector of malaria, not the cause of sleeping sickness.

D. wrong: 'Andes' is not the cause of sleeping sickness.

Question 162 Schistosoma is a parasite that lives

Schistosoma is a parasite that lives in the _____ of the host.

- A. Intestine
- B. Kidney
- C. Liver
- D. Blood ✓ **Correct answer**

A. wrong: Schistosoma does not live in the intestine.

B. wrong: Schistosoma does not live in the kidney.

C. wrong: Schistosoma does not live in the liver.

D. correct: Schistosoma (blood fluke) lives in the blood vessels of its host.

Question 163 The cavity between body wall and

The cavity between body wall and alimentary canal is:

- A. Coelom ✓ **Correct answer**
- B. Mesoderm
- C. Endoderm
- D. Mesoglea

The coelom is the cavity between the body wall and the alimentary canal.

B. wrong: the mesoderm is a germ layer, not the cavity.

C. wrong: the endoderm is a germ layer, not the cavity.

D. wrong: the mesoglea is the jelly layer of cnidarians, not the body cavity.

Question 164 The layer which forms the lining

The layer which forms the lining of digestive tract and glands of digestive system is:

- A. Ectoderm
- B. Mesoderm
- C. Endoderm ✓ **Correct answer**
- D. Mesoglea

A. wrong: the ectoderm forms the outer covering, not the gut lining.

B. wrong: the mesoderm forms muscle and skeleton, not the gut lining.

C. correct: the endoderm forms the lining of the digestive tract and its glands.

D. wrong: the mesoglea is not a germ layer of the gut.

Question 165 Which one of the following vitamins

Which one of the following vitamins is produced by microflora of large intestine?

- A. Vitamin K ✓ **Correct answer**
- B. Vitamin C
- C. Vitamin A
- D. Vitamin D

A. correct: vitamin K is produced by the microflora (bacteria) of the large intestine.

B. wrong: vitamin C is not made by gut bacteria.

amin A is not made by gut bacteria.

D. wrong: vitamin D is made in the skin, not by gut bacteria.

Question 166 is activated to by Enterokinaseenteropeptidase enzyme

_____ is activated to_____ by Enterokinase/enteropeptidase enzyme secreted by the lining of duodenum:

- A. Pepsinogen, Pepsin
- B. Pepsinogen, Trypsin
- C. Trypsinogen, Trypsin ✓ **Correct answer**
- D. Chymotrypsinogen, Chymotrypsin

A. wrong: pepsinogen is activated to pepsin by HCl in the stomach, not by enterokinase.

B. wrong: pepsinogen is not converted to trypsin.

C. correct: enterokinase (enteropeptidase) of the duodenum activates trypsinogen to trypsin.

D. wrong: chymotrypsinogen is activated by trypsin, not by enterokinase.

Question 167 Which of the following are absorbed

Which of the following are absorbed in the large intestine?

- A. Water and salts ✓ **Correct answer**
- B. Water and peptones
- C. Salts and glycerol
- D. Amino acids and sugars

A. correct: the large intestine absorbs water and salts (and some vitamins).

B. wrong: peptones are absorbed in the small intestine, not the large.

/cerol is absorbed in the small intestine.

D. wrong: amino acids and sugars are absorbed in the small intestine.

Question 168 Saliva is basically composed of water

Saliva is basically composed of water, mucus, amylase and:

- A. Sodium bicarbonate ✓ **Correct answer**
- B. Sodium chloride
- C. Sodium hydroxide
- D. Hydrocarbons

A. correct: saliva is water, mucus, amylase (ptyalin) and sodium bicarbonate.

B. wrong: sodium chloride is not the named salivary component.

C. wrong: sodium hydroxide is not in saliva.

D. wrong: hydrocarbons are not a component of saliva.

Question 169 The total inside capacity of lungs

The total inside capacity of lungs is _____ for man.

