KRISH RAUNIYAR / 2026 STUDENT EDITION

CEE MCQs & SURE SHOTS

THE LAST-HOUR MASTER REVISION

A source-aware, concept-first question bank for MBBS • BDS • BSc Nursing

699	5	2021–26
MCQs	SUBJECTS	SOURCE YEARS

PAST-PAPER THEMES + ADVANCED MOCK + EXAM-STYLE PRACTICE

Clear answer keys. Short explanations. Carefully formatted scientific notation. Separate provenance for reconstructed and predicted questions.

Prepared for rapid, selective CEE revision—not a substitute for the current MEC syllabus.

CEE MCQ's & Sure Shots

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YOUR QUICK-REVISION GUIDE

A practical way to revise: take a fast diagnostic pass, circle weak concepts, then revisit the answer notes after attempting each four-option question.

01 Attempt first

Hide the answer line and select one response before checking.

02 Check the key

Read the one-paragraph reason and fix the underlying misconception.

SOURCE-LABEL LEGEND

2021–2025 MEMORY-BASED Sourced from exam reconstructions and may not represent official wording.

2026 MODEL SET 2082 Adapted from an uploaded model paper, not an authenticated 2026 exam.

ADVANCED MOCK 2026 From a separate 180-question user-supplied practice paper.

EXPECTED / CHECKED PRACTICE New or substantially corrected practice items. These are not real past-year questions.

CORRECTED ADAPTATION A flawed or ambiguous reconstruction was rewritten to yield one defensible answer.

Subject coverage

Subject	Explained questions
Physics	143
Chemistry	177
Botany	151
Zoology	182
MAT	46
TOTAL	699

This bank is intentionally larger than a single CEE paper. The usual 200-item subject allocation is not used as a cap.

Precision formula sheet

PHYSICS $K = p^2/(2m)$ • $\tau = I\alpha$ • $v_e = \sqrt{(2GM/R)}$ • $U_{cap} = \frac{1}{2}CV^2$

PHYSICS $P = IV = I^2R$ • v_{avg} (equal distances) $= 2uv/(u+v)$ • $K_{max} = hf - \phi$

CHEMISTRY $pH = -\log_{10}[H^+]$ • $t_{1/2} = 0.693/k$ (first order) • rate $\propto 1/\sqrt{M}$

BOTANY Heterozygous independent loci: gamete types $= 2^n$ • C_4 first product = oxaloacetate

ZOOLOGY Na^+/K^+ pump: 3 Na^+ out / 2 K^+ in • SA node: pacemaker • ADH: water retention

MAT Work = rate × time • Percentages compound multiplicatively, not additively

CEE MCQs & Figure Shots

01 / PHYSICS

143 explained CEE-style MCQs • Source themes + expected practice

Practice the topic first. Then use the answer ribbon and WHY note to make each item a micro-revision.

MECHANICS AND FLUIDS • 55 Qs

001 / PHYSICS Q001 ADVANCED MOCK 2026 • ref Q131

[Numerical] A block slides from rest down a frictionless height h, crosses a rough horizontal patch of length L (coefficient μ), then rises frictionlessly. If μL<h, its greatest final height is:

A. h+μL
B. μh/L
C. h−μL
D. h(1−μ)

ANSWER C — h−μL

WHY Energy lost to friction is μmgL, so mgh′ = mgh − μmgL and h′ = h − μL.

002 / PHYSICS Q002 ADVANCED MOCK 2026 • ref Q133

[Numerical] A 2 kg body moving at 6 m/s sticks to a 1 kg body at rest. The fraction of initial kinetic energy lost is:

A. 3/4
B. 1/2
C. 2/3
D. 1/3

ANSWER D — 1/3

WHY Use momentum conservation to find common final velocity, then compare initial and final kinetic energies.

003 / PHYSICS Q003 ADVANCED MOCK 2026 • ref Q134

A satellite in a circular orbit is moved instantaneously to a larger circular orbit. Compared with the original orbit, its speed and total mechanical energy respectively:

A. increase; become less negative
B. decrease; become more negative
C. decrease; become less negative
D. increase; become more negative

ANSWER C — decrease; become less negative

WHY For circular motion v = √(GM/r) and E = −GMm/(2r); a larger radius gives lower speed but higher total energy.

004 / PHYSICS Q004 ADVANCED MOCK 2026 • ref Q135

[Numerical] A car travels half a distance at speed v and the other half at 2v. Its average speed is:

A. √2v
B. 4v/3
C. 3v/2
D. 5v/4

ANSWER B — 4v/3

WHY For equal out-and-back distances use the harmonic mean 2uv/(u+v), not the arithmetic mean.

005 / PHYSICS Q005 ADVANCED MOCK 2026 • ref Q136

A rigid body has zero net external force but a nonzero net external torque about its centre of mass. It can have:

A. zero angular acceleration necessarily
B. neither translation nor rotation
C. constant linear momentum and changing angular momentum
D. changing linear momentum and constant angular momentum

ANSWER C — constant linear momentum and changing angular momentum
WHY Net torque produces angular acceleration according to $\tau = I\alpha$.

006 / PHYSICS Q006 ADVANCED MOCK 2026 • ref Q138

[Numerical] A uniform rod of length 2 m pivots about one end. A 6 N force perpendicular to the rod at its centre balances a perpendicular force F at the far end. F equals:

A. 1.5 N
B. 12 N
C. 6 N
D. 3 N

ANSWER D — 3 N
WHY The torque is $\tau = Fr_{\perp}$. Equate the applied moment with the resisting moment about the pivot.

007 / PHYSICS Q007 ADVANCED MOCK 2026 • ref Q139

For uniform circular motion, work done by the centripetal force over any interval is zero because the force is:

A. opposite to velocity
B. perpendicular to instantaneous displacement
C. constant in direction
D. zero

ANSWER B — perpendicular to instantaneous displacement
WHY Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to perpendicular to instantaneous displacement.

008 / PHYSICS Q008 ADVANCED MOCK 2026 • ref Q146

[Numerical] An engine absorbs 600 J and rejects 360 J per cycle. Its efficiency is:

A. 1.67
B. 0.60
C. 0.24
D. 0.40

ANSWER D — 0.40
WHY Thermal efficiency $\eta = (Q_{in} - Q_{out})/Q_{in}$. Substitute the heat received and rejected.

009 / PHYSICS Q009 ADVANCED MOCK 2026 • ref Q156

Two resistors R and 2R are in parallel across a battery. The ratio of powers PR:P2R is:

A. 1:2
B. 1:4
C. 4:1
D. 2:1

ANSWER D — 2:1
WHY Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to 2:1.

010 / PHYSICS Q010 ADVANCED MOCK 2026 • ref Q159

Kirchhoff junction rule follows directly from conservation of:

A. energy
B. magnetic flux
C. charge
D. momentum

ANSWER C — charge
WHY Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to charge.

011 / PHYSICS Q011 ADVANCED MOCK 2026 • ref Q162

[Numerical] A 2 Ω and 4 Ω resistor are in series across 12 V. Power in the 4 Ω resistor is:

A. 8 W
B. 16 W
C. 4 W
D. 24 W

ANSWER B — 16 W
WHY Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to 16 W.

012 / PHYSICS Q012 ADVANCED MOCK 2026 • ref Q175

A NAND gate output is 0 only when inputs are:

A. 1,0
B. 0,0
C. 1,1
D. 0,1

ANSWER C — 1,1
WHY Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to 1,1.

013 / PHYSICS Q013 ADVANCED MOCK 2026 • ref Q177

In β– decay, conservation laws require emission of an electron and:

A. a neutrino with zero role
B. a proton only
C. an antineutrino
D. an alpha particle

ANSWER C — an antineutrino
WHY Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to an antineutrino.

014 / PHYSICS Q014 ADVANCED MOCK 2026 • ref Q178

[Numerical] A galaxy recedes at 1400 km/s. If H_0=70 km s–1 Mpc–1, its estimated distance is:

A. 10 Mpc
B. 98 Mpc
C. 70 Mpc
D. 20 Mpc

ANSWER D — 20 Mpc
WHY Hubble law is $v = H_0 d$, so $d = v/H_0$.

015 / PHYSICS Q015 ADVANCED MOCK 2026 • ref Q179

Gamma rays differ from alpha particles because gamma rays:

A. are stopped more easily by paper than alpha rays
B. are electrons from nucleus
C. are neutral electromagnetic radiation with high penetration
D. carry charge +2e and mass 4 u

ANSWER C — are neutral electromagnetic radiation with high penetration
WHY Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to are neutral electromagnetic radiation with high penetration.

016 / PHYSICS Q016 2024 • MEMORY-BASED • ref Q1

Which of the following quantity is responsible for imparting angular acceleration?

A. Force
B. Torque
C. Angular momentum
D. Moment of Inertia

ANSWER B — Torque
WHY Net torque produces angular acceleration according to $\tau = I\alpha$.

017 / PHYSICS Q017 2024 • MEMORY-BASED • ref Q2

Two bodies of masses 4kg and 16 kg are moving with the same Kinetic Energy. What is the ratio of their momentum?

A. 1:2
B. 2:1
C. 4:1
D. 1:4

ANSWER A — 1:2
WHY For a fixed mass, $K = p^2/(2m)$; square-root or square relations are often tested.

018 / PHYSICS Q018 2024 • MEMORY-BASED • ref Q3

A sphere floats with half its volume in mercury (13.6 g/cm³) and half in oil (0.8 g/cm³). Find the sphere density.

A. 5.2
B. 6.8
C. 7.2 g/cm³
D. 12.8

ANSWER C — 7.2 g/cm³
WHY By buoyancy, $\rho_{sphere} = (13.6 + 0.8)/2 = 7.2$ g/cm³.

019 / PHYSICS Q019 2024 • MEMORY-BASED • ref Q5

The property of retentivity of a material is used in the construction of:

A. Permanent magnet
B. Electromagnet
C. Transformer
D. Galvanometer

ANSWER A — Permanent magnet
WHY Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to Permanent magnet.

020 / PHYSICS Q020 2024 • MEMORY-BASED • ref Q6

Which of the following statements is incorrect?

A. The unit of luminous intensity is Candela
B. The unit of Illuminance is Lux
C. The unit of Luminous flux is Lumen
D. The unit of Luminance is Lux/m2

ANSWER D — The unit of Luminance is Lux/m2

WHY Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to The unit of Luminance is Lux/m2.

021 / PHYSICS Q021 2024 • MEMORY-BASED • ref Q8

A man goes to work in his car with a velocity of 60km/hr and quickly returns with a velocity of 40km/hr. Calculate the average speed for the total journey

A. 50km/hr
B. 48km/hr
C. 60km/hr
D. 0 km/hr

ANSWER B — 48km/hr

WHY For equal out-and-back distances use the harmonic mean 2uv/(u+v), not the arithmetic mean.

022 / PHYSICS Q022 2024 • MEMORY-BASED • ref Q10

The ratio of mean value over half cycle to r.m.s value of A.C. is

A. 2:π
B. 2√2:π
C. √2:π
D. √2:1

ANSWER B — 2√2:π

WHY Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to 2√2:π.

023 / PHYSICS Q023 2024 • MEMORY-BASED • ref Q17

A galaxy is receding with velocity 1330 km/s. If the Hubble's constant is 70 km/s/Mpc, find the distance of the galaxy from the Earth

A. 93100 Mpc
B. 18 Mpc
C. 19 Mpc
D. 1330 Mpc

ANSWER C — 19 Mpc

WHY Hubble law is $v = H_0 d$, so $d = v/H_0$.

024 / PHYSICS Q024 2024 • MEMORY-BASED • ref Q18

Which of the following quantities has the dimensions [ML-1T-1]?

A. Torque
B. Force
C. Surface Tension
D. Viscosity

ANSWER D — Viscosity

WHY Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to Viscosity.

025 / PHYSICS Q025 2024 • MEMORY-BASED • ref Q22

Which of the following is a vector quantity?

A. Charge
B. Electric field
C. Electric potential
D. Electric current

ANSWER B — Electric field
WHY Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to Electric field.

026 / PHYSICS Q026 2024 • MEMORY-BASED • ref Q23

Emission of gamma radiation results in:

A. Increase in atomic number by 1 unit
B. Decrease in atomic mass by 4 units
C. Both a and b
D. No change in atomic number and atomic mass

ANSWER D — No change in atomic number and atomic mass
WHY Gamma emission changes nuclear energy but not mass number or atomic number.

027 / PHYSICS Q027 2024 • MEMORY-BASED • ref Q27

The ratio of fundamental frequencies of a closed pipe and an open pipe of the same length is:

A. 1:2
B. 2:1
C. 4:1
D. 1:4

ANSWER A — 1:2
WHY Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to 1:2.

028 / PHYSICS Q028 2024 • MEMORY-BASED • ref Q29

Which of the following has maximum penetrating power?

A. α rays
B. β rays
C. γ rays
D. X- rays

ANSWER C — γ rays
WHY Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to γ rays.

029 / PHYSICS Q029 2024 • MEMORY-BASED • ref Q33

The apparent weight of a body in a lift is less than its actual weight. The lift must be moving:

A. Down with an acceleration
B. Up with an acceleration
C. Down with uniform velocity
D. Not moving at all

ANSWER A — Down with an acceleration
WHY Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to Down with an acceleration.

030 / PHYSICS Q030 2024 • MEMORY-BASED • ref Q35

Which is the most accepted theory for the origin of the universe?

A. Big Bang theory
B. Pulsation Theory
C. Steady State Theory
D. Cosmozoic Theory

ANSWER A — Big Bang theory

WHY Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to Big Bang theory.

031 / PHYSICS Q031 2024 • MEMORY-BASED • ref Q39

The acceleration due to gravity of a planet is twice that of the Earth and its diameter is double that of the Earth. If the escape velocity on Earth is 11.2 km/s, then the escape velocity of the planet is:

A. 11.2 km/s
B. 22.4 km/s
C. 5.6 km/s
D. 44.8 km/s

ANSWER B — 22.4 km/s

WHY Escape speed follows $v_e = \sqrt{(2GM/R)}$; it is independent of launch direction.

032 / PHYSICS Q032 2024 • MEMORY-BASED • ref Q47

In a container filled with N_2, H_2 and He gases, which has the maximum Kinetic Energy?

A. N_2
B. He
C. H_2
D. All have equal KE

ANSWER D — All have equal KE

WHY Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to All have equal KE.

033 / PHYSICS Q033 2023 • MEMORY-BASED • ref Q1

There are two blocks A and B each of mass M resting on a frictionless inclined plane as shown in figure. Then AS OB 460° 45

A. Block A moves down the plane
B. Block B moves down the plane
C. Both the blocks remain at rest
D. Both blocks move down the plane

ANSWER A — Block A moves down the plane

WHY Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to Block A moves down the plane.

034 / PHYSICS Q034 2023 • MEMORY-BASED • ref Q4

The escape velocity from earth is 11 km/s . If a body is to be projected in a direction making an angle of 45° to the vertical, then the escape velocity is

A. 11 km/s
B. 22 km/s
C. 44 km/s
D. 33 km's

ANSWER A — 11 km/s
WHY Escape speed follows $v_e = \sqrt{(2GM/R)}$; it is independent of launch direction.

035 / PHYSICS Q035 2023 • MEMORY-BASED • ref Q7

Web of spider shines due to

A. Diffraction
B. Refraction
C. Reflection
D. Interference

ANSWER A — Diffraction
WHY Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to Diffraction.

036 / PHYSICS Q036 2023 • MEMORY-BASED • ref Q14

The coefficient of viscosity for hot air is

A. Greater than that for cold air
B. Smaller than that for cold air
C. Same as that of cold air
D. Lower at high pressure and greater at low pressure

ANSWER A — Greater than that for cold air
WHY Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to Greater than that for cold air.

037 / PHYSICS Q037 2023 • MEMORY-BASED • ref Q15

Red color of sky during sunrise & sunset is due to

A. Dispersion of light
B. Scattering of light
C. Refraction
D. Diffraction

ANSWER B — Scattering of light
WHY Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to Scattering of light.

038 / PHYSICS Q038 2023 • MEMORY-BASED • ref Q18

In a glass having liquid whose cohesive force > adhesive force, the meniscus formed is

A. Concave
B. Convex
C. Plane
D. Oval

ANSWER B — Convex
WHY Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to Convex.

039 / PHYSICS Q039 2023 • MEMORY-BASED • ref Q41

Which of the following is correct for stable equilibrium?

A. Metacentre above C.G
B. C.G. above metacenter
C. Metacentre should coincide C.G
D. Metacentre height should be zero

ANSWER A — Metacentre above C.G
WHY Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to Metacentre above C.G.

040 / PHYSICS Q040 2025 • ADAPTED • ref Q176

The angle of an inclined plane with the horizontal at which a block just begins to slide is called:

A. Angle of reflection
B. Angle of repose
C. Angle of refraction
D. Angle of deviation

ANSWER B — Angle of repose
WHY At limiting friction, the angle of repose satisfies tan θ = μs.

041 / PHYSICS Q041 2025 • MEMORY-BASED • ref Q177

If the speed of rotation of the Earth increases, then the weight of a body:

A. Decreases
B. May increases or decreases
C. Remains unchanged
D. Increases

ANSWER A — Decreases
WHY Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to Decreases.

042 / PHYSICS Q042 2025 • MEMORY-BASED • ref Q178

The scientific reason behind placing the handle of a door close to the for edge of the door is:

A. To produce a large torque from a small effort
B. To produce larger momentun
C. To produce a large force from a small torque
D. To protect the door from unsual bonding

ANSWER A — To produce a large torque from a small effort
WHY Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to To produce a large torque from a small effort.

043 / PHYSICS Q043 2022 • MEMORY-BASED • ref Q4

If momentum increases by 100% then KE increases by

A. 100%
B. 200%
C. 300%
D. 400%

ANSWER C — 300%
WHY Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to 300%.

044 / PHYSICS Q044 2022 • MEMORY-BASED • ref Q12

The 'g' decreases in going from surface to deep down inside the earth. What happens to value of g in going to height from earth surface?

A. Increases
B. Decreases
C. Remains constant
D. None

ANSWER B — Decreases
WHY Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to Decreases.

045 / PHYSICS Q045 2022 • MEMORY-BASED • ref Q25

When B-decay of an element occurs then it forms

A. Isobars
B. Isotones
C. Isotopes
D. Isomers

ANSWER A — Isobars
WHY Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to Isobars.

046 / PHYSICS Q046 2022 • ADAPTED • ref Q26

Which logic gate produces HIGH output only when every input is LOW?

A. AND
B. OR
C. NOR
D. XOR

ANSWER C — NOR
WHY NOR is the negation of OR, so its output is 1 only for all-zero inputs.

047 / PHYSICS Q047 2022 • ADAPTED • ref Q30

What is the approximate half-life of carbon-14?

A. 5,390 years
B. 5,730 years
C. 500 years
D. 57,300 years

ANSWER B — 5,730 years
WHY Radiocarbon dating uses a ^{14}C half-life of about 5,730 years.

048 / PHYSICS Q048 2022 • MEMORY-BASED • ref Q37

Bats can locomote at night due to echolocation by producing

A. Ultrasonic
B. Infrasonic
C. Radiowave
D. Electromagnetic waves

ANSWER A — Ultrasonic
WHY Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to Ultrasonic.

049 / PHYSICS Q049 2022 • MEMORY-BASED • ref Q38

Angle of deviation is maximum for

A. Red
B. Violet
C. Green
D. Yellow

ANSWER B — Violet
WHY Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to Violet.

050 / PHYSICS Q050 2022 • ADAPTED • ref Q41

At fixed molar mass, the root-mean-square speed of ideal-gas molecules is proportional to:

A. T
B. $1/T$
C. T^2
D. $\sqrt{T}$

ANSWER D — $\sqrt{T}$
WHY $v_{rms} = \sqrt{(3RT/M)}$, so speed rises with the square root of absolute temperature.

051 / PHYSICS Q051 2021 • ADAPTED

A moving body of mass m sticks to an equal mass initially at rest. What fraction of the initial kinetic energy is lost?