- A. 6.7 liters
- B. 2.5 liters
- C. 7 liters
- D. 5 liters ✓ **Correct answer**

A. wrong: the total lung capacity is about 5 litres, not 6.7.

B. wrong: 2.5 litres is nearer the vital-capacity range of a smaller volume, not the total capacity.

C. wrong: the total capacity is about 5 litres, not 7.

The total inside (lung) capacity of man is about 5 litres.

Question 170 The average life span of red

The average life span of red blood cell is about:

- A. Four months ✓ **Correct answer**
- B. Two months
- C. Five months
- D. One month

A. correct: the average life span of a red blood cell is about 120 days — four months.

B. wrong: red cells live about four months, not two.

C. wrong: red cells live about four months, not five.

D. wrong: red cells live about four months, not one.

Question 171 The lymphatic vessels of the body

The lymphatic vessels of the body empty the lymph into blood stream at the:

- A. Abdominal vein
- B. Subclavian vein ✓ **Correct answer**
- C. Jugular vein
- D. Bile duct

A. wrong: lymph does not empty into an abdominal vein.

B. correct: the lymphatic vessels empty lymph into the blood at the subclavian vein.

C. wrong: the jugular vein is not where lymph enters the blood.

D. wrong: the bile duct carries bile, not lymph.

172 Right atrium is separated from right

Right atrium is separated from right ventricle by:

- A. Tricuspid valve ✓ **Correct answer**
- B. Bicuspid valve
- C. Semilunar valve
- D. Septum

A. correct: the tricuspid valve separates the right atrium from the right ventricle.

B. wrong: the bicuspid (mitral) valve is on the left side of the heart.

C. wrong: the semilunar valves guard the exits of the ventricles to the arteries.

D. wrong: the septum separates the left and right sides, not the atrium from the ventricle.

Question 173 Site of filtration in nephron is

Site of filtration in nephron is:

- A. Glomerulus and Bowman's capsule ✓ **Correct answer**
- B. Proximal and Distal end
- C. Ascending and descending arm
- D. Loop of Henle

A. correct: filtration in the nephron occurs at the glomerulus and Bowman's capsule (the renal corpuscle).

B. wrong: the proximal and distal tubules reabsorb and secrete, they do not filter.

C. wrong: the loop of Henle concentrates urine, it does not filter.

D. wrong: the loop of Henle does not filter.

174 Antidiuretic hormone increases the reabsorption of

Antidiuretic hormone increases the reabsorption of:

- A. Amino acids
- B. Salts
- C. Ammonia
- D. Water ✓ **Correct answer**

A. wrong: ADH does not increase amino-acid reabsorption.

B. wrong: ADH acts mainly on water, not salts.

C. wrong: ADH does not increase ammonia reabsorption.

D. correct: antidiuretic hormone (vasopressin) increases the reabsorption of water in the collecting ducts.

Question 175 Active uptake of in the ascending

Active uptake of_____ in the ascending limb or thick loop of Henle is promoted by the action of aldosterone:

- A. K+
- B. Cl—
- C. Ca++
- D. Na+ ✓ **Correct answer**

A. wrong: aldosterone promotes Na+ uptake, not K+.

B. wrong: aldosterone promotes Na+ uptake, not Cl−.

C. wrong: aldosterone promotes Na+ uptake, not Ca++.

D. correct: aldosterone promotes the active uptake of Na+ (in the ascending limb / distal parts of the nephron).

176 The process through which the body

The process through which the body maintains the internal environment from the fluctuations of external environment is called as:

- A. Behavior of organisms
- B. Adaptation
- C. Thermoregulation
- D. Homeostasis ✓ **Correct answer**

A. wrong: behaviour is one response, not the name of the maintenance process.

B. wrong: adaptation is long-term evolutionary change, not the maintenance of the internal environment.

C. wrong: thermoregulation is only the temperature part of the process.

D. correct: homeostasis is the maintenance of a stable internal environment despite external fluctuations.

Question 177 Active pumping out of Na occurs

Active pumping out of Na+ occurs at which part of nephron:

- A. Proximal tubule
- B. Descending loop of Henle
- C. Ascending loop of Henle ✓ **Correct answer**
- D. Collecting ducts

A. wrong: the proximal tubule reabsorbs Na+ passively with water, not by the active pumping named here.

B. wrong: the descending loop is permeable to water; active Na+ pumping is in the ascending limb.

C. correct: active pumping out of Na+ occurs in the (thick) ascending loop of Henle.

e collecting ducts reabsorb water under ADH, not by this active Na+ pumping.

Question 178 The structures which respond when they

The structures which respond when they are stimulated by impulse coming through motor neuron are:

- A. Receptors
- B. Responders
- C. Transducers
- D. Effectors ✓ **Correct answer**

A. wrong: receptors receive stimuli; they do not respond to motor-neuron impulses.

B. wrong: 'responders' is not the term for the structures that act on motor impulses.

C. wrong: transducers convert one form of energy to another; they are not the effectors.

D. correct: effectors (muscles and glands) respond when stimulated by impulses from motor neurons.

Question 179 Thalamus and cerebrum are the part

Thalamus and cerebrum are the part of:

- A. Fore brain ✓ **Correct answer**
- B. Mid brain
- C. Hind brain
- D. Spinal cord

A. correct: the thalamus and cerebrum are parts of the forebrain.

B. wrong: the midbrain contains the corpora quadrigemina, not the thalamus and cerebrum.

C. wrong: the hindbrain contains the cerebellum, pons and medulla.

e spinal cord is separate from the brain.

Question 180 There is also EVIDENCE that high

There is also EVIDENCE that high levels of _____ may contribute to the onset of Alzheimer's disease:

- A. Mg
- B. Mo
- C. Al ✓ **Correct answer**
- D. Ca

A. wrong: magnesium is not linked to Alzheimer's disease.

B. wrong: molybdenum is not linked to Alzheimer's disease.

C. correct: high levels of aluminium (Al) have been linked with the onset of Alzheimer's disease.

D. wrong: calcium is not linked to Alzheimer's disease.

Question 181 L-dopa or Levodopa is used to

L-dopa or Levodopa is used to get some relief from??

- A. Epilepsy
- B. Alzheimer’s disease
- C. Parkinson's disease ✓ **Correct answer**
- D. Dementia

A. wrong: L-dopa is not the treatment for epilepsy.

B. wrong: L-dopa is not the treatment for Alzheimer's disease.

C. correct: L-dopa (levodopa) is given in Parkinson's disease to replace the missing dopamine.

dopa is not the treatment for dementia in general.

Question 182 Spermatogonia differentiate directly into

Spermatogonia differentiate directly into?

- A. Primary spermatocytes ✓ **Correct answer**
- B. Secondary spermatocytes
- C. Spermatozoa
- D. Spermatids

A. correct: spermatogonia differentiate directly into primary spermatocytes.

B. wrong: secondary spermatocytes come from primary spermatocytes, not directly from spermatogonia.

C. wrong: spermatozoa are the end product, several steps later.

D. wrong: spermatids come from secondary spermatocytes, not directly from spermatogonia.

Question 183 Treponema palladium causes

Treponema palladium causes?

- A. AIDS
- B. Genital herpes
- C. Syphilis ✓ **Correct answer**
- D. Gonorrhea

A. wrong: AIDS is caused by HIV.

B. wrong: genital herpes is caused by herpes simplex virus.

C. correct: Treponema pallidum causes syphilis.

D. wrong: gonorrhoea is caused by Neisseria gonorrhoeae.

184 What is the location of interstitial

What is the location of interstitial cells in testes?

- A. Inside the seminiferous tubules
- B. Between the seminiferous tubules ✓ **Correct answer**
- C. Among the germinal epithelial cells
- D. Around the testes

A. wrong: the interstitial (Leydig) cells lie outside the seminiferous tubules.

B. correct: the interstitial cells lie between the seminiferous tubules.

C. wrong: the germinal epithelium lines the tubules; the interstitial cells are between them.

D. wrong: the interstitial cells are inside the testis, between the tubules, not around it.

Question 185 A type of cells in human

A type of cells in human testes which produce testosterone are called?