A. One fourth
B. One half
C. Three fourths
D. None

ANSWER B — One half
WHY Final speed is v/2 by momentum conservation, leaving half of the starting kinetic energy.

052 / PHYSICS Q052 2021 • ADAPTED

Which best describes uniform circular motion?

A. Simple harmonic and nonperiodic
B. Periodic but not SHM
C. Neither periodic nor accelerated
D. Uniform velocity

ANSWER B — Periodic but not SHM
WHY The velocity direction continually changes; circular motion repeats but is not itself SHM.

053 / PHYSICS Q053 2021 • ADAPTED

A body makes an obtuse contact angle with glass. Its liquid surface is usually described as:

A. Completely wetting
B. Non-wetting
C. Perfectly spreading
D. Adhesion-dominated

ANSWER B — Non-wetting
WHY Contact angles greater than 90° indicate cohesive forces dominate wetting.

054 / **PHYSICS Q054** 2021 • ADAPTED

A boat 4 m long and 2 m wide sinks 1 cm deeper when a person boards. What is the mass of the person? (ρwater = 1000 kg/m³)

A. 8 kg
B. 40 kg
C. 80 kg
D. 800 kg

ANSWER C — 80 kg
WHY Extra displaced mass = 4 × 2 × 0.01 × 1000 = 80 kg.

055 / **PHYSICS Q055** 2021 • ADAPTED

For a fixed-mass object, kinetic energy rises by approximately 4%. The corresponding approximate momentum increase is:

A. 1%
B. 2%
C. 4%
D. 8%

ANSWER B — 2%
WHY $p \propto \sqrt{K}$, so a small percentage change in p is half that in K.

ELECTRICITY AND MAGNETISM • 26 Qs

056 / **PHYSICS Q056** ADVANCED MOCK 2026 • ref Q132

Two projectiles are launched with equal speed at complementary angles. Ignoring air resistance, they have equal range. Which comparison is correct?

A. The larger-angle projectile has greater height and longer flight time
B. The smaller-angle projectile has greater height but shorter time
C. Their velocity vectors are identical at every instant
D. Equal maximum height and flight time

ANSWER A — The larger-angle projectile has greater height and longer flight time
WHY A projectile range is $R = u^2\sin(2\theta)/g$. Complementary angles θ and (90°−θ) give equal ranges.

057 / **PHYSICS Q057** ADVANCED MOCK 2026 • ref Q137

A ball is thrown vertically upward inside a lift accelerating upward. Relative to the lift, and ignoring air resistance, the ball has:

A. downward acceleration g+a
B. downward acceleration smaller than g
C. zero acceleration at the top
D. upward acceleration a

ANSWER A — downward acceleration g+a
WHY In an upward-accelerating lift, effective downward acceleration is g+a; apply kinematics in the accelerating frame.

058 / PHYSICS Q058 ADVANCED MOCK 2026 • ref Q157

[Numerical] A cell of emf 12 V and internal resistance 1 Ω supplies 5 Ω. The terminal voltage is:

A. 14 V
B. 10 V
C. 12 V
D. 2 V

ANSWER B — 10 V
WHY Apply Ohm law V = IR and the correct series/parallel relationship.

059 / PHYSICS Q059 ADVANCED MOCK 2026 • ref Q160

A charged particle moves parallel to a uniform magnetic field. Its magnetic force is:

A. qvB
B. zero
C. qvB/2
D. dependent only on mass

ANSWER B — zero
WHY Apply the governing relation for electricity and magnetism and check units or limiting cases. The result corresponds to zero.

060 / PHYSICS Q060 ADVANCED MOCK 2026 • ref Q161

Two long parallel wires carry currents in the same direction. They:

A. exert no force
B. alternate attraction and repulsion
C. repel
D. attract

ANSWER D — attract
WHY Apply the governing relation for electricity and magnetism and check units or limiting cases. The result corresponds to attract.

061 / PHYSICS Q061 ADVANCED MOCK 2026 • ref Q163

Lenz law states that induced current opposes:

A. the magnetic field itself in every case
B. electric current in the source always
C. the change in magnetic flux producing it
D. motion regardless of flux change

ANSWER C — the change in magnetic flux producing it
WHY Apply the governing relation for electricity and magnetism and check units or limiting cases. The result corresponds to the change in magnetic flux producing it.

062 / PHYSICS Q062 ADVANCED MOCK 2026 • ref Q164

A transformer cannot operate with steady DC because steady DC produces:

A. a changing flux of constant rate
B. no continuously changing magnetic flux
C. infinite secondary voltage
D. zero primary current

ANSWER B — no continuously changing magnetic flux
WHY Apply the governing relation for electricity and magnetism and check units or limiting cases. The result corresponds to no continuously changing magnetic flux.

063 / PHYSICS Q063 ADVANCED MOCK 2026 • ref Q165

Inside a conductor in electrostatic equilibrium, the electric field is zero because free charges:

A. cease to exist
B. become neutrons
C. are all at the centre
D. redistribute until their field cancels the internal applied field

ANSWER D — redistribute until their field cancels the internal applied field

WHY Apply the governing relation for electricity and magnetism and check units or limiting cases. The result corresponds to redistribute until their field cancels the internal applied field.

064 / PHYSICS Q064 ADVANCED MOCK 2026 • ref Q166

[Numerical] Two identical capacitors C are first connected in parallel and then in series. The ratio Ceq(parallel):Ceq(series) is:

A. 1:4
B. 4:1
C. 2:1
D. 1:1

ANSWER B — 4:1

WHY Apply the governing relation for electricity and magnetism and check units or limiting cases. The result corresponds to 4:1.

065 / PHYSICS Q065 ADVANCED MOCK 2026 • ref Q167

A dielectric is inserted into an isolated charged capacitor. Which pair decreases?

A. Capacitance and charge
B. Charge and capacitance
C. Capacitance and electric permittivity
D. Potential difference and stored energy

ANSWER D — Potential difference and stored energy

WHY Apply the governing relation for electricity and magnetism and check units or limiting cases. The result corresponds to Potential difference and stored energy.

066 / PHYSICS Q066 ADVANCED MOCK 2026 • ref Q168

Electric potential can be nonzero where electric field is zero, as illustrated by:

A. a point on an electric field line
B. every point near a single charge
C. the surface of an uncharged conductor only
D. the centre of a uniformly charged spherical shell

ANSWER D — the centre of a uniformly charged spherical shell

WHY Apply the governing relation for electricity and magnetism and check units or limiting cases. The result corresponds to the centre of a uniformly charged spherical shell.

067 / PHYSICS Q067 ADVANCED MOCK 2026 • ref Q173

A p-n junction under forward bias has reduced barrier potential, so its current:

A. decreases below reverse saturation current
B. remains exactly zero
C. flows without charge carriers
D. increases strongly after threshold

ANSWER D — increases strongly after threshold

WHY Apply the governing relation for electricity and magnetism and check units or limiting cases. The result corresponds to increases strongly after threshold.

068 / PHYSICS Q068 2024 • MEMORY-BASED • ref Q7

Which gate is used in the construction of other gates and digital circuits?

A. NOT
B. NAND
C. AND
D. Both NOT and AND

ANSWER B — NAND
WHY Apply the governing relation for electricity and magnetism and check units or limiting cases. The result corresponds to NAND.

069 / PHYSICS Q069 2024 • MEMORY-BASED • ref Q9

The electric potential of an electric dipole varies with distance as:

A. $V \propto r$
B. $V \propto 1/r$
C. $V \propto r2$
D. $V \propto 1/r2$

ANSWER D — $V \propto 1/r2$
WHY Apply the governing relation for electricity and magnetism and check units or limiting cases. The result corresponds to $V \propto 1/r2$.

070 / PHYSICS Q070 2024 • MEMORY-BASED • ref Q13

The unit of self inductance is:

A. Volt/Ampere
B. Volt-sec/Ampere
C. Volt/Ampere-sec
D. Volt-Ampere/sec

ANSWER B — Volt-sec/Ampere
WHY The induced emf opposes flux change: $e = -L\, dI/dt$.

071 / PHYSICS Q071 2024 • MEMORY-BASED • ref Q14

Two resistances R and 2R are connected across series. The heat developed across the resistances 2R and R will be in the ratio:

A. 1:2
B. 2:1
C. 4:1
D. 1:4

ANSWER B — 2:1
WHY Joule heating is $H = I^2Rt$; in a series circuit current is common.

072 / PHYSICS Q072 2024 • ADAPTED • ref Q24

Five identical 5 μF capacitors are connected in series. What is their equivalent capacitance?

A. 0.2 μF
B. 0.5 μF
C. 1 μF
D. 25 μF

ANSWER C — 1 μF
WHY For n identical capacitors in series, $C_eq = C/n = 5/5 = 1$ μF.

073 / PHYSICS Q073 2024 • ADAPTED • ref Q25

If n identical capacitors, each of capacitance C, are connected in parallel across voltage V, their total energy is:

A. ½CV²
B. ½nCV²
C. nCV²
D. nCV

ANSWER B — ½nCV²
WHY Equivalent capacitance is nC; hence U = ½(nC)V².

074 / PHYSICS Q074 2024 • MEMORY-BASED • ref Q43

The magnetic field inside a Solenoid is:

A. Directly proportional to Current
B. Inversely proportional to Current
C. Directly proportional to Length
D. Inversely proportional to number of turns

ANSWER A — Directly proportional to Current
WHY Apply the governing relation for electricity and magnetism and check units or limiting cases. The result corresponds to Directly proportional to Current.

075 / PHYSICS Q075 2023 • MEMORY-BASED • ref Q47

A current carrying circular loop is freely suspended by a long thread. The plane of the loop will point in the direction

A. Wherever left free
B. North-south
C. East-west
D. At 45° with the east-west direction

ANSWER C — East-west
WHY Apply the governing relation for electricity and magnetism and check units or limiting cases. The result corresponds to East-west.

076 / PHYSICS Q076 EXPECTED • PRACTICE

A transistor operates in saturation as a switch when:

A. Both junctions are reverse-biased
B. Both base–emitter and base–collector junctions are forward-biased
C. Only the collector–base junction is reverse-biased
D. The collector current is always zero

ANSWER B — Both base–emitter and base–collector junctions are forward-biased
WHY An ideal saturated BJT switch has both p–n junctions forward-biased.

077 / PHYSICS Q077 2022 • MEMORY-BASED • ref Q19

Highest magnetic permeability is

A. Ferromagnetic
B. Paramagnetic
C. Diamagnetic
D. None

ANSWER A — Ferromagnetic
WHY Apply the governing relation for electricity and magnetism and check units or limiting cases. The result corresponds to Ferromagnetic.

078 / PHYSICS Q078 2022 • MEMORY-BASED • ref Q20

An electrons enters in uniform magnetic field 'B' with velocity 'V', if V and B are parallel with each then which is correct for path of electrons?

A. Circular track
B. Parabolic path
C. Moves perpendicular to magnetic field AME
D. No change in orientation

ANSWER D — No change in orientation
WHY Apply the governing relation for electricity and magnetism and check units or limiting cases. The result corresponds to No change in orientation.

079 / PHYSICS Q079 2022 • MEMORY-BASED • ref Q21

Self inductance is independent of

A. Length
B. Diameter
C. Number of turns
D. Resistance

ANSWER D — Resistance
WHY The induced emf opposes flux change: e = −L dI/dt.

080 / PHYSICS Q080 2021 • ADAPTED

Escape speed from Earth is 11.2 km/s. Neglecting air resistance, the launch angle changes this speed to:

A. 5.6 km/s
B. 11.2 km/s
C. 15.8 km/s
D. 22.4 km/s

ANSWER B — 11.2 km/s
WHY Escape speed depends on gravitational potential and starting position, not launch direction.

081 / PHYSICS Q081 2026 • MODEL SET

A DC transformer gives no sustained secondary voltage because steady direct current produces:

A. Alternating field
B. Zero primary resistance
C. Continuously rising flux
D. No time-varying magnetic flux

ANSWER D — No time-varying magnetic flux
WHY Faraday induction requires changing linked magnetic flux.

HEAT AND THERMODYNAMICS • 16 Qs

082 / PHYSICS Q082 ADVANCED MOCK 2026 • ref Q141

An ideal gas undergoes a complete cycle. Which quantity must be zero over the cycle?

A. Net work done
B. Net heat absorbed
C. Change in internal energy
D. Area enclosed on a P-V diagram

ANSWER C — Change in internal energy

WHY Apply the governing relation for heat and thermodynamics and check units or limiting cases. The result corresponds to Change in internal energy.

083 / PHYSICS Q083 ADVANCED MOCK 2026 • ref Q142

A metal ring is heated uniformly. Its central hole:

A. expands as if the missing material also expanded
B. remains unchanged
C. contracts because material expands inward
D. first closes and then opens

ANSWER A — expands as if the missing material also expanded

WHY Every linear dimension of a uniformly heated ring expands, including its central opening.

084 / PHYSICS Q084 ADVANCED MOCK 2026 • ref Q144

During isothermal expansion of an ideal gas, its internal energy remains constant because internal energy depends only on:

A. temperature
B. pressure
C. volume
D. work

ANSWER A — temperature

WHY For an ideal gas U depends only on temperature; under isothermal conditions $\Delta U = 0$.

085 / PHYSICS Q085 ADVANCED MOCK 2026 • ref Q145

A refrigerator cannot transfer heat from cold to hot without external work because that would violate the:

A. conservation of charge
B. second law of thermodynamics
C. law of gravitation
D. zeroth law only

ANSWER B — second law of thermodynamics

WHY A refrigerator needs external work to move heat from a cold region to a warmer region, as required by the second law.

086 / PHYSICS Q086 ADVANCED MOCK 2026 • ref Q147

At the same temperature, molecules of H_2 and O_2 have equal average translational kinetic energy, but H_2 has:

A. zero momentum always
B. higher rms speed
C. the same rms speed
D. lower rms speed

ANSWER B — higher rms speed
WHY Apply the governing relation for heat and thermodynamics and check units or limiting cases. The result corresponds to higher rms speed.

087 / PHYSICS Q087 2024 • MEMORY-BASED • ref Q21

A metal ball is immersed in a liquid whose cubical expansivity is greater than that of the metal. If the temperature is increased, the apparent weight of the metal will:

A. Increase
B. Decrease
C. Remain unchanged
D. First increase then decrease

ANSWER A — Increase
WHY Apply the governing relation for heat and thermodynamics and check units or limiting cases. The result corresponds to Increase.

088 / PHYSICS Q088 2024 • MEMORY-BASED • ref Q31

The descending order of work done in different thermodynamic processes is given by:

A. Isothermal > Adiabatic > Isobaric > Isochoric
B. Isobaric > Adiabatic > Isochoric > Isothermal
C. Isobaric > Isothermal > Adiabatic > Isochoric
D. Isochoric > Adiabatic > Isobaric > Isothermal

ANSWER C — Isobaric > Isothermal > Adiabatic > Isochoric
WHY Apply the governing relation for heat and thermodynamics and check units or limiting cases. The result corresponds to Isobaric > Isothermal > Adiabatic > Isochoric.

089 / PHYSICS Q089 2024 • ADAPTED • ref Q42

Which Carnot engine has the highest theoretical efficiency (hot source temperature T_h; cold sink temperature T_c)?

A. T_h = 100 K, T_c = 10 K
B. T_h = 300 K, T_c = 100 K
C. T_h = 600 K, T_c = 300 K
D. T_h = 600 K, T_c = 100 K

ANSWER A — T_h = 100 K, T_c = 10 K
WHY $\eta = 1 - T_c/T_h$. The first pair gives 90%, exceeding the other pairs.

090 / **PHYSICS Q090** 2024 • MEMORY-BASED • ref Q46

For a temperature increase of 1 K, the velocity of sound in air increases by:

A. 0.4 m/s
B. 0.5 m/s
C. 0.6 m/s
D. 1 m/s

ANSWER C — 0.6 m/s
WHY Apply the governing relation for heat and thermodynamics and check units or limiting cases. The result corresponds to 0.6 m/s.

091 / **PHYSICS Q091** 2023 • MEMORY-BASED • ref Q32

What is the heat required to convert 1g water from 14.5°C to 15.5°C?

A. lJ
B. Ical
C. 4.2cal
D. 42cal

ANSWER B — Ical
WHY Apply the governing relation for heat and thermodynamics and check units or limiting cases. The result corresponds to Ical.

092 / **PHYSICS Q092** EXPECTED • PRACTICE

In a thermocouple, the inversion temperature is 400°C and cold junction is held at 20°C. What is the neutral temperature under the standard parabolic-emf approximation?

A. 180°C
B. 200°C
C. 210°C
D. 420°C

ANSWER C — 210°C
WHY For this approximation, $t_i = 2t_n - t_c$, so $t_n = (400 + 20)/2 = 210°C$.

093 / **PHYSICS Q093** 2023 • MEMORY-BASED • ref Q35

With rise in temperature, the Young's modulus of elasticity

A. Increases
B. Decreases
C. Remains constant
D. Becomes zero

ANSWER B — Decreases
WHY Apply the governing relation for heat and thermodynamics and check units or limiting cases. The result corresponds to Decreases.

094 / **PHYSICS Q094** 2023 • MEMORY-BASED • ref Q37

A vessel has 6g of oxygen at pressure P and temperature 400K. A small hole is made in it so that oxygen leaks out. How much oxygen leaks out if the final pressure is P/2 and temperature 300K?

A. 5g
B. 4g
C. 2g
D. 3g

ANSWER C — 2g
WHY Apply the governing relation for heat and thermodynamics and check units or limiting cases. The result corresponds to 2g.

095 / PHYSICS Q095 EXPECTED • PRACTICE

An ideal gas at fixed temperature is compressed from volume V to 0.9V. What is the ratio of final to initial pressure?

A. 0.90
B. 1.10
C. 10/9
D. 9/10

ANSWER C — 10/9
WHY Boyle law $P_1V = P_2(0.9V)$ gives $P_2/P_1 = 1/0.9 = 10/9$.

096 / PHYSICS Q096 2022 • MEMORY-BASED • ref Q40

Isothermal process is that process with ..... constant

A. Temperature
B. Heat
C. Volume
D. Pressure

ANSWER A — Temperature
WHY Apply the governing relation for heat and thermodynamics and check units or limiting cases. The result corresponds to Temperature.

097 / PHYSICS Q097 2026 • MODEL SET

For an ideal gas in an isothermal process, internal energy change equals:

A. nRT
B. Zero
C. Work input
D. Heat loss

ANSWER B — Zero
WHY Ideal-gas internal energy depends only on temperature, which remains constant.

WAVES AND OPTICS • 16 Qs

098 / PHYSICS Q098 ADVANCED MOCK 2026 • ref Q148

A wave travels from a light string into a heavier string under equal tension. At the boundary its frequency:

A. decreases
B. becomes zero
C. remains fixed by the source
D. increases

ANSWER C — remains fixed by the source
WHY Frequency remains set by the driving source across the boundary; wave speed and wavelength can change.

099 / PHYSICS Q099 ADVANCED MOCK 2026 • ref Q149

[Numerical] A pipe closed at one end has fundamental frequency v/4L. If its length doubles with v unchanged, the new fundamental is:

A. v/16L
B. v/2L
C. v/8L
D. v/4L

ANSWER C — v/8L
WHY Apply the governing relation for waves and optics and check units or limiting cases. The result corresponds to v/8L.

100 / PHYSICS Q100 ADVANCED MOCK 2026 • ref Q150

Two coherent equal-amplitude waves arrive π radians out of phase. Their resultant intensity ideally is:

A. four times one wave
B. zero
C. equal to one wave
D. twice one wave

ANSWER B — zero
WHY Apply the governing relation for waves and optics and check units or limiting cases. The result corresponds to zero.

101 / PHYSICS Q101 ADVANCED MOCK 2026 • ref Q151

[Numerical] A convex lens forms a real image twice the object size. If focal length is 10 cm, the object distance is:

A. 5 cm
B. 30 cm
C. 15 cm
D. 10 cm

ANSWER C — 15 cm
WHY For thin lenses, use 1/f = 1/v − 1/u with the chosen sign convention.