- A. Germ cells
- B. Sertoli cells
- C. Interstitial cells ✓ **Correct answer**
- D. Spermatocytes

A. wrong: germ cells give rise to sperm, they do not make testosterone.

B. wrong: Sertoli cells nourish developing sperm; they do not make testosterone.

C. correct: the interstitial (Leydig) cells of the testes produce testosterone.

D. wrong: spermatocytes are germ cells in meiosis; they do not make testosterone.

186 The hormone produced from corpus luteum

The hormone produced from corpus luteum is:

- A. Prolactin
- B. FSH
- C. Progesterone ✓ **Correct answer**
- D. LH

A. wrong: prolactin is made by the pituitary, not the corpus luteum.

B. wrong: FSH is made by the pituitary, not the corpus luteum.

C. correct: the corpus luteum produces progesterone.

D. wrong: LH is made by the pituitary, not the corpus luteum.

Question 187 The length of myofibril from one

The length of myofibril from one Z-band to the next is described as:

- A. Sarcolemma
- B. Sarcoplasm
- C. Sarcomere ✓ **Correct answer**
- D. Muscle fiber

A. wrong: the sarcolemma is the muscle-fibre membrane.

B. wrong: the sarcoplasm is the muscle-fibre cytoplasm.

C. correct: the length of a myofibril from one Z-band to the next is a sarcomere.

D. wrong: the muscle fibre is the whole cell, not the Z-band to Z-band unit.

Question 188 The Ca ions released during a

The Ca++ ions released during a muscle fiber contraction attach with:

- B. Actin
- C. Troponin ✓ **Correct answer**
- D. Tropomyosin

A. wrong: calcium ions do not attach to myosin — they attach to troponin.

B. wrong: calcium ions do not attach to actin — they attach to troponin on the actin filament.

C. correct: the Ca++ ions released during contraction attach to troponin, shifting tropomyosin and exposing the myosin-binding sites.

D. wrong: calcium ions attach to troponin, not to tropomyosin.

Question 189 The joint that allows the movement

The joint that allows the movement in several directions is called:

- A. Hinge joint
- B. Ball and Socket joint ✓ **Correct answer**
- C. Cartilagous joint
- D. Fibrous joint

A. wrong: a hinge joint moves in one plane only.

B. correct: a ball-and-socket joint allows movement in several directions.

C. wrong: a cartilaginous joint allows little or no movement.

D. wrong: a fibrous joint allows no movement.

Question 190 Where can we find H zone

Where can we find H zone in the figure of fine structure of skeletal muscle's myofibril?

- A. In the mid of A band ✓ **Correct answer**

- C. Besides the Z-line
- D. Along the I-band

A. correct: the H zone lies in the middle of the A band (the region where only thick filaments occur).

B. wrong: the I-band contains only thin filaments — the H zone is not there.

C. wrong: the Z-line bounds the sarcomere; the H zone is in the middle of the A band.

D. wrong: the H zone is in the A band, not along the I-band.

Question 191 First vertebra of cervical region of

First vertebra of cervical region of vertebral column is known as:

- A. Atlas ✓ **Correct answer**
- B. Sacral
- C. Thoracic
- D. Axis

A. correct: the first cervical vertebra is the atlas (it supports the skull).

B. wrong: the sacral vertebrae are fused at the base of the column.

C. wrong: the thoracic vertebrae are in the chest region.

D. wrong: the axis is the second cervical vertebra.

Question 192 Chemically insulin and glucagon are

Chemically insulin and glucagon are:

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

A. wrong: insulin and glucagon are not carbohydrates.

B. correct: insulin and glucagon are protein (peptide) hormones.

C. wrong: insulin and glucagon are not lipids.

D. wrong: insulin and glucagon are not nucleic acids.

Question 193 Hormones secreted by anterior pituitary and

Hormones secreted by anterior pituitary and which controls the secretion of hormones of other endocrine glands are known as:

- A. Release factor
- B. Inhibitor
- C. Accelerator
- D. Tropic or trophic hormones ✓ **Correct answer**

A. wrong: releasing factors come from the hypothalamus, not the anterior pituitary.

B. wrong: inhibitors are not the anterior-pituitary hormones that control other glands.

C. wrong: 'accelerator' is not the name for these hormones.

D. correct: the anterior-pituitary hormones that control other endocrine glands are tropic (trophic) hormones.

Question 194 Alpha cells of Islets of Langerhans

Alpha cells of Islets of Langerhans secrete hormone called:

- A. Glucocorticoid
- B. Insulin
- C. Glucagon ✓ **Correct answer**
- D. Aldosterone

ucocorticoids come from the adrenal cortex.

B. wrong: insulin is secreted by the beta cells.

C. correct: the alpha cells of the Islets of Langerhans secrete glucagon.

D. wrong: aldosterone comes from the adrenal cortex.

Question 195 Which of the following is the

Which of the following is the function of glucagon hormone?

- A. Glucose to lipids
- B. Glucose to proteins
- C. Glucose to glycogen
- D. Glycogen to glucose ✓ **Correct answer**

A. wrong: glucagon does not convert glucose to lipids.

B. wrong: glucagon does not convert glucose to proteins.

C. wrong: converting glucose to glycogen is insulin's action, not glucagon's.

D. correct: glucagon breaks glycogen down to glucose (glycogenolysis).

Question 196 In passive immunity which of the

In passive immunity which of the following components are injected into body?

- A. Antigens
- B. Immunogens
- C. Serum
- D. Immunoglobulins ✓ **Correct answer**

A. wrong: antigens are injected in active immunisation, not passive immunity.

B. wrong: immunogens are injected in active immunisation, not passive immunity.

rum as such is not the named component — the antibodies (immunoglobulins) are.

D. correct: in passive immunity ready-made antibodies (immunoglobulins) are injected into the body.

Question 197 Which part of the antibody recognizes

Which part of the antibody recognizes the antigen during immune response?

- A. Heavy part
- B. Variable part ✓ **Correct answer**
- C. Light part
- D. Consonant part

A. wrong: the heavy part alone does not recognise the antigen — the variable region does.

B. correct: the variable part (variable region) of the antibody recognises and binds the antigen.

C. wrong: the light part alone does not recognise the antigen — the variable region does.

D. wrong: the constant part does not recognise the antigen — the variable part does.

Question 198 Two identical light chains and two

Two identical light chains and two identical heavy chains in antibody molecule are linked by:

- A. Disulphide bridges ✓ **Correct answer**
- B. Peptide bond
- C. Glycerol bond
- D. Ionic bond

A. correct: the two identical light chains and two identical heavy chains are linked by disulphide bridges.

ptide bonds join amino acids within a chain, not the chains to each other.

C. wrong: there is no 'glycerol bond' linking antibody chains.

D. wrong: ionic bonds do not link the antibody chains.

Question 199 Antibodies are produced against invading cells

Antibodies are produced against invading cells by:

- A. Lymphocytes ✓ **Correct answer**
- B. Basophils
- C. Basophils
- D. Neutrophils

A. correct: antibodies are produced by lymphocytes (B-lymphocytes / plasma cells) against invading cells.

B. wrong: basophils are involved in allergy and inflammation, not antibody production.

C. wrong: basophils are involved in allergy and inflammation, not antibody production.

D. wrong: neutrophils are phagocytes, not antibody producers.

Question 200 In the structural diagram of an

In the structural diagram of an antibody molecule which portion is occupied by variable chains?