102 / PHYSICS Q102 ADVANCED MOCK 2026 • ref Q152

When light passes from air to glass, which pair remains unchanged?

A. Frequency and phase velocity
B. Speed and wavelength
C. Wavelength and speed
D. Frequency and color as set by frequency

ANSWER D — Frequency and color as set by frequency
WHY Apply the governing relation for waves and optics and check units or limiting cases. The result corresponds to Frequency and color as set by frequency.

103 / PHYSICS Q103 ADVANCED MOCK 2026 • ref Q153

A myopic eye is corrected with a concave lens because the lens:

A. increases focal power of the eye
B. converges rays more strongly
C. diverges incoming rays so the eye focuses them on retina
D. moves retina forward

ANSWER C — diverges incoming rays so the eye focuses them on retina
WHY For thin lenses, use 1/f = 1/v − 1/u with the chosen sign convention.

104 / PHYSICS Q104 ADVANCED MOCK 2026 • ref Q154

In Young double-slit interference, increasing slit separation while other quantities remain fixed causes fringe width to:

A. decrease
B. become wavelength independent
C. remain constant
D. increase

ANSWER A — decrease
WHY Apply the governing relation for waves and optics and check units or limiting cases. The result corresponds to decrease.

105 / PHYSICS Q105 ADVANCED MOCK 2026 • ref Q155

Total internal reflection occurs only when light travels:

A. from vacuum to glass normally
B. from denser to rarer with incidence above critical angle
C. through a thin lens
D. from rarer to denser at any angle

ANSWER B — from denser to rarer with incidence above critical angle
WHY Apply the governing relation for waves and optics and check units or limiting cases. The result corresponds to from denser to rarer with incidence above critical angle.

106 / PHYSICS Q106 ADVANCED MOCK 2026 • ref Q169

Light of frequency below the threshold strikes a metal with arbitrarily high intensity. Photoelectrons are absent because:

A. total energy is always zero
B. intensity lowers work function to infinity
C. electrons require momentum but photons have none
D. each photon lacks sufficient energy

ANSWER D — each photon lacks sufficient energy
WHY Apply the governing relation for waves and optics and check units or limiting cases. The result corresponds to each photon lacks sufficient energy.

107 / PHYSICS Q107 2024 • MEMORY-BASED • ref Q16

Sodium has a work function of 2.0 eV. Light of wavelength 500 nm is incident. What is the approximate maximum speed of the emitted electrons?

A. 413 km/s
B. 430 km/s
C. 317 km/s
D. 467 km/s

ANSWER A — 413 km/s
WHY Photon energy ≈ 1240/500 = 2.48 eV. Kmax ≈ 0.48 eV, hence vmax ≈ 4.1×10^5 m/s.

108 / PHYSICS Q108 2024 • ADAPTED • ref Q30

For a circular telescope aperture of diameter D, the Rayleigh minimum resolvable angle in radians is:

A. $1.22D/\lambda$
B. $1.22\lambda/D$
C. $\lambda D/1.22$
D. D/λ

ANSWER B — $1.22\lambda/D$
WHY The diffraction-limited angular separation is approximately $\theta = 1.22\lambda/D$.

109 / PHYSICS Q109 2024 • MEMORY-BASED • ref Q45

Which of the following is incorrect for light?

A. Newton discovered an example of interference which is called Newton's rings

B. Sachharimeter is based on the principle of Polarization

C. Coherent sources are necessary and sufficient conditions for Interference

D. Diffraction requires slit with width comparable to the wavelength of light

ANSWER C — Coherent sources are necessary and sufficient conditions for Interference

WHY Apply the governing relation for waves and optics and check units or limiting cases. The result corresponds to Coherent sources are necessary and sufficient conditions for Interference.

110 / PHYSICS Q110 2024 • ADAPTED • ref Q48

Electrons are accelerated through 5.2 kV before striking a metal target. What is the approximate shortest wavelength of the emitted X-rays?

A. 1.2 nm

B. 0.12 nm

C. 0.24 nm

D. 2.4 nm

ANSWER C — 0.24 nm

WHY Duane–Hunt law gives λmin = hc/eV = 1240/5200 nm ≈ 0.24 nm.

111 / PHYSICS Q111 2023 • MEMORY-BASED • ref Q30

Refractive index doesn't depend on:

A. Temperature

B. Intensity

C. Wavelength

D. Optical density

ANSWER B — Intensity

WHY For thin lenses, use 1/f = 1/v − 1/u with the chosen sign convention.

112 / PHYSICS Q112 2025 • MEMORY-BASED • ref Q171

The focal length of a convex lens depends upon:

A. The wavelength of incident ray

B. The frequency of incident ray

C. Both on frequency and wavelength of incident ray

D. Neither on frequency vor on wavelength of incident ray

ANSWER C — Both on frequency and wavelength of incident ray

WHY For thin lenses, use 1/f = 1/v − 1/u with the chosen sign convention.

113 / PHYSICS Q113 2022 • MEMORY-BASED • ref Q32

Which of following wave is not polarizable?

A. Light

B. X-ray

C. Sound

D. IR

ANSWER C — Sound

WHY Only transverse waves can show polarization.

MODERN PHYSICS • 22 Qs

114 / PHYSICS Q114 ADVANCED MOCK 2026 • ref Q170

[Numerical] For a radioactive sample with half-life 6 h, the fraction remaining after 18 h is:

A. 1/6
B. 1/18
C. 1/8
D. 1/3

ANSWER C — 1/8
WHY After n half-lives the surviving amount equals $N_0(½)^n$.

115 / PHYSICS Q115 ADVANCED MOCK 2026 • ref Q171

In Bohr model, an electron moving from n=3 to n=2 emits a photon whose energy equals:

A. E3+E2
B. E3−E2 in magnitude
C. E2−E3 with negative photon energy
D. the ionization energy from n=1

ANSWER B — E3−E2 in magnitude
WHY Bohr theory accurately describes hydrogen-like one-electron systems.

116 / PHYSICS Q116 ADVANCED MOCK 2026 • ref Q172

An electron and a proton have equal de Broglie wavelength. They must have equal:

A. speed
B. mass
C. momentum magnitude
D. kinetic energy

ANSWER C — momentum magnitude
WHY Apply the governing relation for modern physics and check units or limiting cases. The result corresponds to momentum magnitude.

117 / PHYSICS Q117 ADVANCED MOCK 2026 • ref Q174

An intrinsic semiconductor is warmed. Its conductivity generally:

A. decreases because all electrons stop
B. increases because more electron-hole pairs are generated
C. remains exactly constant
D. becomes superconducting

ANSWER B — increases because more electron-hole pairs are generated
WHY Apply the governing relation for modern physics and check units or limiting cases. The result corresponds to increases because more electron-hole pairs are generated.

118 / PHYSICS Q118 ADVANCED MOCK 2026 • ref Q176

[Numerical] A nucleus has mass defect 0.20 u. Using 1 u≈931 MeV/c², its binding energy is approximately:

A. 46.6 MeV
B. 931 MeV
C. 93.1 MeV
D. 186 MeV

ANSWER D — 186 MeV
WHY Apply the governing relation for modern physics and check units or limiting cases. The result corresponds to 186 MeV.

119 / PHYSICS Q119 ADVANCED MOCK 2026 • ref Q180

In the photoelectric effect, raising light frequency above threshold at fixed intensity primarily increases:

A. maximum kinetic energy of emitted electrons
B. number of photons necessarily without limit
C. work function of metal
D. threshold frequency Page 23

ANSWER A — maximum kinetic energy of emitted electrons
WHY Use Kmax = hf − ϕ; no electrons are emitted below the threshold frequency.

120 / PHYSICS Q120 2024 • MEMORY-BASED • ref Q15

Which is correct about the forbidden energy gap in conductor, semi-conductor and insulator?

A. The energy gap in conductors is never zero
B. The energy gap in insulators is the widest
C. The energy gap in semiconductors is the smallest
D. The energy gap in insulators is zero

ANSWER B — The energy gap in insulators is the widest
WHY Insulators have large band gaps; semiconductors have smaller ones and conductors have overlapping or touching bands.

121 / PHYSICS Q121 2024 • MEMORY-BASED • ref Q19

The quark combination of proton is:

A. uud
B. udd
C. uuu
D. ddd

ANSWER A — uud
WHY A proton contains two up quarks and one down quark: uud.

122 / PHYSICS Q122 2024 • MEMORY-BASED • ref Q20

A p-type semiconductor is made by doping an intrinsic semiconductor with acceptor material. Which of the following can be used to convert Germanium into a p-type semiconductor?

A. Antimony
B. Phosphorus
C. Silicon
D. Indium

ANSWER D — Indium
WHY Apply the governing relation for modern physics and check units or limiting cases. The result corresponds to Indium.

123 / PHYSICS Q123 2024 • ADAPTED • ref Q34

A Zener diode differs from an ordinary rectifier diode because it is designed primarily to:

A. Operate predictably in reverse breakdown
B. Increase forward resistance indefinitely
C. Convert AC to mechanical energy
D. Act only as a light sensor

ANSWER A — Operate predictably in reverse breakdown
WHY A Zener diode provides a specified reverse breakdown voltage for regulation.

124 / PHYSICS Q124 2024 • MEMORY-BASED • ref Q49

The half life of a radioactive substance is 1.28 x 109 s. Then, its mean life is:

A. 1.02 x 109 s
B. 1.33 x 109 s
C. 1.85 x 109 s
D. 1.58 x 109 s

ANSWER C — 1.85 x 109 s
WHY After n half-lives the surviving amount equals $N_0(½)^n$.

125 / PHYSICS Q125 2023 • MEMORY-BASED • ref Q6

Hard X-ray differ from soft X-ray in having

A. Low wavelength
B. Low energy
C. Low frequency
D. Long wavelength

ANSWER A — Low wavelength
WHY Hard X-rays have higher photon energy and shorter wavelength than soft X-rays.

126 / PHYSICS Q126 2023 • MEMORY-BASED • ref Q9

Which of the following determines saturation point for maximum photoelectric current?

A. Intensity
B. Stopping potential
C. Frequency
D. Wavelength

ANSWER A — Intensity
WHY Use Kmax = hf − ϕ; no electrons are emitted below the threshold frequency.

127 / PHYSICS Q127 2023 • ADAPTED • ref Q11

An antineutron contains which valence antiquark combination?

A. $\bar{u}\bar{u}\,\bar{d}$
B. $\bar{u}\,\bar{d}\,\bar{d}$
C. u d d
D. $\bar{u}$ d d

ANSWER B — $\bar{u}\,\bar{d}\,\bar{d}$
WHY A neutron has udd valence quarks; the antineutron has their corresponding antiquarks.

128 / PHYSICS Q128 2023 • MEMORY-BASED • ref Q17

Potential barrier in PN-diode is due to

A. Diffusion of charge carriers
B. Drift of electrons
C. Drift of holes
D. Forbidden energy band

ANSWER A — Diffusion of charge carriers
WHY Apply the governing relation for modern physics and check units or limiting cases. The result corresponds to Diffusion of charge carriers.

129 / PHYSICS Q129 2023 • MEMORY-BASED • ref Q27

In photoelectric effect, the slope of the straight line graph between stopping potential and frequency of the incident light gives t B Stopping: Potertia Wd A ?) oN Frequency (\) —> Dy

A. Work function
B. Kinetic energy of electron
C. Photoelectric current
D. Ratio of Planck's constant & charge of e-

ANSWER D — Ratio of Planck's constant & charge of e-
WHY Use Kmax = hf − ϕ; no electrons are emitted below the threshold frequency.

130 / PHYSICS Q130 2023 • MEMORY-BASED • ref Q45

The impurity atom used to make P-type semiconductor 1s

A. Trivalent
B. Pentavalent
C. Tetravalent
D. Divalent

ANSWER A — Trivalent
WHY Apply the governing relation for modern physics and check units or limiting cases. The result corresponds to Trivalent.

131 / PHYSICS Q131 EXPECTED • PRACTICE

Arrange these energy units from smallest to largest: electronvolt (eV), erg, joule (J), calorie (cal).

A. erg < eV < cal < J
B. eV < erg < J < cal
C. eV < J < erg < cal
D. J < erg < cal < eV

ANSWER B — eV < erg < J < cal
WHY 1 eV ≈ 1.60×10^{-19} J; 1 erg = 10^{-7} J; 1 cal ≈ 4.184 J.

132 / PHYSICS Q132 2022 • MEMORY-BASED • ref Q18

A proton and electron is moving in a uniform magnetic field with same KE then which is correct?

A. Path of electron is less curved
B. Path of proton is less curved
C. Both equally curved
D. None

ANSWER B — Path of proton is less curved
WHY Apply the governing relation for modern physics and check units or limiting cases. The result corresponds to Path of proton is less curved.

133 / PHYSICS Q133 2026 • MODEL SET

A photon with energy just equal to the work function liberates an electron with maximum kinetic energy:

A. Zero
B. Equal to work function
C. Twice work function
D. Infinite

ANSWER A — Zero
WHY Einstein's equation Kmax = hf − ϕ gives zero at threshold.

134 / **PHYSICS Q134** EXPECTED • PRACTICE

The de Broglie wavelength of a particle varies inversely with its:

A. Momentum
B. Charge alone
C. Temperature alone
D. Atomic number

ANSWER A — Momentum
WHY $\lambda = h/p$ for matter waves.

135 / **PHYSICS Q135** EXPECTED • PRACTICE

A radioactive nuclide passes through three half-lives. The surviving fraction is:

A. 1/2
B. 1/4
C. 1/8
D. 1/16

ANSWER C — 1/8
WHY The remaining quantity is $(1/2)^3 = 1/8$.

MECHANICS • 1 Qs

136 / **PHYSICS Q136** EXPECTED • PRACTICE

For a projectile, at the highest point the vertical component of velocity is:

A. Equal to initial velocity
B. Zero
C. Equal to horizontal velocity
D. Equal to g

ANSWER B — Zero
WHY Gravity reduces the vertical speed to zero at the apex, but horizontal speed persists.

FLUID MECHANICS • 1 Qs

137 / **PHYSICS Q137** EXPECTED • PRACTICE

In steady incompressible flow through a narrower horizontal pipe section, fluid speed:

A. Decreases
B. Increases
C. Becomes zero
D. Remains fixed

ANSWER B — Increases
WHY Continuity $A v$ = constant makes speed larger in a narrower tube.

THERMODYNAMICS • 1 Qs

138 / PHYSICS Q138 EXPECTED • PRACTICE

An ideal Carnot engine operating between 500 K and 300 K has efficiency:

A. 20%
B. 40%
C. 60%
D. 80%

ANSWER B — 40%
WHY η = 1 − Tc/Th = 1 − 300/500 = 0.40.

OPTICS • 2 Qs

139 / PHYSICS Q139 EXPECTED • PRACTICE

If a convex lens has focal length 25 cm, its power in air is:

A. +0.25 D
B. +4 D
C. −4 D
D. +25 D

ANSWER B — +4 D
WHY Power P = 1/f(m) = 1/0.25 = +4 D.

140 / PHYSICS Q140 EXPECTED • PRACTICE

For a diffraction grating at fixed wavelength, increasing slit spacing makes the diffraction angle for a given order:

A. Increase
B. Decrease
C. Remain fixed
D. Reach 90° always

ANSWER B — Decrease
WHY From d sinθ = nλ, a larger d reduces sinθ.

ELECTRICITY • 2 Qs

141 / PHYSICS Q141 EXPECTED • PRACTICE

Two equal 6 Ω resistors in parallel have equivalent resistance:

A. 12 Ω
B. 6 Ω
C. 3 Ω
D. 1.5 Ω

ANSWER C — 3 Ω
WHY For two equal parallel resistors Req = R/2 = 3 Ω.

142 / **PHYSICS Q142** EXPECTED • PRACTICE

The energy stored in a capacitor is:

A. CV
B. CV^2
C. $CV^2/2$
D. C/V

ANSWER C — $CV^2/2$
WHY U = 1/2 CV^2 for a capacitor charged to potential V.

SEMICONDUCTOR • 1 Qs

143 / **PHYSICS Q143** EXPECTED • PRACTICE

Majority carriers in an n-type semiconductor are:

A. Holes
B. Electrons
C. Protons
D. Photons

ANSWER B — Electrons
WHY Donor impurities increase mobile conduction electrons.

CEE MCQ's & Sur

02 / CHEMISTRY

177 explained CEE-style MCQs • Source themes + expected practice

Practice the topic first. Then use the answer ribbon and WHY note to make each item a micro-revision.

PHYSICAL CHEMISTRY • 39 Qs

144 / CHEMISTRY Q001 ADVANCED MOCK 2026 • ref Q81

For $N_2(g)+3H2(g)\rightleftharpoons 2NH3(g)$, an inert gas is added at constant volume. At unchanged temperature, which statement is correct?

A. Kp increases

B. Equilibrium shifts right because total pressure rises

C. Equilibrium shifts left because mole fraction falls

D. Equilibrium composition is unchanged because reacting partial pressures are unchanged

ANSWER D — Equilibrium composition is unchanged because reacting partial pressures are unchanged

WHY At constant volume and temperature, an inert gas does not alter the reacting species' partial pressures.

145 / CHEMISTRY Q002 ADVANCED MOCK 2026 • ref Q83

Equal masses of two ideal gases at the same temperature have rms speeds in ratio 2:1. Their molar masses are in ratio:

A. 2:1

B. 1:2

C. 1:4

D. 4:1

ANSWER C — 1:4

WHY At constant T, $v_{rms} = \sqrt{(3RT/M)}$, so lighter gas molecules have higher rms speeds.

146 / CHEMISTRY Q003 ADVANCED MOCK 2026 • ref Q85

For a first-order reaction, doubling initial concentration while keeping temperature constant changes the half-life to:

A. four times

B. unchanged

C. twice

D. half

ANSWER B — unchanged

WHY After n half-lives the surviving amount equals $N_0(½)^n$.

147 / CHEMISTRY Q004 ADVANCED MOCK 2026 • ref Q87

A gas expands freely into vacuum in an insulated vessel. For an ideal gas, which set is correct?

A. $q=0,w<0,\Delta T>0$

B. $q>0,w<0,\Delta U=0$

C. $q=0,w=0,\Delta U=0$

D. $q<0,w=0,\Delta U<0$

ANSWER C — q=0,w=0,ΔU=0

WHY In free expansion against vacuum w = 0. If insulated, q = 0; for an ideal gas ΔU = 0.

148 / CHEMISTRY Q005 ADVANCED MOCK 2026 • ref Q89

Two solutions have pH 3 and pH 5. The first has, ideally:

A. 100 times the [H+]
B. 2 times the [H+]
C. the same [H+]
D. 1/100 the [H+]

ANSWER A — 100 times the [H+]
WHY The hydrogen-ion concentration changes by a factor of ten for each one-unit pH difference.

149 / CHEMISTRY Q006 ADVANCED MOCK 2026 • ref Q90

At equilibrium, ΔG for the reaction as written is zero, while ΔG° may be nonzero because:

A. all concentrations equal unity
B. forward and reverse activation energies vanish
C. Q has adjusted so $\Delta G^\circ + RT \ln Q = 0$
D. standard free energy never relates to K

ANSWER C — Q has adjusted so $\Delta G^\circ + RT \ln Q = 0$
WHY At equilibrium $\Delta G = \Delta G^\circ + RT \ln Q = 0$; ΔG° itself need not equal zero.

150 / CHEMISTRY Q007 ADVANCED MOCK 2026 • ref Q92

Real gases approach ideal behavior most closely at:

A. critical point only
B. high pressure and low temperature
C. low volume with strong attraction
D. low pressure and high temperature

ANSWER D — low pressure and high temperature
WHY Low pressure and high temperature minimize intermolecular attraction and finite-volume effects.

151 / CHEMISTRY Q008 ADVANCED MOCK 2026 • ref Q93

For an exothermic equilibrium, raising temperature causes:

A. activation energy to become negative
B. K to decrease as equilibrium favors reactants
C. K to increase because collisions increase
D. K to remain constant at all temperatures

ANSWER B — K to decrease as equilibrium favors reactants
WHY Heating an exothermic equilibrium favors the endothermic reverse direction and lowers K.

152 / CHEMISTRY Q009 ADVANCED MOCK 2026 • ref Q95

In electrolysis of aqueous $CuSO_4$ using inert electrodes, Cu deposits preferentially at the cathode because:

A. the cathode oxidizes Cu^{2+}
B. copper atoms are negatively charged
C. sulfate is reduced first
D. Cu^{2+} reduction is favored over water reduction under the stated conditions

ANSWER D — Cu^{2+} reduction is favored over water reduction under the stated conditions
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Cu^{2+} reduction is favored over water reduction under the stated conditions.

153 / CHEMISTRY Q010 ADVANCED MOCK 2026 • ref Q97

When equal volumes of 0.10 M strong acid and 0.10 M strong base are mixed at 25°C, the final pH is near 7 because:

A. H+ and OH− react stoichiometrically to water
B. both remain at 0.05 M
C. the acid becomes weak
D. pH values are averaged arithmetically

ANSWER A — H+ and OH− react stoichiometrically to water
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: H+ and OH− react stoichiometrically to water.

154 / CHEMISTRY Q011 ADVANCED MOCK 2026 • ref Q98

The first ionization energy of oxygen is lower than nitrogen despite greater nuclear charge mainly because oxygen has:

A. paired-electron repulsion in a 2p orbital
B. a larger principal shell
C. no shielding
D. a filled 2p subshell

ANSWER A — paired-electron repulsion in a 2p orbital
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: paired-electron repulsion in a 2p orbital.

155 / CHEMISTRY Q012 ADVANCED MOCK 2026 • ref Q101

NH_3 has a higher boiling point than PH_3 chiefly because NH_3 molecules exhibit:

A. stronger hydrogen bonding
B. ionic bonding
C. greater molar mass
D. metallic bonding

ANSWER A — stronger hydrogen bonding
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: stronger hydrogen bonding.

156 / CHEMISTRY Q013 ADVANCED MOCK 2026 • ref Q105

Amphoteric Al_2O_3 reacts with both acid and strong base. The best interpretation is that it can:

A. act solely as neutral oxide
B. only release oxygen gas
C. change aluminium atomic number
D. behave as basic oxide toward acid and acidic oxide toward base

ANSWER D — behave as basic oxide toward acid and acidic oxide toward base
WHY Al_2O_3 is amphoteric: it reacts as a base with acids and as an acid with strong bases.

157 / CHEMISTRY Q014 ADVANCED MOCK 2026 • ref Q116

During SN_1 substitution of a tertiary halide, rate depends mainly on:

A. both nucleophile and halide equally in one step
B. product concentration
C. halide concentration alone in the rate-determining ionization
D. nucleophile concentration only

ANSWER C — halide concentration alone in the rate-determining ionization
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: halide concentration alone in the rate-determining ionization.

158 / CHEMISTRY Q015 ADVANCED MOCK 2026 • ref Q117

A primary alkyl halide with a strong nucleophile favors SN_2 because:

A. steric crowding accelerates attack
B. backside attack can occur with low steric hindrance
C. a primary carbocation is highly stable
D. reaction proceeds through two carbocations

ANSWER B — backside attack can occur with low steric hindrance
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: backside attack can occur with low steric hindrance.

159 / CHEMISTRY Q016 ADVANCED MOCK 2026 • ref Q127

In Haber manufacture, high pressure favors ammonia yield, but moderate temperature is used as a compromise between:

A. atomic number and isotope abundance
B. electrode mass and charge
C. pH and solubility only
D. equilibrium yield and reaction rate

ANSWER D — equilibrium yield and reaction rate
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: equilibrium yield and reaction rate.

160 / CHEMISTRY Q017 2024 • MEMORY-BASED • ref Q10

Graph between Pressure and Volume at constant Temperature is called : [similar concept Conceptual CEE vol 1 P_{276}]

A. Isobar
B. Isochore
C. Isotherm
D. Adiabatic

ANSWER C — Isotherm
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Isotherm.

161 / CHEMISTRY Q018 2024 • MEMORY-BASED • ref Q12

H_2S is a gas but H_2O is a liquid because:

A. H_2O is more ionic
B. H_2O has higher molecular weight
C. Due to association by Hydrogen bonding
D. O is more electronegative than S

ANSWER C — Due to association by Hydrogen bonding
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Due to association by Hydrogen bonding.

162 / CHEMISTRY Q019 2024 • MEMORY-BASED • ref Q15

Sodium is commercially prepared by the electrolysis of its fused chloride. The process is called:

A. Castner process
B. Solvay process
C. Down process
D. Kelner process

ANSWER C — Down process
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Down process.

163 / CHEMISTRY Q020 2024 • MEMORY-BASED • ref Q21

Which of the following forward reactions is favored by an increase in pressure?

A. PCI_5 (g) ⇌ PCI_3(g) + CI_2(g)
B. N_2(g) + O_2(g) ⇌ 2NO(g)
C. H_2(g) + I_2(g) ⇌ 2HI(g)
D. 2SO2(g) + O_2(g) ⇌ 2SO3(g)

ANSWER D — 2SO2(g) + O_2(g) ⇌ 2SO3(g)
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: 2SO2(g) + O_2(g) ⇌ 2SO3(g).

164 / CHEMISTRY Q021 2024 • MEMORY-BASED • ref Q25

The decrease in solubility of carbonates down the group in the Alkaline earth metals (Magnesium family) is due to:

A. Decrease in Lattice energy
B. Increase in Lattice energy
C. Increase in Hydration energy
D. Decrease in Hydration energy

ANSWER D — Decrease in Hydration energy
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Decrease in Hydration energy.

165 / CHEMISTRY Q022 2024 • MEMORY-BASED • ref Q26

The unit of rate constant in a third order reaction is:

A. Mol1L-1s-1
B. Mol2L-2s-1
C. Mol-2L2s-1
D. Mol-1L1s-1

ANSWER C — Mol-2L2s-1
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Mol-2L2s-1.

166 / CHEMISTRY Q023 2024 • MEMORY-BASED • ref Q28

Graphite is used in nuclear reactors as:

A. Lubricant
B. To reduce neutron velocity
C. Superconductor
D. To control the number of neutrons

ANSWER B — To reduce neutron velocity
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: To reduce neutron velocity.

167 / CHEMISTRY Q024 2024 • MEMORY-BASED • ref Q29

The existence of 3 unpaired electrons in Nitrogen atom is explained by:

A. Pauli's exclusion principle
B. Hund's rule of Maximum multiplicity
C. Aufbau principle
D. De Broglie hypothesis

ANSWER B — Hund's rule of Maximum multiplicity
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Hund's rule of Maximum multiplicity.

168 / CHEMISTRY Q025 2024 • MEMORY-BASED • ref Q38

Limiting ionic molar conductivities of Ba^{2+} and Cl^- are 127 and 76 S cm^2 mol^{-1}, respectively. Find the limiting equivalent conductivity of $BaCl_2$.

A. 279
B. 139.5
C. 203
D. 101.5

ANSWER B — 139.5
WHY Limiting molar conductivity of $BaCl_2$ is 127 + 2(76) = 279; its equivalent conductivity is 279/2 = 139.5.

169 / CHEMISTRY Q026 2024 • MEMORY-BASED • ref Q45

Lyman series of Hydrogen spectrum lies in which region of electromagnetic spectrum?

A. Visible region
B. Infrared region
C. Ultraviolet region
D. None of the above

ANSWER C — Ultraviolet region
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Ultraviolet region.

170 / CHEMISTRY Q027 2024 • MEMORY-BASED • ref Q48

At constant temperature, the rate of diffusion of a gas is:

A. Directly proportional to molecular weight
B. Inversely proportional to molecular weight
C. Directly proportional to square root of molecular weight
D. Inversely proportional to square root of molecular weight

ANSWER D — Inversely proportional to square root of molecular weight
WHY Graham law states rate $\propto 1/\sqrt{M}$ under comparable conditions.

171 / CHEMISTRY Q028 2023 • MEMORY-BASED • ref Q59

Which allotrope of carbon is used as superconductor?

A. Fullerene
B. Graphite
C. Diamond
D. Lamp black

ANSWER A — Fullerene
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Fullerene.

172 / CHEMISTRY Q029 2023 • MEMORY-BASED • ref Q73

The pH of 0.2% (w/V) NaOH will be

A. 12.7
B. 12.3
C. 13.7
D. 13.3

ANSWER A — 12.7
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: 12.7.

173 / CHEMISTRY Q030 2023 • MEMORY-BASED • ref Q90

Which allotrope of phosphorus produces phosphorescence?

A. Scarlet phosphorus
B. Red phosphorus
C. Black phosphorus
D. White phosphorus

ANSWER D — White phosphorus
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: White phosphorus.

174 / CHEMISTRY Q031 2025 • ADAPTED • ref Q16

Why does zinc usually fail to liberate H_2 when treated with nitric acid?

A. Zinc is less reactive than hydrogen
B. HNO_3 is a weak acid
C. HNO_3 provides no H^+
D. HNO_3 acts as an oxidizing acid and nitrate is reduced

ANSWER D — HNO_3 acts as an oxidizing acid and nitrate is reduced
WHY Nitric acid oxidizes the metal and nitrate is reduced; H_2 evolution is usually suppressed.

175 / CHEMISTRY Q032 2025 • MEMORY-BASED • ref Q20

Transition metal show variable oxidation state, due to emission of electron from

A. (n-1) d orbital
B. (n~1)d orbital
C. us orbital
D. np orbital

ANSWER A — (n-1) d orbital
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: (n-1) d orbital.

176 / CHEMISTRY Q033 2025 • ADAPTED • ref Q24

Which one is typically classified as an amorphous form of carbon?

A. Graphite
B. Diamond
C. Fullerene crystal
D. Charcoal

ANSWER D — Charcoal
WHY Charcoal lacks long-range periodic crystal structure; graphite and diamond are crystalline.

177 / CHEMISTRY Q034 2022 • MEMORY-BASED • ref Q7

Person frequently working with phosphorous may suffer from

A. Phossy jaw
B. Grey disease
C. Cancer
D. Rickets

ANSWER A — Phossy jaw
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Phossy jaw.

178 / CHEMISTRY Q035 2022 • ADAPTED • ref Q26

Electric current in an aqueous electrolyte is carried mainly by the movement of:

A. Electrons through solution only
B. Ions
C. Photons
D. Neutrons

ANSWER B — Ions
WHY Positive and negative ions transport charge through an electrolyte.

179 / CHEMISTRY Q036 2022 • MEMORY-BASED • ref Q33

Rate of reaction kinetics is determined by

A. Fastest reaction of species
B. Slowest reaction of species
C. Reaction with max. no. of reacting species
D. Rate cannot be determined

ANSWER B — Slowest reaction of species
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Slowest reaction of species.

180 / CHEMISTRY Q037 2022 • ADAPTED • ref Q34

The fundamental limit on simultaneously specifying an electron's position and momentum is described by:

A. Bohr orbit postulate
B. Heisenberg uncertainty principle
C. Hund rule
D. Avogadro law

ANSWER B — Heisenberg uncertainty principle
WHY $\Delta x \cdot \Delta p \geq \hbar/2$; exact position and momentum cannot both be specified arbitrarily well.

181 / CHEMISTRY Q038 2022 • MEMORY-BASED • ref Q37

Amino acid is amphoteric due to

A. Alkalinity
B. Acidity
C. Alkalinity & acidity
D. Saltiness

ANSWER C — Alkalinity & acidity
WHY Amino acids contain both acidic –COOH and basic $-NH_2$ functional groups.

182 / CHEMISTRY Q039 EXPECTED • PRACTICE

At constant temperature, doubling the volume of an ideal gas changes its pressure to:

A. Double
B. Half
C. Four times
D. Unchanged

ANSWER B — Half
WHY Boyle's law gives $P \propto 1/V$ at fixed T and n.

INORGANIC CHEMISTRY • 98 Qs

183 / CHEMISTRY Q040 ADVANCED MOCK 2026 • ref Q82

A spontaneous process has ΔH>0. Which condition must make spontaneity possible?

A. Entropy of surroundings alone must rise while universe entropy falls
B. ΔS<0 at all temperatures
C. TΔS>ΔH with ΔS>0
D. ΔG>0

ANSWER C — TΔS>ΔH with ΔS>0
WHY Use ΔG = ΔH − TΔS. For an endothermic process to be spontaneous, TΔS must exceed ΔH.

184 / CHEMISTRY Q041 ADVANCED MOCK 2026 • ref Q84

A weak acid HA is half-neutralized by strong base. Neglecting activity effects, which relation holds?

A. pH=pKa because [HA]=[A−]
B. Ka=0
C. pH=7 always
D. [H+]=initial acid concentration

ANSWER A — pH=pKa because [HA]=[A−]
WHY Henderson–Hasselbalch gives pH = pKa + log([A^-]/[HA]); at half neutralization the ratio is 1.

185 / CHEMISTRY Q042 ADVANCED MOCK 2026 • ref Q86

A catalyst speeds both forward and reverse reactions because it:

A. lowers activation barriers for both directions
B. makes an endothermic reaction exothermic
C. changes ΔG°
D. increases equilibrium constant

ANSWER A — lowers activation barriers for both directions
WHY A catalyst creates a lower-energy pathway for both directions but does not change their equilibrium constant.

186 / CHEMISTRY Q043 ADVANCED MOCK 2026 • ref Q88

In a galvanic cell, increasing the concentration of oxidized species in the reduction half-cell generally:

A. lowers its reduction potential by Nernst equation
B. reverses electron flow in every case
C. leaves potential necessarily zero
D. raises its reduction potential

ANSWER D — raises its reduction potential
WHY The Nernst equation shows increased oxidized-to-reduced ratio generally raises a reduction half-cell potential.

187 / CHEMISTRY Q044 ADVANCED MOCK 2026 • ref Q91

A saturated solution of a sparingly soluble salt receives a common ion. Precipitation occurs when:

A. ionic product exceeds Ksp
B. ionic product falls below Ksp
C. temperature alone is unchanged
D. Ksp becomes zero

ANSWER A — ionic product exceeds Ksp
WHY Adding a common ion raises the ionic product and drives the dissolution equilibrium toward undissolved salt.

188 / CHEMISTRY Q045 ADVANCED MOCK 2026 • ref Q94

A solution freezes below the pure solvent. For equal molalities, the greatest ideal depression is produced by:

A. urea
B. glucose
C. ethanol
D. NaCl (complete dissociation)

ANSWER D — NaCl (complete dissociation)
WHY Colligative freezing-point depression depends on total dissolved-particle concentration, including dissociation.

189 / CHEMISTRY Q046 ADVANCED MOCK 2026 • ref Q96

The slope of ln k versus 1/T is negative. Its magnitude is proportional to:

A. collision frequency independent of temperature
B. activation energy
C. equilibrium concentration
D. reaction enthalpy only

ANSWER B — activation energy
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: activation energy.

190 / CHEMISTRY Q047 ADVANCED MOCK 2026 • ref Q99

Across a period, oxide character generally changes from basic to acidic because:

A. metallic character decreases and electronegativity increases
B. atomic size always increases
C. all oxides become ionic
D. oxidation states become zero

ANSWER A — metallic character decreases and electronegativity increases
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: metallic character decreases and electronegativity increases.

191 / CHEMISTRY Q048 ADVANCED MOCK 2026 • ref Q100

$AlCl_3$ behaves as a Lewis acid because aluminium:

A. can accept an electron pair into an incomplete valence shell
B. releases H+ from every solvent
C. donates a lone pair
D. has a filled octet in the monomer

ANSWER A — can accept an electron pair into an incomplete valence shell
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: can accept an electron pair into an incomplete valence shell.

192 / CHEMISTRY Q049 ADVANCED MOCK 2026 • ref Q102

Chlorine disproportionates in cold dilute alkali. This means chlorine is:

A. only reduced
B. neither oxidized nor reduced
C. only oxidized
D. simultaneously oxidized and reduced

ANSWER D — simultaneously oxidized and reduced
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: simultaneously oxidized and reduced.

193 / CHEMISTRY Q050 ADVANCED MOCK 2026 • ref Q103

Transition metals commonly show variable oxidation states because:

A. their nuclei change charge in reactions
B. they lack d electrons entirely
C. their ns and (n−1)d energies are comparable
D. all their compounds are covalent

ANSWER C — their ns and (n−1)d energies are comparable

WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: their ns and (n−1)d energies are comparable.

194 / CHEMISTRY Q051 ADVANCED MOCK 2026 • ref Q104

Aqueous Cu^{2+} is colored whereas Zn^{2+} is usually colorless because Cu^{2+} has:

A. a completely filled d subshell like Zn^{2+}
B. no d electrons
C. partially filled d orbitals permitting d-level transitions
D. only s-s transitions in visible light

ANSWER C — partially filled d orbitals permitting d-level transitions

WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: partially filled d orbitals permitting d-level transitions.

195 / CHEMISTRY Q052 ADVANCED MOCK 2026 • ref Q106

Among halide ions, reducing power in aqueous solution generally increases down the group because:

A. ionic radius decreases
B. larger ions lose electrons more readily despite hydration effects
C. all bond energies increase uniformly
D. electron affinity becomes infinitely large

ANSWER B — larger ions lose electrons more readily despite hydration effects

WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: larger ions lose electrons more readily despite hydration effects.

196 / CHEMISTRY Q053 ADVANCED MOCK 2026 • ref Q107

Temporary hardness is removed by boiling because bicarbonates decompose to:

A. metal atoms
B. insoluble carbonates with CO_2 and water
C. nitrates
D. soluble chlorides

ANSWER B — insoluble carbonates with CO_2 and water

WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: insoluble carbonates with CO_2 and water.

197 / CHEMISTRY Q054 ADVANCED MOCK 2026 • ref Q108

2-methylpropene reacts with HBr without peroxide. The major product follows Markovnikov addition because:

A. the double bond remains unchanged
B. the more stable tertiary carbocation pathway is favored
C. Br+ attacks the less substituted carbon first
D. a primary radical is mandatory

ANSWER B — the more stable tertiary carbocation pathway is favored
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: the more stable tertiary carbocation pathway is favored.

198 / CHEMISTRY Q055 ADVANCED MOCK 2026 • ref Q114

Which pair represents functional isomers?

A. Ethane and ethene
B. Ethanol and dimethyl ether
C. Propan-1-ol and propan-2-ol
D. cis- and trans-but-2-ene

ANSWER B — Ethanol and dimethyl ether
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Ethanol and dimethyl ether.

199 / CHEMISTRY Q056 ADVANCED MOCK 2026 • ref Q115

A compound rotates plane-polarized light only when the sample contains:

A. a net excess of one enantiomer
B. equal enantiomers
C. only constitutional isomers
D. a carbonyl group necessarily

ANSWER A — a net excess of one enantiomer
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: a net excess of one enantiomer.

200 / CHEMISTRY Q057 ADVANCED MOCK 2026 • ref Q121

A peptide bond forms through condensation between:

A. amino and carboxyl groups with loss of water
B. two phosphate groups
C. an aldehyde and alkane only
D. two hydrocarbon groups with gain of oxygen

ANSWER A — amino and carboxyl groups with loss of water
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: amino and carboxyl groups with loss of water.

201 / CHEMISTRY Q058 ADVANCED MOCK 2026 • ref Q125

Soap cleans oily dirt poorly in hard water chiefly because Ca^{2+} and Mg^{2+}:

A. increase soap solubility indefinitely
B. oxidize water into oxygen
C. form insoluble salts with fatty-acid anions
D. convert oil to glucose

ANSWER C — form insoluble salts with fatty-acid anions
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: form insoluble salts with fatty-acid anions.