- A. Lower region
- B. Upper region ✓ **Correct answer**
- C. Middle region
- D. In between chains

A. wrong: the lower region is the constant (Fc) region, not the variable chains.

B. correct: the variable chains (the antigen-binding ends) occupy the upper region of the

C. wrong: the middle region is not where the variable chains sit.

D. wrong: the variable chains are at the top, not in between the chains.

Question 201 Every molecule of NADH fed into

Every molecule of NADH, fed into ETC produces:

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

A. wrong: one NADH yields 3 ATP in the classic count, not 2.

B. correct: every NADH fed into the electron transport chain produces 3 ATP (classic P/O ratio).

C. wrong: one NADH yields 3 ATP, not 4.

D. wrong: one NADH yields 3 ATP, not 6.

Question 202 Final acceptor of electrons in respiratory

Final acceptor of electrons in respiratory chain is:

- A. Cytochrome a
- B. Oxygen ✓ **Correct answer**
- C. Cytochrome a3
- D. Cytochrome c

A. wrong: cytochrome a passes electrons on — it is not the final acceptor.

B. correct: oxygen is the final acceptor of electrons in the respiratory chain (forming water).

tochrome a3 passes electrons to oxygen — oxygen itself is the final acceptor.

D. wrong: cytochrome c passes electrons on — it is not the final acceptor.

Question 203 The end product of anaerobic respiration

The end product of anaerobic respiration in humans and other mammals is:

- A. Pyruvic acid
- B. Ethanol
- C. Lactic acid ✓ **Correct answer**
- D. Glucose

A. wrong: pyruvic acid is the intermediate, not the end product in humans.

B. wrong: ethanol is the anaerobic end product in yeast, not in humans.

C. correct: anaerobic respiration in humans and other mammals ends in lactic acid.

D. wrong: glucose is the starting material, not the end product.

Question 204 A biochemical process which occurs within

A biochemical process which occurs within a cell to breakdown complex compounds to produce energy is called:

- A. Respiration ✓ **Correct answer**
- B. Photosynthesis
- C. Oxidation reduction
- D. Photophosphorylation

A. correct: the breakdown of complex compounds within a cell to produce energy is (cellular) respiration.

B. wrong: photosynthesis builds compounds using light energy — the opposite process.

C. The printed key: wrong: 'oxidation reduction' names a type of chemical reaction, not the

sing breakdown process.

D. wrong: photophosphorylation makes ATP in photosynthesis, it is not the breakdown process. (PRINTED-KEY ERROR CORRECTED: the printed key records C (Oxidation reduction), but the breakdown of complex compounds within a cell to produce energy is (cellular) respiration; 'oxidation reduction' names a reaction type, not the process, so the answer is corrected to A. Corrected by the assistant under the owner's 8 Nov 2026 delegation.)

Question 205 Which part of chlorophyll molecule absorbs

Which part of chlorophyll molecule absorbs light?

- A. Phytol
- B. Porphyrin ring ✓ **Correct answer**
- C. Pyrrole
- D. Thylakoid membrane

A. wrong: phytol is the alcohol tail of chlorophyll, not the light-absorbing part.

B. correct: the porphyrin ring (with its magnesium atom) is the part of the chlorophyll molecule that absorbs light.

C. wrong: a single pyrrole ring is not the light-absorbing unit — the whole porphyrin ring is.

D. wrong: the thylakoid membrane holds the chlorophyll; it is not part of the molecule that absorbs light.

Question 206 The DNA molecule formed from messenger-RNA

The DNA molecule formed from messenger-RNA by reverse transcriptase is called??

- A. Complementary DNA ✓ **Correct answer**
- B. Recombinant DNA

meric DNA

- D. Plasmid DNA

A. correct: DNA made from messenger RNA by reverse transcriptase is complementary DNA (cDNA).

B. wrong: recombinant DNA is DNA joined from different sources.

C. wrong: chimeric DNA is a joined (hybrid) DNA, not the reverse-transcriptase product.

D. wrong: plasmid DNA is the small circular DNA of bacteria.

Question 207 The agent which separates the two

The agent which separates the two strands of DNA in PCR is??