202 / CHEMISTRY Q059 ADVANCED MOCK 2026 • ref Q126

Ozone depletion by chlorofluorocarbons is catalytic because a chlorine radical:

A. adds ozone to make more ozone
B. acts only as greenhouse gas without reaction
C. is regenerated while converting ozone to oxygen
D. is permanently consumed in the first step

ANSWER C — is regenerated while converting ozone to oxygen
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: is regenerated while converting ozone to oxygen.

203 / CHEMISTRY Q060 ADVANCED MOCK 2026 • ref Q128

In acid-base titration, an indicator should be chosen so its transition range lies:

A. within the steep pH change near equivalence
B. outside every attainable pH
C. exactly at pH 7 for all titrations
D. at the initial pH only

ANSWER A — within the steep pH change near equivalence
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: within the steep pH change near equivalence.

204 / CHEMISTRY Q061 ADVANCED MOCK 2026 • ref Q129

Repeated measurements are tightly clustered but far from the accepted value. They are:

A. neither measurable nor reproducible
B. both accurate and precise
C. precise but inaccurate
D. accurate but imprecise

ANSWER C — precise but inaccurate
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: precise but inaccurate.

205 / CHEMISTRY Q062 ADVANCED MOCK 2026 • ref Q130

A precipitate is washed before gravimetric weighing mainly to:

A. add indicator color
B. remove soluble adhering impurities without dissolving appreciable precipitate
C. increase its unknown composition
D. convert it completely to filtrate

ANSWER B — remove soluble adhering impurities without dissolving appreciable precipitate
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: remove soluble adhering impurities without dissolving appreciable precipitate.

206 / CHEMISTRY Q063 2024 • MEMORY-BASED • ref Q1

Which of the following contains maximum no of Nitrogen atoms?

A. 44.8 L of N_2
B. 2 moles of NO_2
C. 17 gm of NH_3
D. 6.023 x 1023 molecules of N_2

ANSWER A — 44.8 L of N_2
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: 44.8 L of N_2.

207 / CHEMISTRY Q064 2024 • ADAPTED • ref Q2

Benzene treated with an alkyl halide and anhydrous $AlCl_3$ undergoes which named reaction?

A. Cannizzaro reaction
B. Friedel–Crafts alkylation
C. Aldol condensation
D. Wurtz reaction

ANSWER B — Friedel–Crafts alkylation
WHY Friedel–Crafts alkylation substitutes an alkyl group onto an aromatic ring.

208 / CHEMISTRY Q065 2024 • MEMORY-BASED • ref Q3

Which of the following is an exception to the octet rule?

A. HF
B. NO_2
C. CCl_4
D. HNO_3

ANSWER B — NO_2
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: NO_2.

209 / CHEMISTRY Q066 2024 • MEMORY-BASED • ref Q4

A chemical is used in the preparation of Bakelite. It is also found to give positive $FeCl_3$ test. The name of the reactant is:

A. Phenol
B. Formaldehyde
C. Benzaldehyde
D. Toluene

ANSWER A — Phenol
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Phenol.

210 / CHEMISTRY Q067 2024 • MEMORY-BASED • ref Q6

Invert sugar contains:

A. Glucose only
B. Sucrose only
C. Glucose + Sucrose
D. Glucose + Fructose

ANSWER D — Glucose + Fructose
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Glucose + Fructose.

211 / CHEMISTRY Q068 2024 • MEMORY-BASED • ref Q7

Which is the correct order for reactivity towards SN_1 reaction?

A. 1o>2o>3o
B. 2o>3o>1o
C. 3o>2o>1o
D. 1o>3o>2o

ANSWER C — 3o>2o>1o
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: 3o>2o>1o.

212 / CHEMISTRY Q069 2024 • MEMORY-BASED • ref Q8

What is the stereochemistry of the product in SN_2 reaction?

A. Retention
B. Racemisation
C. Walden Inversion
D. Net Inversion

ANSWER C — Walden Inversion
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Walden Inversion.

213 / CHEMISTRY Q070 2024 • MEMORY-BASED • ref Q9

When chloroform reacts with conc. HNO_3, it gives:

A. Nitropicrin
B. Chloropicrin
C. Nitro-chloropicrin
D. Chloro-Nitroform

ANSWER B — Chloropicrin
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Chloropicrin.

214 / CHEMISTRY Q071 2024 • MEMORY-BASED • ref Q11

Turnbull's blue is:

A. Ferric ferrocyanide
B. Potassium cyanide
C. Ferroferricyanide
D. Ferric cyanide

ANSWER C — Ferroferricyanide
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Ferroferricyanide.

215 / CHEMISTRY Q072 2024 • MEMORY-BASED • ref Q13

When the saturated solution of NaCl is heated, it becomes:

A. Unsaturated
B. Supersaturated
C. Saturated
D. None of the above

ANSWER A — Unsaturated
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Unsaturated.

216 / CHEMISTRY Q073 2024 • MEMORY-BASED • ref Q14

The difference between the mass number and its atomic number gives the number of:

A. Protons
B. Neutrons
C. Electrons
D. Mesons

ANSWER B — Neutrons
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Neutrons.

217 / CHEMISTRY Q074 2024 • MEMORY-BASED • ref Q17

The conjugate acid of HCO_3- is

A. H_2CO_3
B. HCO 3- -
C. CO 3- -
D. CO_2

ANSWER A — H_2CO_3
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: H_2CO_3.

218 / CHEMISTRY Q075 2024 • MEMORY-BASED • ref Q18

The Group Reagent for IIIA is:

A. Dil. HCl + H_2S
B. $NH_4Cl + NH_4OH$
C. $NH_4Cl + NH_4OH + H_2S$
D. Dil. HCl

ANSWER B — $NH_4Cl + NH_4OH$
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: $NH_4Cl + NH_4OH$.

219 / CHEMISTRY Q076 2024 • MEMORY-BASED • ref Q19

Which compound is formed as a result of ring test for nitrates?

A. $FeSO_4.NO_2$
B. $FeSO_4.NO_3$
C. $FeSO_4.NO$
D. $FeSO_4$

ANSWER C — $FeSO_4.NO$
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: $FeSO_4.NO$.

220 / CHEMISTRY Q077 2024 • MEMORY-BASED • ref Q20

The number of ionic, covalent and co- ordinate bonds in NH_4Cl is:

A. 1,3,1
B. 3,1,1
C. 1,1,3
D. 3,1,3

ANSWER A — 1,3,1
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: 1,3,1.

221 / CHEMISTRY Q078 2024 • MEMORY-BASED • ref Q22

The donor atoms present in EDTA are:

A. 4 N and 2 O atoms
B. 4 O and 2 N atoms
C. 4 O and 4 N atoms
D. 2 O and 2 N atoms

ANSWER B — 4 O and 2 N atoms
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: 4 O and 2 N atoms.

222 / CHEMISTRY Q079 2024 • MEMORY-BASED • ref Q23

Activation energy of a reaction can be decreased by:

A. Adding reactants
B. Using Catalyst
C. Increasing the temperature
D. All of the above

ANSWER B — Using Catalyst
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Using Catalyst.

223 / CHEMISTRY Q080 2024 • MEMORY-BASED • ref Q24

When CO_2 is passed through lime water, the solution turns milky. But, when further CO_2 is added, the milkiness disappears due to the formation of:

A. Soluble $CaCO_3$
B. Insoluble $CaCO_3$
C. Soluble $Ca(HCO_3)_2$
D. Insoluble $Ca(HCO_3)_2$

ANSWER C — Soluble $Ca(HCO_3)_2$
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Soluble $Ca(HCO_3)_2$.

224 / CHEMISTRY Q081 2024 • MEMORY-BASED • ref Q27

When 100 ml of 0.2 M H_2SO_4 solution is neutralized with 100 ml of 0.2 M NaOH solution, the resultant normality of the solution will be:

A. 1 N
B. 0.7 N
C. 0.4 N
D. 0.1 N

ANSWER D — 0.1 N
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: 0.1 N.

225 / CHEMISTRY Q082 2024 • MEMORY-BASED • ref Q30

The oxidation state of C atom in $CHCl_3$, CH_2Cl_2 and CH_3Cl are respectively:

A. +2, 0, -2
B. +4, 0, -4
C. +2, -2, 0
D. 0, -2, +4

ANSWER A — +2, 0, -2
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: +2, 0, -2.

226 / CHEMISTRY Q083 2024 • MEMORY-BASED • ref Q31

In the manufacture of Iron, limestone is used as:

A. Slag
B. Gangue
C. Flux
D. Activator

ANSWER C — Flux
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Flux.

227 / CHEMISTRY Q084 2024 • MEMORY-BASED • ref Q32

Iodoform can be used as:

A. Analgesic
B. Anaesthetic
C. Antipyretic
D. Antiseptic

ANSWER D — Antiseptic
WHY Iodoform is associated with methyl ketones and qualifying ethanol/secondary-alcohol precursors.

228 / CHEMISTRY Q085 2024 • MEMORY-BASED • ref Q35

Isocyanide test is given by

A. Primary alcohol
B. Primary amine
C. Secondary amine
D. Tertiary amine

ANSWER B — Primary amine
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Primary amine.

229 / CHEMISTRY Q086 2024 • MEMORY-BASED • ref Q36

Which of the following conditions results in maximum yield in Contact process?

A. High concentration of reactants, High pressure and high temperature
B. Low concentration of reactants, Low pressure and high temperature
C. Low concentration of reactants, Low pressure and low temperature
D. High concentration of reactants, High pressure and low temperature

ANSWER D — High concentration of reactants, High pressure and low temperature
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: High concentration of reactants, High pressure and low temperature.

230 / CHEMISTRY Q087 2024 • MEMORY-BASED • ref Q39

Which of the following is a neutral oxide?

A. CO
B. NO_2
C. CO_2
D. SiO_2

ANSWER A — CO
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: CO.

231 / CHEMISTRY Q088 2024 • MEMORY-BASED • ref Q40

The conjugate base of HPO_4^{-} - is:

A. $H_2PO_4^-$
B. HPO_4^-
C. PO_4^{---}
D. H_3PO_4

ANSWER C — PO_4^{---}
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: PO_4^{---}.

232 / CHEMISTRY Q089 2024 • ADAPTED • ref Q41

In Fischer esterification, a carboxylic acid reacts with an alcohol (H^+, heat) to form:

A. A primary amine
B. An ether
C. An ester
D. An alkene

ANSWER C — An ester
WHY Acid-catalyzed condensation forms an ester and water.

233 / CHEMISTRY Q090 2024 • MEMORY-BASED • ref Q42

Oxidation means:

A. Increase in positive valency
B. Decrease in positive valency
C. Increase in negative valency
D. Change in atomic weight

ANSWER A — Increase in positive valency
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Increase in positive valency.

234 / CHEMISTRY Q091 2024 • MEMORY-BASED • ref Q44

Nuclear reactors work on the principle of:

A. Nuclear fusion
B. Nuclear fission
C. Natural radioactivity
D. Radioactive emission

ANSWER B — Nuclear fission
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Nuclear fission.

235 / CHEMISTRY Q092 2024 • MEMORY-BASED • ref Q47

Galvanization is the process of coating:

A. Zinc on Iron
B. Copper on Iron
C. Iron on Copper
D. Iron on Zinc

ANSWER A — Zinc on Iron
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Zinc on Iron.

236 / CHEMISTRY Q093 2024 • MEMORY-BASED • ref Q50

A fuel is found to contain 20% n- Heptane. Its octane number is:

A. 20
B. 40
C. 60
D. 80

ANSWER D — 80
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: 80.

237 / CHEMISTRY Q094 2023 • MEMORY-BASED • ref Q55

Out of the following, which acid is strongest?

A. p-nitro phenol
B. o-nitro phenol
C. m-nitro phenol
D. o-amino phenol

ANSWER A — p-nitro phenol
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: p-nitro phenol.

238 / CHEMISTRY Q095 2023 • MEMORY-BASED • ref Q57

Iron obtained from blast fumace 1s

A. Wrought iron
B. Pig iron
C. Mild iron
D. Cast iron

ANSWER B — Pig iron
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Pig iron.

239 / CHEMISTRY Q096 2023 • MEMORY-BASED • ref Q61

Removal of oxygen is known as

A. Reduction
B. Oxidation
C. Hydration
D. Dehydrogenation

ANSWER A — Reduction
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Reduction.

240 / CHEMISTRY Q097 2023 • MEMORY-BASED • ref Q64

CH;MgX + CH_3CN gives

A. Acetone
B. Ethanol
C. Acetaldehyde
D. Ethanoic acid

ANSWER A — Acetone
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Acetone.

241 / CHEMISTRY Q098 2023 • MEMORY-BASED • ref Q65

Which compound when treated with alkali & iodine gives hospital smell?

A. 2-propanone
B. Propanal
C. 3-pentanone
D. Iodine

ANSWER A — 2-propanone
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: 2-propanone.

242 / CHEMISTRY Q099 2023 • MEMORY-BASED • ref Q66

Which has lowest pKa value?

A. HCOOH
B. CH;COOH
C. CH;CH;COOH
D. CH;CH,CH,COOH

ANSWER A — HCOOH
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: HCOOH.

243 / CHEMISTRY Q100 2023 • MEMORY-BASED • ref Q68

Which of the following is not used in bleaching of pulp?

A. CaOClh,
B. NH;
C. Cl
D. NaOH

ANSWER B — NH;
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: NH;.

244 / CHEMISTRY Q101 EXPECTED • PRACTICE

What is the principal role of concentrated H_2SO_4 during esterification of a carboxylic acid with an alcohol?

A. Oxidant only
B. Acid catalyst and dehydrating agent
C. Source of ammonia
D. Reducing agent

ANSWER B — Acid catalyst and dehydrating agent
WHY Concentrated sulfuric acid catalyzes ester formation and helps remove water.

245 / CHEMISTRY Q102 EXPECTED • PRACTICE

Which reactant usually gives a secondary alcohol when treated with a Grignard reagent followed by acidic work-up?

A. Formaldehyde
B. An aldehyde other than formaldehyde
C. A ketone
D. Carbon dioxide

ANSWER B — An aldehyde other than formaldehyde
WHY Addition to R–CHO gives R–CH(OH)–R′, a secondary alcohol. Ketones usually give tertiary alcohols.

246 / CHEMISTRY Q103 2023 • MEMORY-BASED • ref Q76

Lower density of ice than water is due to

A. a cage like structure formed due to intermolecular H-bond
B. a cage like structure formed due to intramolecular H-bond
C. due to covalent bond
D. due to Van der Waals force

ANSWER A — a cage like structure formed due to intermolecular H-bond
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: a cage like structure formed due to intermolecular H-bond.

247 / CHEMISTRY Q104 2023 • MEMORY-BASED • ref Q81

Chemists don't worry about the composition of H,S either obtained from stomach or made in laboratory. This is due to

A. Law of definite proportion
B. Law of multiple proportion
C. Law of conservation of mass
D. Law of reciprocal proportion

ANSWER A — Law of definite proportion
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Law of definite proportion.

248 / CHEMISTRY Q105 EXPECTED • PRACTICE

Which common metal is liquid at room temperature and has a high density?

A. Aluminium
B. Mercury
C. Sodium
D. Zinc

ANSWER B — Mercury
WHY Mercury is liquid at room temperature and has a density near 13.6 g/cm³.

249 / CHEMISTRY Q106 2023 • MEMORY-BASED • ref Q85

Which is used in reducing body temperature?

A. Antipyretic
B. Antiseptic
C. Analgesic
D. Disinfectant

ANSWER A — Antipyretic
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Antipyretic.

250 / CHEMISTRY Q107 2023 • MEMORY-BASED • ref Q86

Which of the following reacts with Tollen's reagent depositing silver mirror?

A. Acetaldehyde
B. Acetone
C. Ethanol
D. Acetic acid

ANSWER A — Acetaldehyde
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Acetaldehyde.

251 / CHEMISTRY Q108 2023 • MEMORY-BASED • ref Q88

Bohr's model failed to explain

A. Stark & Zeeman effect
B. Hydrogen spectrum
C. Atomic spectrum
D. Angular momentum is integral multiple of oh

ANSWER A — Stark & Zeeman effect
WHY Bohr theory accurately describes hydrogen-like one-electron systems.

252 / CHEMISTRY Q109 2023 • MEMORY-BASED • ref Q95

Which is important for flowering & seeding?

A. Phosphorus
B. Nitrogen
C. Potassium
D. Calcium

ANSWER A — Phosphorus
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Phosphorus.

253 / CHEMISTRY Q110 2023 • MEMORY-BASED • ref Q99

Which of the following favors the existence of substance in solid state?

A. High thermal energy
B. Low temperature
C. High temperature
D. Weak cohesive force

ANSWER B — Low temperature
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Low temperature.

254 / CHEMISTRY Q111 2023 • MEMORY-BASED • ref Q100

Oil of Mirbane is the common name for

A. Nitrobenzene
B. Methyl salicylate
C. Ethyl salicylate
D. Benzaldehyde

ANSWER A — Nitrobenzene
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Nitrobenzene.

255 / CHEMISTRY Q112 2025 • MEMORY-BASED • ref Q1

Chloretone is formed when chloroform reacts with

A. Acetone
B. Acetaldehy
C. Formaldehyde
D. Benzaldeliyde

ANSWER A — Acetone
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Acetone.

256 / CHEMISTRY Q113 2025 • MEMORY-BASED • ref Q2

Which of the following gives amino acids as end product after digestion?

A. Fats
B. Lipids
C. Proteins
D. Enzymes

ANSWER C — Proteins
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Proteins.

257 / CHEMISTRY Q114 2025 • ADAPTED • ref Q4

Benzenediazonium chloride treated with CuCl (Sandmeyer reaction) gives:

A. Aniline
B. Phenol
C. Chlorobenzene
D. Benzaldehyde

ANSWER C — Chlorobenzene
WHY CuCl replaces the diazonium group with chlorine in a Sandmeyer reaction.

258 / CHEMISTRY Q115 2025 • MEMORY-BASED • ref Q14

During molten NaCl electrolysis in the Downs cell, what happens at the cathode?

A. Na gets oxidized
B. Na* gets reduced
C. Hz is released
D. Cl is released

ANSWER B — Na* gets reduced
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Na* gets reduced.

259 / CHEMISTRY Q116 2025 • MEMORY-BASED • ref Q19

Why is sodium extract boiled with HNO_3 before lascaincge test?

A. To remove CN- and S— --
B. To make the solution acidic
C. To increase basicity
D. To make solution lighter

ANSWER A — To remove CN- and S— --
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: To remove CN- and S— --.

260 / CHEMISTRY Q117 2025 • ADAPTED • ref Q25

Acetone on prolonged condensation with concentrated H_2SO_4 may form:

A. Benzene
B. Mesitylene (1,3,5-trimethylbenzene)
C. Toluene
D. Ethylbenzene

ANSWER B — Mesitylene (1,3,5-trimethylbenzene)
WHY Acid-catalyzed trimerization/dehydration of acetone can produce mesitylene.

261 / CHEMISTRY Q118 2025 • MEMORY-BASED • ref Q30

Which of the following is not true about CO?

A. It violates octet rule
B. It makes rain water acidic
C. It is pole blue in colour
D. Both b andec

ANSWER A — It violates octet rule
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: It violates octet rule.

262 / CHEMISTRY Q119 2025 • ADAPTED • ref Q31

For the equilibrium A ⇌ B with 1:1 stoichiometry, if Kc = [B]/[A] = 2, then at equilibrium:

A. [B]=[A]
B. [B]=2[A]
C. [A]=2[B]
D. [B]=4[A]

ANSWER B — [B]=2[A]
WHY For this specified reaction, Kc = [B]/[A] = 2 directly determines the ratio.

263 / CHEMISTRY Q120 2025 • ADAPTED • ref Q32

Which transition-metal compound is used with trialkylaluminium in a classical Ziegler–Natta polymerization catalyst?

A. $CdCl_2$
B. $TiCl_4$
C. NaCl
D. $CaCO_3$

ANSWER B — $TiCl_4$
WHY Classical catalysts use titanium chlorides with organoaluminium co-catalysts.

264 / CHEMISTRY Q121 EXPECTED • PRACTICE

Which element in glycine can be detected using a properly performed Lassaigne sodium-fusion test?

A. Nitrogen
B. Chlorine
C. Bromine
D. Iodine

ANSWER A — Nitrogen
WHY Glycine contains nitrogen; sodium fusion converts it to detectable cyanide under appropriate conditions.

265 / CHEMISTRY Q122 2025 • ADAPTED • ref Q40

On heating ethanol with concentrated H_2SO_4 to approximately 170°C, the main organic product is:

A. Ethene
B. Ethane
C. Ethanal
D. Ethanoic acid

ANSWER A — Ethene
WHY Concentrated sulfuric acid dehydrates ethanol to ethene at about 170°C.

266 / CHEMISTRY Q123 2025 • MEMORY-BASED • ref Q41

Heterolytic fission gives

A. Carbocation
B. Ions
C. Free-radical
D. Carbocation and carboanions

ANSWER A — Carbocation
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Carbocation.

267 / CHEMISTRY Q124 2022 • MEMORY-BASED • ref Q6

Which are doesn't contain calcium?

A. Calcite
B. Dolomite
C. Limestone
D. Bauxite

ANSWER D — Bauxite
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Bauxite.

268 / CHEMISTRY Q125 2022 • ADAPTED • ref Q9

The reaction $2NaOH + H_2SO_4 \rightarrow Na_2SO_4 + 2H_2O$ illustrates:

A. Combustion
B. Hydrolysis only
C. Neutralization / double displacement
D. Polymerization

ANSWER C — Neutralization / double displacement
WHY An acid and a base form salt and water through neutralization.

269 / CHEMISTRY Q126 2022 • MEMORY-BASED • ref Q10

Solution of Na in liquid ammonia is blue due to 2

A. Solvated ions
B. Ammoniated electrons
C. Ammoniated atoms
D. Ammoniated ions

ANSWER B — Ammoniated electrons
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Ammoniated electrons.

270 / CHEMISTRY Q127 2022 • MEMORY-BASED • ref Q14

Which is not reduced by H_2?

A. SnO;
B. FesO;
C. ALO;
D. CuO

ANSWER C — ALO;
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: ALO;.

271 / CHEMISTRY Q128 2022 • MEMORY-BASED • ref Q16

Yellow stain is developed while working with Nitric acid. It is due to presence of

A. Protein
B. Lipid
C. Fat
D. Carbohydrate

ANSWER A — Protein
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Protein.

272 / CHEMISTRY Q129 2022 • MEMORY-BASED • ref Q21

For the production of H_2S in lab we use

A. Kipp's apparatus
B. Haber's process
C. Contact process
D. Castner's process 3

ANSWER A — Kipp's apparatus
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Kipp's apparatus.

273 / CHEMISTRY Q130 2022 • MEMORY-BASED • ref Q28

When KMn_0O, is used in the titration of oxalic acid in dil. H:SO, the indicator used is

A. Phenolphthalein
B. Methyl orange
C. Methyl red
D. Self indicator

ANSWER D — Self indicator
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Self indicator.

274 / CHEMISTRY Q131 2022 • MEMORY-BASED • ref Q31

Fractional crystallization is based on the difference of

A. Solubility
B. Density
C. Bpt
D. Vapour pressure

ANSWER A — Solubility
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Solubility.

275 / CHEMISTRY Q132 2022 • MEMORY-BASED • ref Q35

Bohr's atomic spectrum is valid for

A. For hydrogen atom only
B. For hydrogen molecule
C. For hydrogen like single electron species
D. For any species

ANSWER C — For hydrogen like single electron species
WHY Bohr theory accurately describes hydrogen-like one-electron systems.

276 / CHEMISTRY Q133 2022 • MEMORY-BASED • ref Q36

Adipic acid is the monomer of

A. Orlon
B. Nylon 6.6
C. PVC
D. Polyethene

ANSWER B — Nylon 6.6
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Nylon 6.6.

277 / CHEMISTRY Q134 2022 • ADAPTED • ref Q42

Which of the following is a monosaccharide?

A. Glucose
B. Cellulose
C. Starch
D. Sucrose

ANSWER A — Glucose
WHY Glucose is a single sugar unit; sucrose is a disaccharide and the others are polysaccharides.

278 / CHEMISTRY Q135 2026 • MODEL SET

The approximate mass percentage of nitrogen in urea $CO(NH_2)_2$ is:

A. 18.7%
B. 46.7%
C. 60.0%
D. 72.0%

ANSWER B — 46.7%
WHY Nitrogen contributes 28 g to urea's 60 g molar mass: 46.7%.

279 / CHEMISTRY Q136 2026 • MODEL SET

The 4p orbital begins to fill after which subshell in the ground-state Aufbau order?

A. 4d
B. 5s
C. 4f
D. 3d

ANSWER D — 3d
WHY The usual sequence is 4s → 3d → 4p.

280 / CHEMISTRY Q137 EXPECTED • PRACTICE

Which species is the conjugate base of $H_2PO_4^-$?

A. H_3PO_4
B. HPO_4^{2-}
C. PO_4^{3-}
D. $H_2PO_4^{2+}$

ANSWER B — HPO_4^{2-}
WHY Loss of one proton from $H_2PO_4^-$ forms HPO_4^{2-}.

ORGANIC CHEMISTRY • 34 Qs

281 / CHEMISTRY Q138 ADVANCED MOCK 2026 • ref Q109

Which reagent sequence most directly converts a primary alcohol to a carboxylic acid without changing carbon number?

A. Hydrogenation over Ni
B. Mild dehydration only
C. Aqueous base only
D. Strong oxidation under reflux

ANSWER D — Strong oxidation under reflux
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Strong oxidation under reflux.

282 / CHEMISTRY Q139 ADVANCED MOCK 2026 • ref Q110

Phenol is more acidic than cyclohexanol chiefly because:

A. phenol has no O-H bond
B. cyclohexanol is aromatic
C. phenoxide concentrates charge on carbon only
D. phenoxide ion is resonance stabilized

ANSWER D — phenoxide ion is resonance stabilized

WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: phenoxide ion is resonance stabilized.

283 / CHEMISTRY Q140 ADVANCED MOCK 2026 • ref Q111

An aldehyde and a ketone have the same molecular formula. Tollens reagent distinguishes them because aldehydes:

A. cannot contain carbonyl groups
B. undergo only reduction
C. are always aromatic
D. are more readily oxidized under mild conditions

ANSWER D — are more readily oxidized under mild conditions

WHY For thin lenses, use $1/f = 1/v - 1/u$ with the chosen sign convention.

284 / CHEMISTRY Q141 ADVANCED MOCK 2026 • ref Q112

Hydrolysis of an ester in alkali is effectively driven forward because the carboxylic acid product:

A. becomes an alkane
B. immediately reforms ester quantitatively
C. produces no alcohol
D. forms a resonance-stabilized carboxylate salt

ANSWER D — forms a resonance-stabilized carboxylate salt

WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: forms a resonance-stabilized carboxylate salt.

285 / CHEMISTRY Q142 ADVANCED MOCK 2026 • ref Q113

Benzene undergoes substitution rather than ordinary addition mainly because addition would:

A. retain all six π electrons unchanged
B. make every carbon sp hybridized
C. destroy aromatic stabilization
D. increase resonance

ANSWER C — destroy aromatic stabilization

WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: destroy aromatic stabilization.

286 / CHEMISTRY Q143 ADVANCED MOCK 2026 • ref Q118

Dehydration of butan-2-ol can yield more than one alkene. The major product is generally the:

A. more substituted, more stable alkene
B. alcohol with more water
C. product formed by carbon-chain cleavage only
D. least substituted alkane

ANSWER A — more substituted, more stable alkene

WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: more substituted, more stable alkene.

287 / CHEMISTRY Q144 ADVANCED MOCK 2026 • ref Q119

Ethanal reacts with HCN to give a cyanohydrin. The carbonyl carbon is attacked because it is:

A. strongly nucleophilic
B. electron deficient due to C=O polarization
C. negatively charged in the reactant
D. aromatic

ANSWER B — electron deficient due to C=O polarization
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: electron deficient due to C=O polarization.

288 / CHEMISTRY Q145 ADVANCED MOCK 2026 • ref Q120

Aniline is less basic than ethylamine because the nitrogen lone pair in aniline is:

A. held by hydrogen only
B. converted into a σ bond with oxygen
C. delocalized into the benzene ring
D. absent

ANSWER C — delocalized into the benzene ring
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: delocalized into the benzene ring.

289 / CHEMISTRY Q146 ADVANCED MOCK 2026 • ref Q122

Glucose gives a positive reducing-sugar test despite being predominantly cyclic because:

A. it contains a ketone only and never opens
B. the test hydrolyses it to methane
C. all alcohols reduce Cu^{2+} identically
D. its ring can equilibrate with an open-chain aldehyde form

ANSWER D — its ring can equilibrate with an open-chain aldehyde form
WHY The open-chain aldehyde form remains in equilibrium with cyclic glucose, enabling its reducing-sugar reactions.

290 / CHEMISTRY Q147 ADVANCED MOCK 2026 • ref Q123

Addition polymerization of ethene changes each monomer primarily by:

A. eliminating CO_2 from every unit
B. opening the π bond to form new σ bonds in a chain
C. retaining isolated C=C bonds in each repeat unit
D. forming peptide bonds

ANSWER B — opening the π bond to form new σ bonds in a chain
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: opening the π bond to form new σ bonds in a chain.

291 / CHEMISTRY Q148 ADVANCED MOCK 2026 • ref Q124

A compound C_3H_6O is oxidized by Tollens reagent and reduced to a primary alcohol. It is most consistent with:

A. propanoic acid
B. propan-2-ol
C. propanone
D. propanal

ANSWER D — propanal
WHY For thin lenses, use 1/f = 1/v − 1/u with the chosen sign convention.

292 / CHEMISTRY Q149 2024 • MEMORY-BASED • ref Q16

Breathalyzer is a device is used to test the consumption of alcohol in motorists. Which chemical is used in this process?

A. Conc. H_2SO_4
B. Conc. HNO_3
C. HIO_3
D. $K_2Cr_2O_7$

ANSWER D — $K_2Cr_2O_7$
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: $K_2Cr_2O_7$.

293 / CHEMISTRY Q150 2024 • MEMORY-BASED • ref Q33

Benzene diazonium chloride on treatment with Aniline gives:

A. p- Amino azobenzene
B. p- Hydroxy azobenzene
C. o- Amino azobenzene
D. p- Amino phenol

ANSWER A — p- Amino azobenzene
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: p- Amino azobenzene.

294 / CHEMISTRY Q151 2024 • MEMORY-BASED • ref Q34

IUPAC name of Glycerol is:

A. Propan-1,2,3-ol
B. 1,2,3-Hydroxypropane
C. Propan-1,2,3-triol
D. Propan-1,2,3-trialcohol

ANSWER C — Propan-1,2,3-triol
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Propan-1,2,3-triol.

295 / CHEMISTRY Q152 2024 • MEMORY-BASED • ref Q37

In Nitrobenzene, Nitro group ($-NO_2$) acts as:

A. o-directing group
B. m-directing group
C. o- and p- directing group
D. ring activating group

ANSWER B — m-directing group
WHY Electrophilic nitration of benzene proceeds through the nitronium ion NO_2^+.

296 / CHEMISTRY Q153 2024 • MEMORY-BASED • ref Q43

When phenol reacts with excess Bromine, the product obtained is:

A. o- Bromophenol
B. m- Bromophenol
C. o, p- dibromophenol
D. Tribromophenol

ANSWER D — Tribromophenol
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Tribromophenol.

297 / CHEMISTRY Q154 2024 • ADAPTED • ref Q46

What is the correct IUPAC name for $CH_3–C(CH_3)_2–CH_2–CH_3$?

A. 3,3-Dimethylbutane
B. 2,2-Dimethylbutane
C. 2-Methylpentane
D. 2,3-Dimethylbutane

ANSWER B — 2,2-Dimethylbutane
WHY The longest chain has four carbons; two methyl substituents are both on carbon 2.

298 / CHEMISTRY Q155 2024 • MEMORY-BASED • ref Q49

An alkene, on Ozonolysis gave acetaldehyde and acetone. The alkene may be:

A. But-2-ene
B. 2-Methylbut-2-ene
C. Butene
D. 2-Methylbutene

ANSWER B — 2-Methylbut-2-ene
WHY Ozonolysis cleaves a carbon–carbon double bond to give carbonyl fragments.

299 / CHEMISTRY Q156 2023 • MEMORY-BASED • ref Q53

$(F2xC-CF_4)n$ is polymer of

A. Teflon
B. Nylon
C. Orlon
D. Polythene

ANSWER A — Teflon
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Teflon.

300 / CHEMISTRY Q157 EXPECTED • PRACTICE

Hydrolysis of an ester catalyzed by added H^+ ions is an example of:

A. Autocatalysis
B. Heterogeneous metal catalysis
C. Homogeneous acid catalysis
D. Enzyme inhibition

ANSWER C — Homogeneous acid catalysis
WHY H^+ and the reacting solution occupy the same liquid phase; this is homogeneous acid catalysis.

301 / CHEMISTRY Q158 2023 • MEMORY-BASED • ref Q78

Amino acid has two functional group. If amino acid is subjected to decarboxylation, then it forms:

A. Primary amine
B. Alcohol
C. Carboxylic acid
D. Amide

ANSWER A — Primary amine
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Primary amine.

302 / CHEMISTRY Q159 2023 • MEMORY-BASED • ref Q84

Phenol reacts with chloroform & NaOH to form

A. Salicylic acid
B. Salicaldehyde
C. Benzoic acid
D. Carbylamine

ANSWER B — Salicaldehyde
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Salicaldehyde.

303 / CHEMISTRY Q160 2023 • MEMORY-BASED • ref Q98

Lindlar's catalyst helps in the conversion of alkyne to

A. Trans alkene
B. Cis alkene
C. Alkane
D. Cycloalkane

ANSWER B — Cis alkene
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Cis alkene.

304 / CHEMISTRY Q161 2025 • ADAPTED • ref Q3

What is the IUPAC name of $CH_3COCH_2CH_2CH_3$?

A. Pentan-3-one
B. Pentan-2-one
C. Butan-2-one
D. Pentanal

ANSWER B — Pentan-2-one
WHY The carbonyl carbon receives the lowest locant, 2.

305 / CHEMISTRY Q162 2025 • MEMORY-BASED • ref Q5

Nylon 6,6 is formed by the condensation of the monomers:

A. Butane-1.3-diene 4 propylene
B. Ethane -1.2-diol4 1.4 benzenedionic acid
C. Phenol and formaldehyde
D. 1,6-diamino hexane and 1,6 hexanedioic acid

ANSWER D — 1,6-diamino hexane and 1,6 hexanedioic acid
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: 1,6-diamino hexane and 1,6 hexanedioic acid.

306 / CHEMISTRY Q163 2025 • MEMORY-BASED • ref Q6

On ozonolysis, benzone gives

A. only ethanol
B. only methanol
C. methanol and ethanol
D. only ethanedial

ANSWER D — only ethanedial
WHY Ozonolysis cleaves a carbon–carbon double bond to give carbonyl fragments.

307 / CHEMISTRY Q164 2025 • MEMORY-BASED • ref Q13

Haloarene are less reactive than haloalkanes because of

A. Resonance
B. Mesomeric
C. Inductive effect
D. Hyperconjugation

ANSWER A — Resonance
WHY Resonance gives aryl C–halogen bonds partial double-bond character, reducing substitution reactivity.

308 / CHEMISTRY Q165 2025 • MEMORY-BASED • ref Q28

Preparation of aldehyde from acid chloride is known as;

A. Rosenmund's reduction
B. Cannizaro reaction
C. Perkins's condensation
D. Benzoin condensation

ANSWER A — Rosenmund's reduction
WHY Use the defining chemical property or reaction condition, rather than a look-alike distractor: Rosenmund's reduction.

309 / CHEMISTRY Q166 2022 • ADAPTED • ref Q8

Why is ozone used in water treatment?

A. To remove Ca^{2+} hardness selectively
B. To make water more radioactive
C. To add chloride
D. To disinfect by oxidative destruction of microorganisms

ANSWER D — To disinfect by oxidative destruction of microorganisms
WHY Ozone is an oxidizing disinfectant; this is called ozonation, not ozonolysis.

310 / CHEMISTRY Q167 2026 • MODEL SET

Which alcohol gives a red coloration first in the Victor Meyer test?

A. Primary alcohol
B. Secondary alcohol
C. Tertiary alcohol
D. Phenol

ANSWER A — Primary alcohol
WHY The primary nitroalkane-derived species gives red under alkaline Victor Meyer conditions.

311 / CHEMISTRY Q168 2026 • MODEL SET

Which catalyst is classically used for the hydrogenation of an alkene to an alkane?

A. Ni or Pt
B. Concentrated H_2SO_4 only
C. $KMnO_4$ only
D. $AgNO_3$ only

ANSWER A — Ni or Pt
WHY Finely divided Ni, Pt or Pd catalyzes addition of H_2 across C=C.

312 / CHEMISTRY Q169 EXPECTED • PRACTICE

Which reagent converts a primary alcohol to an aldehyde without overoxidation under suitable conditions?

A. PCC
B. Excess acidified $KMnO_4$
C. NaOH
D. H_2/Ni

ANSWER A — PCC
WHY PCC is a selective mild oxidant for alcohol-to-carbonyl conversion.

313 / CHEMISTRY Q170 EXPECTED • PRACTICE

The product of a typical aldol addition is:

A. α-hydroxy ketone
B. β-hydroxy carbonyl compound
C. Carboxylic acid only
D. Alkane

ANSWER B — β-hydroxy carbonyl compound
WHY Enolate attack on a carbonyl forms a β-hydroxy aldehyde or ketone.

314 / CHEMISTRY Q171 EXPECTED • PRACTICE

Aromatic nitration of benzene principally involves which electrophile?

A. NO_2^+
B. NO_3^-
C. NH_4^+
D. OH^-

ANSWER A — NO_2^+
WHY Nitronium ion attacks the aromatic π-electron system.

ELECTROCHEMISTRY • 1 Qs

315 / CHEMISTRY Q172 EXPECTED • PRACTICE

Oxidation always occurs at the:

A. Cathode
B. Anode
C. Salt bridge
D. Voltmeter

ANSWER B — Anode
WHY Anode is the oxidation electrode in galvanic and electrolytic cells.

CHEMICAL KINETICS • 1 Qs

316 / CHEMISTRY Q173 EXPECTED • PRACTICE

For a first-order reaction, the half-life is:

A. Proportional to initial concentration
B. Independent of initial concentration
C. Zero
D. Dependent only on volume

ANSWER B — Independent of initial concentration
WHY $t_{1/2} = 0.693/k$ for first-order kinetics.

EQUILIBRIUM • 1 Qs

317 / CHEMISTRY Q174 EXPECTED • PRACTICE

Adding a catalyst to a system already at equilibrium changes the equilibrium constant by:

A. Increasing it
B. Decreasing it
C. No change
D. Reversing its sign

ANSWER C — No change
WHY A catalyst accelerates both directions equally and does not shift equilibrium.

CHEMICAL BONDING • 1 Qs

318 / CHEMISTRY Q175 EXPECTED • PRACTICE

The hybridization of carbon in ethyne (C_2H_2) is:

A. sp^3
B. sp^2
C. sp
D. dsp^2

ANSWER C — sp
WHY Each carbon makes two sigma-bond directions and retains two p orbitals for π bonding.

BIOMOLECULES • 1 Qs

319 / CHEMISTRY Q176 EXPECTED • PRACTICE

The linkage joining two amino acids in a peptide is a/an:

A. Ether
B. Ester
C. Amide
D. Acetal

ANSWER C — Amide
WHY A peptide bond is an amide bond formed with loss of water.