- A. DNA ligase
- B. Primer
- C. Heat ✓ **Correct answer**
- D. Helicase

A. wrong: DNA ligase joins strands, it does not separate them.

B. wrong: primers start copying; they do not separate the strands.

C. correct: in PCR the two DNA strands are separated by heat (denaturation, about 94 °C).

D. wrong: helicase separates strands in the cell, but in PCR heat does it.

Question 208 Cystic fibrosis patient lack a gene

Cystic fibrosis patient lack a gene that codes for trans-membrane carrier of??

- A. Na+ ions
- B. Cl— ions ✓ **Correct answer**
- C. Ca++ ions
- D. K+ ions

stic fibrosis affects chloride transport, not sodium.

B. correct: cystic fibrosis patients lack the gene for the trans-membrane chloride-ion carrier (CFTR).

C. wrong: cystic fibrosis affects chloride transport, not calcium.

D. wrong: cystic fibrosis affects chloride transport, not potassium.

Question 209 The phage commonly used as a

The phage commonly used as a vector in genetic engineering is?

- A. Lambda phage ✓ **Correct answer**
- B. Gamma phage
- C. T2 phage
- D. T4 phage

A. correct: the lambda phage is the phage commonly used as a vector in genetic engineering.

B. wrong: the gamma phage is not the standard vector.

C. wrong: the T2 phage is not the standard vector.

D. wrong: the T4 phage is not the standard vector.

Question 210 Restriction endonucleases are naturally occurring enzymes

Restriction endonucleases are naturally occurring enzymes of:

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

striction endonucleases are bacterial enzymes, not viral.

B. correct: restriction endonucleases occur naturally in bacteria (as a defence against viruses).

C. wrong: restriction endonucleases are bacterial enzymes, not fungal.

D. wrong: restriction endonucleases are bacterial enzymes, not plant.

Question 211 In an ecosystem mycorrhizae are an

In an ecosystem mycorrhizae are an example of:

- A. Predation
- B. Symbiosis ✓ **Correct answer**
- C. Mutualism
- D. Parasitism

A. wrong: mycorrhizae are not predation — neither partner is eaten.

B. correct: mycorrhizae (fungus living with plant roots) are an example of symbiosis — two different species living together.

C. correct in fact: mycorrhizae are specifically mutualism, since both partners benefit (the fungus gains food, the plant gains minerals) — so this is a second correct option.

D. wrong: mycorrhizae are not parasitism — neither partner is harmed. (PICK-ONE: both B (Symbiosis) and C (Mutualism) are correct — mycorrhizae are a mutualistic symbiosis (fungus and plant roots, both partners benefit). The key records B, which is filed. Decided by the assistant under the owner's 8 Nov 2026 delegation.)

Question 212 As a result of destruction of

As a result of destruction of ozone layer there is significant increase in:

- A. Ultra-violet radiations ✓ **Correct answer**

- C. Nitrogen oxide
- D. Sulphur oxide

A. correct: destroying the ozone layer lets more ultra-violet radiation reach the Earth.

B. wrong: greenhouse gases are not increased by ozone destruction.

C. wrong: nitrogen oxide is not what increases when ozone is destroyed.

D. wrong: sulphur oxide is not what increases when ozone is destroyed.

Question 213 Higher rate of a biological activity

Higher rate of a biological activity in a nutrient rich pond water is called:

- A. Water pollution
- B. Air pollution
- C. Eutrophication ✓ **Correct answer**
- D. Industrial effects

A. wrong: the name for the high biological activity in nutrient-rich pond water is eutrophication, not water pollution in general.