ANALYTICAL CHEMISTRY • 1 Qs

320 / CHEMISTRY Q177 EXPECTED • PRACTICE

In acid–base titration, the equivalence point is defined by:

A. Indicator becoming colorless
B. Stoichiometric reaction completion
C. pH always 7
D. Highest temperature

ANSWER B — Stoichiometric reaction completion

WHY Equivalence depends on the reaction stoichiometry, not a universal pH value.

CEE MCQ's & Sure Shots

03 / BOTANY

151 explained CEE-style MCQs • Source themes + expected practice

Practice the topic first. Then use the answer ribbon and WHY note to make each item a micro-revision.

DIVERSITY, ECOLOGY AND APPLIED BOTANY • 75 Qs

321 / BOTANY Q001 ADVANCED MOCK 2026 • ref Q41

Heating an enzyme gradually reduces reaction rate even though substrate remains abundant. The best molecular explanation is:

A. substrate becomes an enzyme
B. active-site conformation is disrupted beyond an optimum
C. peptide bonds always hydrolyse at body temperature
D. activation energy becomes zero

ANSWER B — active-site conformation is disrupted beyond an optimum
WHY The distinguishing feature in diversity, ecology and applied botany is active-site conformation is disrupted beyond an optimum; contrast it with the related processes in the alternatives.

322 / BOTANY Q002 ADVANCED MOCK 2026 • ref Q44

A fungus obtains carbon from a living host and later produces resistant spores. Which observation best distinguishes it from a green plant?

A. Absorptive heterotrophy with chitinous wall
B. Multicellularity
C. Formation of spores
D. Presence of a cell wall

ANSWER A — Absorptive heterotrophy with chitinous wall
WHY A parasite gains nutrients from a host, which suffers the cost; this is not a discussion of antibiotic resistance.

323 / BOTANY Q003 ADVANCED MOCK 2026 • ref Q49

Lichens colonize bare rock successfully because the association combines:

A. fungal mineral/water retention with photosynthetic carbon gain
B. two autotrophs competing for light
C. a root and mycorrhiza of a vascular plant
D. a virus and bacterium

ANSWER A — fungal mineral/water retention with photosynthetic carbon gain
WHY In a lichen, fungus provides protection and mineral absorption while its photosynthetic partner supplies sugars.

324 / BOTANY Q004 ADVANCED MOCK 2026 • ref Q52

Two plant species use the same limiting mineral but different soil depths. Their coexistence is best explained by:

A. identical niches
B. absence of competition
C. resource partitioning
D. primary productivity being zero

ANSWER C — resource partitioning
WHY Resource partitioning reduces competition by separating resource use in space or time.

325 / BOTANY Q005 ADVANCED MOCK 2026 • ref Q53

Net primary productivity is lower than gross primary productivity because plants:

A. transfer all energy to herbivores
B. consume some fixed carbon in respiration
C. do not photosynthesize
D. convert energy completely into heat before fixation

ANSWER B — consume some fixed carbon in respiration
WHY NPP = GPP − autotrophic respiration; plants use part of fixed carbon themselves.

326 / BOTANY Q006 ADVANCED MOCK 2026 • ref Q54

During primary succession on lava, early colonizers facilitate later species mainly by:

A. forming soil and modifying microclimate
B. eliminating nutrient cycles
C. preventing weathering
D. removing all organic matter

ANSWER A — forming soil and modifying microclimate
WHY Pioneer communities create organic matter and soil, making the environment suitable for later colonists.

327 / BOTANY Q007 ADVANCED MOCK 2026 • ref Q55

Biomagnification predicts the highest concentration of a persistent lipid-soluble pesticide in:

A. decomposers regardless of food web
B. top consumers feeding through several trophic levels
C. soil water only
D. producers exposed briefly

ANSWER B — top consumers feeding through several trophic levels
WHY Persistent pollutants increase in concentration along successive trophic levels, peaking in top consumers.

328 / BOTANY Q008 ADVANCED MOCK 2026 • ref Q62

A testcross yields offspring in a 1:1 ratio of parental types with no recombinants. The most defensible inference is:

A. the two loci are completely linked in that cross
B. both genes are lethal
C. independent assortment produced only parentals
D. the tested individual is homozygous

ANSWER A — the two loci are completely linked in that cross
WHY Complete linkage keeps alleles on the same homolog inherited together, yielding only parental combinations.

329 / BOTANY Q009 ADVANCED MOCK 2026 • ref Q64

A carrier female for an X-linked recessive trait mates with a normal male. Which child has the highest specified risk?

A. All sons: affected
B. Any daughter: 50% affected
C. Any son: 50% affected
D. All daughters: carriers

ANSWER C — Any son: 50% affected
WHY A carrier mother transmits the mutant X to half her sons; normal father gives sons a Y.

330 / BOTANY Q010 ADVANCED MOCK 2026 • ref Q67

A ring of bark is removed without damaging wood. Sugar accumulates above the ring while leaves initially remain hydrated. This demonstrates that:

A. phloem translocates organic solutes while xylem still carries water
B. both tissues were removed
C. transpiration stops immediately
D. xylem transports sugar downward

ANSWER A — phloem translocates organic solutes while xylem still carries water
WHY Girdling interrupts phloem sugar transport without immediately interrupting xylem water flow.

331 / BOTANY Q011 ADVANCED MOCK 2026 • ref Q73

A plant supplied nitrate but lacking magnesium develops chlorosis because magnesium is required chiefly for:

A. DNA base pairing only
B. stomatal pores
C. the chlorophyll molecule and enzyme function
D. cellulose monomers

ANSWER C — the chlorophyll molecule and enzyme function
WHY Magnesium is the central metal in chlorophyll and participates in numerous enzyme processes.

332 / BOTANY Q012 ADVANCED MOCK 2026 • ref Q76

Double fertilization produces a zygote and endosperm. The endosperm usually receives nuclei in the ratio:

A. two sperms plus one egg
B. one egg plus one synergid
C. two eggs plus one sperm
D. one sperm plus two polar nuclei

ANSWER D — one sperm plus two polar nuclei
WHY One sperm fuses with the egg; the second joins two polar nuclei to form typically triploid endosperm.

333 / BOTANY Q013 ADVANCED MOCK 2026 • ref Q79

Crop rotation with legumes can reduce nitrogen fertilizer need primarily through:

A. conversion of nitrate into atmospheric nitrogen only
B. elimination of all soil microbes
C. photosynthesis by roots
D. symbiotic biological nitrogen fixation

ANSWER D — symbiotic biological nitrogen fixation
WHY Rhizobium in legume root nodules fixes atmospheric nitrogen, enriching the crop system.

334 / BOTANY Q014 2024 • MEMORY-BASED • ref Q1

Which of the following is not a cause of variation?

A. Crossing over
B. Mutation
C. Linkage
D. Independent assortment

ANSWER C — Linkage
WHY The distinguishing feature in diversity, ecology and applied botany is Linkage; contrast it with the related processes in the alternatives.

335 / BOTANY Q015 2024 • MEMORY-BASED • ref Q6

All plants of a particular species living in a certain area at a given time is called:

A. Community
B. Vegetation
C. Population
D. Ecosystem

ANSWER C — Population
WHY The distinguishing feature in diversity, ecology and applied botany is Population; contrast it with the related processes in the alternatives.

336 / BOTANY Q016 2024 • MEMORY-BASED • ref Q9

Zygospore of Spirogyra is:

A. Haploid
B. Diploid
C. Diplohaploid
D. Polyploid

ANSWER B — Diploid
WHY The distinguishing feature in diversity, ecology and applied botany is Diploid; contrast it with the related processes in the alternatives.

337 / BOTANY Q017 2024 • MEMORY-BASED • ref Q10

Sporophyte of Marchantia is:

A. Autotrophic
B. Independent
C. Parasitic
D. Saprophytic

ANSWER C — Parasitic
WHY The distinguishing feature in diversity, ecology and applied botany is Parasitic; contrast it with the related processes in the alternatives.

338 / BOTANY Q018 2024 • MEMORY-BASED • ref Q11

Prothallus of Fern is:

A. Haploid
B. Diploid
C. Haplodiploid
D. Diplohaploid

ANSWER A — Haploid
WHY The distinguishing feature in diversity, ecology and applied botany is Haploid; contrast it with the related processes in the alternatives.

339 / BOTANY Q019 2024 • MEMORY-BASED • ref Q20

Crossing over occurs between

A. Non- sister chromatids of non- homologous chromosomes
B. Sister chromatids of non- homologous chromosomes
C. Non-sister chromatids of homologous chromosomes
D. Sister chromatids of homologous chromosomes

ANSWER C — Non-sister chromatids of homologous chromosomes
WHY The distinguishing feature in diversity, ecology and applied botany is Non-sister chromatids of homologous chromosomes; contrast it with the related processes in the alternatives.

340 / BOTANY Q020 2024 • MEMORY-BASED • ref Q21

Herkogamy means:

A. Self- incompatibility of pollen grain
B. Physical barrier for self-pollination
C. Maturation at different time
D. Different lengths of reproductive parts

ANSWER B — Physical barrier for self-pollination
WHY The distinguishing feature in diversity, ecology and applied botany is Physical barrier for self-pollination; contrast it with the related processes in the alternatives.

341 / BOTANY Q021 2024 • MEMORY-BASED • ref Q26

The innermost layer of anther wall responsible for providing nutrition is termed as:

A. Endothecium
B. Tapetum
C. Exine
D. Intine

ANSWER B — Tapetum
WHY The distinguishing feature in diversity, ecology and applied botany is Tapetum; contrast it with the related processes in the alternatives.

342 / BOTANY Q022 2024 • MEMORY-BASED • ref Q27

Turpentine oil is extracted from:

A. Pinus
B. Cycas
C. Cedrus
D. Fern

ANSWER A — Pinus
WHY The distinguishing feature in diversity, ecology and applied botany is Pinus; contrast it with the related processes in the alternatives.

343 / BOTANY Q023 2024 • MEMORY-BASED • ref Q28

Which of the following is wrong for Solanaceae?

A. Obliquely placed ovary
B. Unilocular ovary
C. Epipetalous stamens
D. Persistent sepal

ANSWER B — Unilocular ovary
WHY The distinguishing feature in diversity, ecology and applied botany is Unilocular ovary; contrast it with the related processes in the alternatives.

344 / BOTANY Q024 2024 • MEMORY-BASED • ref Q30

The dominant pigment in Rhodophyceae is:

A. Chlorophyll b
B. Chlorophyll c
C. Phycocyanin
D. Phycoerythrin

ANSWER D — Phycoerythrin
WHY The distinguishing feature in diversity, ecology and applied botany is Phycoerythrin; contrast it with the related processes in the alternatives.

345 / BOTANY Q025 2024 • MEMORY-BASED • ref Q31

The end product of oxidative phosphorylation is:

A. ATP and H_2O
B. ATP
C. NADH2
D. ATP and NADH2

ANSWER A — ATP and H_2O
WHY The distinguishing feature in diversity, ecology and applied botany is ATP and H_2O; contrast it with the related processes in the alternatives.

346 / BOTANY Q026 2024 • MEMORY-BASED • ref Q32

A normal man with a colourblind father married a normal woman with a colourblind mother. Then, what percentage of the sons will be colourblind?

A. 25%
B. 50%
C. 75%
D. 100%

ANSWER B — 50%
WHY Draw a family tree and follow each relationship one link at a time.

347 / BOTANY Q027 2024 • MEMORY-BASED • ref Q33

The plant part used for tissue culture is called:

A. Stock
B. Explant
C. Callus
D. Scion

ANSWER B — Explant
WHY The distinguishing feature in diversity, ecology and applied botany is Explant; contrast it with the related processes in the alternatives.

348 / BOTANY Q028 2024 • MEMORY-BASED • ref Q34

The end product of Glycolysis is:

A. 2 molecules of Pyruvic acid
B. Acetyl Co-A
C. CO_2 and H_2O
D. NADH2

ANSWER A — 2 molecules of Pyruvic acid
WHY The distinguishing feature in diversity, ecology and applied botany is 2 molecules of Pyruvic acid; contrast it with the related processes in the alternatives.

349 / BOTANY Q029 2024 • MEMORY-BASED • ref Q35

Which is the process of converting atmospheric nitrogen into usable form?

A. Ammonification
B. Nitrification
C. Nitrogen fixation
D. Nitrogen assimilation

ANSWER C — Nitrogen fixation
WHY The distinguishing feature in diversity, ecology and applied botany is Nitrogen fixation; contrast it with the related processes in the alternatives.

350 / BOTANY Q030 2024 • MEMORY-BASED • ref Q36

The transgenic plant which was developed to overcome Vitamin A deficiency is:

A. Triticale
B. Pomato
C. Golden rice
D. Bt cotton

ANSWER C — Golden rice
WHY The distinguishing feature in diversity, ecology and applied botany is Golden rice; contrast it with the related processes in the alternatives.

351 / BOTANY Q031 2024 • MEMORY-BASED • ref Q37

All carbohydrates are:

A. Pentose and Hexose
B. Ribose and Deoxyribose
C. Aldose and ketose
D. Triose and tetrose

ANSWER C — Aldose and ketose
WHY The distinguishing feature in diversity, ecology and applied botany is Aldose and ketose; contrast it with the related processes in the alternatives.

352 / BOTANY Q032 2023 • MEMORY-BASED • ref Q102

Tracheophyta includes:

A. Angiosperms and Gymnospenms
B. Angiosperms only
C. Angiosperms, Gymnosperms and Pteridophyta
D. Angiosperms, Gymnosperms, Pteridophyta and Bryophyta

ANSWER C — Angiosperms, Gymnosperms and Pteridophyta
WHY The distinguishing feature in diversity, ecology and applied botany is Angiosperms, Gymnosperms and Pteridophyta; contrast it with the related processes in the alternatives.

353 / BOTANY Q033 2023 • MEMORY-BASED • ref Q103

Which one of the following has the least similar characters?

A. Family
B. Order
C. Genus
D. Class

ANSWER D — Class
WHY The distinguishing feature in diversity, ecology and applied botany is Class; contrast it with the related processes in the alternatives.

354 / BOTANY Q034 2023 • MEMORY-BASED • ref Q104

Which of these is mismatched?

A. Phaneros — Visible
B. Gymno — Naked
C. Bryon- Liverworts
D. Kryptos — Concealed

ANSWER C — Bryon- Liverworts
WHY The distinguishing feature in diversity, ecology and applied botany is Bryon- Liverworts; contrast it with the related processes in the alternatives.

355 / BOTANY Q035 2023 • MEMORY-BASED • ref Q105

The taxa of living organism in danger of extinction from the world in the near future if the threats continue to be operative belong to the TUCN category of:

A. Threatened
B. Vulnerable
C. Extinct
D. Endangered

ANSWER D — Endangered
WHY The distinguishing feature in diversity, ecology and applied botany is Endangered; contrast it with the related processes in the alternatives.

356 / BOTANY Q036 2023 • MEMORY-BASED • ref Q106

Siliqua develops from:

A. Monocarpellary gynoecium
B. Bicarpellary gynoecium
C. Tricarpellary gynoecium
D. Multicarpellary gynoecium

ANSWER B — Bicarpellary gynoecium
WHY The distinguishing feature in diversity, ecology and applied botany is Bicarpellary gynoecium; contrast it with the related processes in the alternatives.

357 / BOTANY Q037 2023 • MEMORY-BASED • ref Q108

Protoplasm was first observed by:

A. Dujardin
B. Purkinje
C. Van Mohl
D. Corti

ANSWER D — Corti
WHY The distinguishing feature in diversity, ecology and applied botany is Corti; contrast it with the related processes in the alternatives.

358 / BOTANY Q038 2023 • MEMORY-BASED • ref Q115

When radio labelled C-14 Uracil is incorporated in a sample, the molecular component that can be discovered is:

A. DNA
B. RNA
C. Histone
D. Nucleotide

ANSWER B — RNA
WHY The distinguishing feature in diversity, ecology and applied botany is RNA; contrast it with the related processes in the alternatives.

359 / BOTANY Q039 2023 • MEMORY-BASED • ref Q118

Opening of flower and drooping of bud is an example of

A. Epinasty
B. Hyponasty
C. Spontaneous Movement
D. Movement of Curvature

ANSWER A — Epinasty
WHY The distinguishing feature in diversity, ecology and applied botany is Epinasty; contrast it with the related processes in the alternatives.

360 / BOTANY Q040 2023 • MEMORY-BASED • ref Q119

Bolting in plants is caused by-

A. Auxin
B. Ethylene
C. Gibberellins
D. Abscisic acid

ANSWER C — Gibberellins
WHY The distinguishing feature in diversity, ecology and applied botany is Gibberellins; contrast it with the related processes in the alternatives.

361 / BOTANY Q041 2023 • MEMORY-BASED • ref Q122

Commercial jute fibres are obtained from bark Bark is anatomically:

A. Outside the vascular cambium and is phloem fibres
B. Outside the cork cambium and is phellem
C. All parts outside to pith
D. All parts outside to the vascular cambium

ANSWER A — Outside the vascular cambium and is phloem fibres
WHY The distinguishing feature in diversity, ecology and applied botany is Outside the vascular cambium and is phloem fibres; contrast it with the related processes in the alternatives.

362 / BOTANY Q042 2023 • MEMORY-BASED • ref Q123

Endosperm in angiosperm is:

A. Haploid
B. Diploid
C. Triploid
D. Polyploid

ANSWER C — Triploid
WHY The distinguishing feature in diversity, ecology and applied botany is Triploid; contrast it with the related processes in the alternatives.

363 / BOTANY Q043 2023 • MEMORY-BASED • ref Q128

The ecological interaction between two organisms which has a negative impact on both the organisms is:

A. Predation
B. Parasitism
C. Competition
D. Amensalism

ANSWER C — Competition
WHY The distinguishing feature in diversity, ecology and applied botany is Competition; contrast it with the related processes in the alternatives.

364 / BOTANY Q044 2023 • MEMORY-BASED • ref Q131

PCR technique was discovered by:

A. Kary Mullis
B. Sanger
C. Wilmut
D. Cohn

ANSWER A — Kary Mullis
WHY The distinguishing feature in diversity, ecology and applied botany is Kary Mullis; contrast it with the related processes in the alternatives.

365 / BOTANY Q045 2023 • MEMORY-BASED • ref Q132

Grafting is useful because:

A. It gives rise to many plants
B. It can be used to obtain desired genetic traits
C. It ts easier to perform and economic
D. It gives rise to genetically advanced progenies

ANSWER B — It can be used to obtain desired genetic traits
WHY The distinguishing feature in diversity, ecology and applied botany is It can be used to obtain desired genetic traits; contrast it with the related processes in the alternatives.

366 / BOTANY Q046 2023 • MEMORY-BASED • ref Q134

In tissue culture, explants are sterilized by:

A. By passing through filter membrane of pore size less than 0.2 microns
B. By passing UV light
C. Distillation
D. Sodium hypochlorite solution

ANSWER D — Sodium hypochlorite solution
WHY The distinguishing feature in diversity, ecology and applied botany is Sodium hypochlorite solution; contrast it with the related processes in the alternatives.

367 / BOTANY Q047 2023 • MEMORY-BASED • ref Q136

An interconnected food chain is:

A. Food web
B. Trophic level
C. Ecological Pyramid
D. Food Cycle

ANSWER A — Food web
WHY The distinguishing feature in diversity, ecology and applied botany is Food web; contrast it with the related processes in the alternatives.

368 / BOTANY Q048 2023 • MEMORY-BASED • ref Q138

A researcher working on plant species wants to preserve the plant and stores it in a cold temperature so that the plant remains viable for a long period of time. This method of preservation of biological species by storing them at a cold temperature is known as:

A. Vemalization
B. In situ preservation
C. Cryopreservation
D. In vitro storage

ANSWER C — Cryopreservation
WHY The distinguishing feature in diversity, ecology and applied botany is Cryopreservation; contrast it with the related processes in the alternatives.

369 / BOTANY Q049 2023 • MEMORY-BASED • ref Q140

Which of the following is true for wine and beer?