B. wrong: this is a water phenomenon, not air pollution.

C. correct: a higher rate of biological activity in nutrient-rich pond water is eutrophication.

D. wrong: 'industrial effects' is not the name for this phenomenon.

Question 214 Living part of ecosystem is

Living part of ecosystem is:

- A. lithosphere
- B. Hydrosphere
- C. Community ✓ **Correct answer**

A. wrong: the lithosphere is the non-living rocky part.

B. wrong: the hydrosphere is the non-living water part.

C. correct: the living (biotic) part of an ecosystem is its community — all the populations of organisms living there.

D. The printed key: wrong: the biosphere is the global sum of all ecosystems, not the living part of one ecosystem. (PRINTED-KEY ERROR CORRECTED: the printed key records D (Biosphere), but the living (biotic) part of an ecosystem is its community — all the populations of organisms; the biosphere is the global sum of ecosystems, not the living part of one ecosystem, so the answer is corrected to C. Corrected by the assistant under the owner's 8 Nov 2026 delegation.)

Question 215 A living association between two living

A living association between two living organisms of different species which is beneficial to both the partners is called:

- A. Commensalism
- B. Parasitism
- C. Mutualism ✓ **Correct answer**
- D. Predation

A. wrong: commensalism benefits one partner and leaves the other unaffected — not both.

B. wrong: parasitism benefits one partner at the other's expense.

C. correct: mutualism is a living association between two different species that benefits both partners.

D. wrong: predation is one organism eating another.

216 The structures which are reduced during

The structures which are reduced during the course of evolution and have no apparent function are called:

- A. Regenerated organs
- B. Vestigial organs ✓ **Correct answer**
- C. Saltatory organs
- D. Useless organs

A. wrong: regenerated organs regrow after loss; they are not reduced, functionless structures.

B. correct: structures reduced during evolution and left with no apparent function are vestigial organs.

C. wrong: 'saltatory organs' is not the term for reduced, functionless structures.

D. wrong: 'useless organs' is not the scientific term — the term is vestigial organs.

Question 217 When a gene suppresses the effect

When a gene suppresses the effect of another gene at another locus the phenomenon is termed as:

- A. Over dominance
- B. Pleiotropy
- C. Epistasis ✓ **Correct answer**
- D. Co-dominance

A. wrong: overdominance is the heterozygote being superior, not one gene suppressing another.

B. wrong: pleiotropy is one gene affecting several characters, not gene suppression.

C. correct: when a gene suppresses the effect of another gene at a different locus, the

n is epistasis.

D. wrong: co-dominance is both alleles being expressed, not gene suppression.

Question 218 Phenylketonuria is an example of

Phenylketonuria is an example of:

- A. Polyploidy
- B. Transmutation
- C. Inversion
- D. Point mutation ✓ **Correct answer**

A. wrong: phenylketonuria is not polyploidy (extra chromosome sets).

B. wrong: phenylketonuria is not a transmutation.

C. wrong: phenylketonuria is not an inversion.

D. correct: phenylketonuria is caused by a point mutation (a single base change) in the gene for phenylalanine hydroxylase.

Question 219 A situation in which one gene

A situation in which one gene affects two or more unrelated characters is called:

- A. Epistasis
- B. Pleiotropy ✓ **Correct answer**
- C. Dominance relation
- D. Polygenes

A. wrong: epistasis is one gene suppressing another, not one gene affecting several characters.

B. correct: when one gene affects two or more unrelated characters, the phenomenon is pleiotropy.

minance relation is about alleles at one locus, not one gene affecting several characters.

D. wrong: polygenes are several genes affecting one character — the reverse of this.

Question 220 The mutation which causes change in

The mutation which causes change in the sequence of DNA is called:

- A. Point mutation ✓ **Correct answer**
- B. Chromosomal mutation
- C. Deletion
- D. Inversion

A. correct: a mutation that changes the sequence of DNA (a single base change) is a point mutation.

B. wrong: a chromosomal mutation changes chromosome structure or number, not the DNA sequence at one point.

C. wrong: a deletion removes bases — it is a kind of mutation, but the general name for a sequence change is point mutation.

D. wrong: an inversion reverses a chromosome segment, not a single sequence change.

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