A. Yeast is used for fermentation of beer and bacteria is used for fermentation of wine
B. Beer is prepared from fermented malt and wine from fermented molasses
C. Beer is prepared from fermented malt and wine is prepared from fermented fruits
D. Both beer and wine are prepared from fermented malt

ANSWER C — Beer is prepared from fermented malt and wine is prepared from fermented fruits
WHY The distinguishing feature in diversity, ecology and applied botany is Beer is prepared from fermented malt and wine is prepared from fermented fruits; contrast it with the related processes in the alternatives.

370 / BOTANY Q050 2025 • MEMORY-BASED • ref Q56

Cystic fibrosis is

A. Autoimmune disorder
B. Genetic disorder
C. Physiological disorder
D. Nutritional disorder

ANSWER B — Genetic disorder
WHY The distinguishing feature in diversity, ecology and applied botany is Genetic disorder; contrast it with the related processes in the alternatives.

371 / BOTANY Q051 2025 • MEMORY-BASED • ref Q57

Digestion of protein gives

A. Amino acid
B. Ester
C. Fat
D. Carbohydrate

ANSWER A — Amino acid
WHY The distinguishing feature in diversity, ecology and applied botany is Amino acid; contrast it with the related processes in the alternatives.

372 / BOTANY Q052 2025 • MEMORY-BASED • ref Q58

Which of the following has narrow lumen:

A. Sclerenchymatous fibres
B. Stone cell
C. Scleids
D. Sclrenchyme

ANSWER A — Sclerenchymatous fibres
WHY The distinguishing feature in diversity, ecology and applied botany is Sclerenchymatous fibres; contrast it with the related processes in the alternatives.

373 / BOTANY Q053 2025 • MEMORY-BASED • ref Q62

Which of the following is not anecploidy?

A. Downs syndrome
B. Turner's syndrome
C. Phenylketonuria
D. Khnfellers syndrome

ANSWER C — Phenylketonuria
WHY The distinguishing feature in diversity, ecology and applied botany is Phenylketonuria; contrast it with the related processes in the alternatives.

374 / BOTANY Q054 2025 • MEMORY-BASED • ref Q63

Phenotypic and genotypic ratio is game in?

A. Codominance
B. Intermediate inheritance
C. Epistaxis
D. Linkage

ANSWER B — Intermediate inheritance
WHY The distinguishing feature in diversity, ecology and applied botany is Intermediate inheritance; contrast it with the related processes in the alternatives.

375 / BOTANY Q055 2025 • MEMORY-BASED • ref Q64

Obligate relationship is found in?

A. Mutualism
B. Commensalin
C. Protocooperation
D. Ammensalin

ANSWER A — Mutualism
WHY The distinguishing feature in diversity, ecology and applied botany is Mutualism; contrast it with the related processes in the alternatives.

376 / BOTANY Q056 2025 • MEMORY-BASED • ref Q66

Organisms found the bottom of sea are:

A. Nertons
B. Benthos
C. Phytons
D. Plalctons

ANSWER B — Benthos
WHY The distinguishing feature in diversity, ecology and applied botany is Benthos; contrast it with the related processes in the alternatives.

377 / BOTANY Q057 2025 • ADAPTED • ref Q67

When two species benefit from one another and depend on the association for survival, this is:

A. Amensalism
B. Obligate mutualism
C. Commensalism
D. Predation

ANSWER B — Obligate mutualism
WHY Both partners benefit and the obligate relationship is required for survival.

378 / BOTANY Q058 2025 • MEMORY-BASED • ref Q69

Pyramid of energy is:

A. Spindle shape
B. Always erect
C. Sometimes erect
D. Inverted

ANSWER B — Always erect
WHY The distinguishing feature in diversity, ecology and applied botany is Always erect; contrast it with the related processes in the alternatives.

379 / BOTANY Q059 2025 • MEMORY-BASED • ref Q71

Phosphorylation means synthesis of

A. PGA
B. ADP and ATP
C. ATP from ADP
D. NADP

ANSWER C — ATP from ADP
WHY The distinguishing feature in diversity, ecology and applied botany is ATP from ADP; contrast it with the related processes in the alternatives.

380 / BOTANY Q060 2025 • MEMORY-BASED • ref Q72

In the conversion of pyruvic acid to acetyl COA pyruvic acid is:

A. Denatured
B. Oxidized
C. Reduced
D. Isomerized

ANSWER B — Oxidized
WHY The distinguishing feature in diversity, ecology and applied botany is Oxidized; contrast it with the related processes in the alternatives.

381 / BOTANY Q061 2025 • MEMORY-BASED • ref Q73

During in active period, the pores of older sieve tube are blocked by structures called as which is called:

A. Callose
B. Sclereids
C. Tyloses
D. Calyptrogen

ANSWER A — Callose
WHY The distinguishing feature in diversity, ecology and applied botany is Callose; contrast it with the related processes in the alternatives.

382 / BOTANY Q062 2025 • MEMORY-BASED • ref Q74

Grafting is not possible in monocots because

A. Lack of vascular tissue
B. Having smaller stem
C. Scattered vascular bundle
D. Absence of cambium

ANSWER D — Absence of cambium
WHY The distinguishing feature in diversity, ecology and applied botany is Absence of cambium; contrast it with the related processes in the alternatives.

383 / BOTANY Q063 2025 • MEMORY-BASED • ref Q78

Which of the following is disaccharide

A. Maltose
B. Glucose
C. Cellulose
D. Starch 79, In maize male anther matures faster than stigma then, maize is

ANSWER A — Maltose
WHY The distinguishing feature in diversity, ecology and applied botany is Maltose; contrast it with the related processes in the alternatives.

384 / BOTANY Q064 2025 • MEMORY-BASED • ref Q80

Dissolved oxygen in decreared in pond due to?

A. Biomagnification
B. Eutrophication
C. Nitrification
D. Denitrification

ANSWER B — Eutrophication
WHY The distinguishing feature in diversity, ecology and applied botany is Eutrophication; contrast it with the related processes in the alternatives.

385 / BOTANY Q065 2025 • MEMORY-BASED • ref Q81

Gemma cup are found in

A. Marchantia
B. Funaria
C. Fem
D. Pinus

ANSWER A — Marchantia
WHY The distinguishing feature in diversity, ecology and applied botany is Marchantia; contrast it with the related processes in the alternatives.

386 / BOTANY Q066 2025 • ADAPTED • ref Q82

Why is the sickle-cell trait (HbAS) associated with protection against severe malaria in endemic regions?

A. The trait prevents mosquito bites
B. Heterozygote red cells can inhibit parasite survival
C. It guarantees lifelong immunity
D. It removes all red cells

ANSWER B — Heterozygote red cells can inhibit parasite survival
WHY Heterozygous sickle-cell trait provides partial protection, unlike a guarantee of immunity.

387 / BOTANY Q067 2022 • ADAPTED • ref Q10

Hemp bast fibres are especially rich in which cell-wall polymer?

A. Cellulose
B. Protein
C. Starch
D. Sucrose

ANSWER A — Cellulose
WHY Bast sclerenchyma fibres contain cellulose-rich secondary cell walls.

388 / BOTANY Q068 2022 • MEMORY-BASED • ref Q11

Botanical name of sunflower is

A. Allium cepa
B. Tagetes patula
C. Helianthus annus
D. Brassica rapa

ANSWER C — Helianthus annus
WHY The distinguishing feature in diversity, ecology and applied botany is Helianthus annus; contrast it with the related processes in the alternatives.

389 / BOTANY Q069 2022 • MEMORY-BASED • ref Q12

Plants living in salty soil are called

A. Oxylophytes
B. Lithophytes
C. Halophytes
D. Psammophytes

ANSWER C — Halophytes
WHY The distinguishing feature in diversity, ecology and applied botany is Halophytes; contrast it with the related processes in the alternatives.

390 / BOTANY Q070 2022 • MEMORY-BASED • ref Q18

Which is correct in reference to cytokinin?

A. Internodal growth
B. Cell division
C. Root initiation
D. Cell elongation in shoot

ANSWER B — Cell division
WHY Cytokinins promote cell division and can influence shoot formation.

391 / BOTANY Q071 2022 • MEMORY-BASED • ref Q19

Opening of flower is

A. Cleistogamy
B. Anthesis
C. Hyponasty
D. Acstivgfion

ANSWER B — Anthesis
WHY The distinguishing feature in diversity, ecology and applied botany is Anthesis; contrast it with the related processes in the alternatives.

392 / BOTANY Q072 2022 • MEMORY-BASED • ref Q29

Edible part of coconut is

A. Endosperm
B. Pericarp
C. Mesocarp
D. Endocarp

ANSWER A — Endosperm
WHY The distinguishing feature in diversity, ecology and applied botany is Endosperm; contrast it with the related processes in the alternatives.

393 / BOTANY Q073 2022 • ADAPTED • ref Q31

Agar is obtained primarily from members of which algal group?

A. Chlorophyta
B. Rhodophyta
C. Cyanobacteria
D. Euglenophyta

ANSWER B — Rhodophyta
WHY Red algae such as Gelidium and Gracilaria are major agar sources.

394 / BOTANY Q074 2022 • MEMORY-BASED • ref Q38

Xerophytic plants lack:

A. well developed roots
B. well developed conducting tissue NAN
C. aerenchyma
D. spiny leaves

ANSWER C — aerenchyma
WHY The distinguishing feature in diversity, ecology and applied botany is aerenchyma; contrast it with the related processes in the alternatives.

395 / BOTANY Q075 2026 • MODEL SET

Which plastid pigment strongly contributes to the red color of Rhodophyceae?

A. Phycoerythrin
B. Carotene alone
C. Chlorophyll b
D. Xanthophyll only

ANSWER A — Phycoerythrin
WHY Phycoerythrin is a red phycobiliprotein absorbing green-blue light.

PLANT PHYSIOLOGY AND ANATOMY • 28 Qs

396 / BOTANY Q076 ADVANCED MOCK 2026 • ref Q42

A membrane phospholipid placed in water forms a bilayer because its molecules are:

A. covalently bonded to water
B. entirely hydrophobic
C. amphipathic, with opposing interactions of heads and tails
D. identical to cellulose

ANSWER C — amphipathic, with opposing interactions of heads and tails
WHY Amphipathic phospholipids put hydrophobic tails inward and hydrophilic heads toward water.

397 / BOTANY Q077 ADVANCED MOCK 2026 • ref Q43

A photosynthetic prokaryote releases oxygen but has no membrane-bound organelles. It is most consistent with:

A. cyanobacteria
B. fungi
C. protozoa
D. bryophytes

ANSWER A — cyanobacteria
WHY Photosynthesis converts light energy into chemical energy in chloroplasts.

398 / BOTANY Q078 ADVANCED MOCK 2026 • ref Q45

A bryophyte and a fern both require free water for fertilization, but the fern is taller chiefly because it possesses:

A. seeds and flowers
B. vascular tissues and a dominant sporophyte
C. a dominant gametophyte only
D. pollen tubes

ANSWER B — vascular tissues and a dominant sporophyte
WHY The distinguishing feature in plant physiology and anatomy is vascular tissues and a dominant sporophyte; contrast it with the related processes in the alternatives.

399 / BOTANY Q079 ADVANCED MOCK 2026 • ref Q47

A gymnosperm seed differs from an angiosperm seed most fundamentally because gymnosperm ovules are:

A. produced inside fruits
B. not enclosed within an ovary
C. always dispersed by water
D. formed without meiosis

ANSWER B — not enclosed within an ovary
WHY Gymnosperm ovules are not enclosed in a carpel; angiosperm seeds mature within a fruit.

400 / BOTANY Q080 ADVANCED MOCK 2026 • ref Q48

A flower has parallel venation, fibrous roots and floral parts in threes. If secondary growth is absent, the combined evidence supports:

A. a bryophyte
B. a typical monocot
C. a typical dicot
D. a gymnosperm

ANSWER B — a typical monocot
WHY Parallel venation and fibrous roots are classic monocot characters, usually paired with trimerous flowers.

401 / BOTANY Q081 ADVANCED MOCK 2026 • ref Q51

If archegonia are present but seeds are absent, the plant could belong to:

A. angiosperms only
B. bryophytes or pteridophytes
C. fungi only
D. cyanobacteria only

ANSWER B — bryophytes or pteridophytes
WHY Bryophytes and many pteridophytes form archegonia but do not make seeds.

402 / BOTANY Q082 ADVANCED MOCK 2026 • ref Q68

Secondary growth increases stem girth because vascular cambium produces:

A. primary xylem outward only
B. secondary xylem inward and secondary phloem outward
C. epidermis inward
D. cortex on both sides

ANSWER B — secondary xylem inward and secondary phloem outward
WHY Vascular cambium adds secondary xylem inward and secondary phloem outward.

403 / BOTANY Q083 ADVANCED MOCK 2026 • ref Q69

A xerophyte with sunken stomata and thick cuticle primarily reduces:

A. water-vapour diffusion from moist internal surfaces
B. root pressure
C. CO_2 fixation to zero
D. mineral absorption by roots

ANSWER A — water-vapour diffusion from moist internal surfaces
WHY A thick cuticle and protected stomata limit water loss by reducing diffusion and exposure.

404 / BOTANY Q084 ADVANCED MOCK 2026 • ref Q71

A plant is transferred from humid to dry moving air with soil water initially adequate. Transpiration first rises because:

A. humidity inside leaves falls to zero
B. stomata necessarily close before transfer
C. xylem becomes impermeable
D. the water-vapour gradient and boundary-layer removal increase

ANSWER D — the water-vapour gradient and boundary-layer removal increase
WHY Dry, moving air increases the water-vapor gradient and removes moist boundary-layer air.

405 / BOTANY Q085 ADVANCED MOCK 2026 • ref Q72

If light intensity rises but CO_2 becomes limiting, the photosynthetic rate will:

A. increase indefinitely in direct proportion to light
B. equal respiration exactly
C. approach a plateau
D. become negative at all intensities

ANSWER C — approach a plateau
WHY Photosynthesis converts light energy into chemical energy in chloroplasts.

406 / BOTANY Q086 ADVANCED MOCK 2026 • ref Q74

Auxin from the shoot tip promotes phototropic bending because it redistributes toward the shaded side and:

A. inhibits all elongation there
B. moves only through xylem upward
C. promotes greater cell elongation there
D. destroys chloroplasts on lit side

ANSWER C — promotes greater cell elongation there
WHY Auxin stimulates cell elongation and, at suitable concentrations, root initiation.

407 / BOTANY Q087 ADVANCED MOCK 2026 • ref Q75

During ascent of sap in a tall tree, the continuity of the water column depends most directly on:

A. cohesion among water molecules and tension from transpiration
B. root hairs pushing water to any height without loss
C. active pumping by every vessel element
D. phloem pressure only

ANSWER A — cohesion among water molecules and tension from transpiration
WHY The distinguishing feature in plant physiology and anatomy is cohesion among water molecules and tension from transpiration; contrast it with the related processes in the alternatives.

408 / BOTANY Q088 ADVANCED MOCK 2026 • ref Q77

Removing anthers before dehiscence and then applying selected pollen is useful because it:

A. converts ovules into pollen
B. guarantees apomixis
C. prevents unwanted self-pollination while permitting controlled crossing
D. prevents fertilization completely

ANSWER C — prevents unwanted self-pollination while permitting controlled crossing
WHY Emasculation prevents self-pollination and permits intentional introduction of selected pollen.

409 / BOTANY Q089 2024 • MEMORY-BASED • ref Q2

Which hormone is responsible for rooting?

A. Auxin
B. Cytokinin
C. Gibberellin
D. Ethylene

ANSWER A — Auxin
WHY The distinguishing feature in plant physiology and anatomy is Auxin; contrast it with the related processes in the alternatives.

410 / BOTANY Q090 2024 • MEMORY-BASED • ref Q8

Which linkage is present between the glucose units in Amylose of starch?

A. Peptide bond
B. Ester linkage
C. Glycosidic bond
D. Phosphodiester bond

ANSWER C — Glycosidic bond
WHY The distinguishing feature in plant physiology and anatomy is Glycosidic bond; contrast it with the related processes in the alternatives.

411 / BOTANY Q091 2024 • MEMORY-BASED • ref Q24

The rate of transpiration increases when:

A. Increase in humidity
B. Increase in light intensity
C. Decrease in wind velocity
D. Decrease in temperature

ANSWER B — Increase in light intensity
WHY The distinguishing feature in plant physiology and anatomy is Increase in light intensity; contrast it with the related processes in the alternatives.

412 / BOTANY Q092 2024 • MEMORY-BASED • ref Q29

Bicollateral vascular bundles are present in:

A. Cucurbitaceae
B. Compositae
C. Graminae
D. Cruciferae

ANSWER A — Cucurbitaceae
WHY The distinguishing feature in plant physiology and anatomy is Cucurbitaceae; contrast it with the related processes in the alternatives.

413 / BOTANY Q093 2023 • MEMORY-BASED • ref Q124

A bisexual, closed flower that remains closed throughout its life and sheds its pollen grains in closed condition 1s:

A. Chasmogamous
B. Homogamous
C. Cleistogamous
D. Dichogamous

ANSWER C — Cleistogamous
WHY The distinguishing feature in plant physiology and anatomy is Cleistogamous; contrast it with the related processes in the alternatives.

414 / BOTANY Q094 2023 • MEMORY-BASED • ref Q137

Stilt roots in Sugarcane are developed from:

A. Lower internodes of stem
B. Lower nodes of stem
C. Radicle of seed
D. Aerial branches of stem

ANSWER B — Lower nodes of stem
WHY The distinguishing feature in plant physiology and anatomy is Lower nodes of stem; contrast it with the related processes in the alternatives.

415 / BOTANY Q095 2025 • MEMORY-BASED • ref Q70

In photosynthesis. O_2 is evolved from water during:

A. Oxidative photophosrylation
B. Photolysis of water
C. Photo-excitatiouof chat
D. Exitation of electron

ANSWER B — Photolysis of water
WHY Photosynthesis converts light energy into chemical energy in chloroplasts.

416 / BOTANY Q096 2025 • MEMORY-BASED • ref Q75

Cucurbits have___ vascular bundle

A. Conjoint collateral
B. Conjoint bicollateral
C. Radial
D. Concentric

ANSWER B — Conjoint bicollateral
WHY The distinguishing feature in plant physiology and anatomy is Conjoint bicollateral; contrast it with the related processes in the alternatives.

417 / BOTANY Q097 2022 • MEMORY-BASED • ref Q5

Bicoilateral vascular bundle is present in:

A. Cruciferae
B. Cucurbita
C. Malvaceae
D. Leguminosae

ANSWER B — Cucurbita
WHY The distinguishing feature in plant physiology and anatomy is Cucurbita; contrast it with the related processes in the alternatives.

418 / BOTANY Q098 2022 • ADAPTED • ref Q6

How are xylem and phloem typically arranged in a primary dicot root?

A. Conjoint
B. Radial
C. Bicollateral
D. Collateral

ANSWER B — Radial
WHY In roots xylem and phloem occupy alternate radii (radial vascular bundles).

419 / BOTANY Q099 2022 • ADAPTED • ref Q8

Which type of mature xylem cell is living?

A. Tracheid
B. Vessel element
C. Xylem parenchyma
D. Xylem fiber

ANSWER C — Xylem parenchyma
WHY Most mature tracheids and vessel elements are dead; xylem parenchyma remains living.

420 / BOTANY Q100 2022 • MEMORY-BASED • ref Q24

Root and shoot elongation in callus can be done by altering the ratio of

A. Auxin to cytokinin
B. Auxin to gibberellin
C. Cytokinin to gibberellin
D. Auxin to ethylene

ANSWER A — Auxin to cytokinin
WHY The distinguishing feature in plant physiology and anatomy is Auxin to cytokinin; contrast it with the related processes in the alternatives.

421 / BOTANY Q101 2022 • MEMORY-BASED • ref Q26

Winged pollen of pinus develops from

A. intine
B. exine
C. ex-intine
D. germ layer

ANSWER B — exine
WHY The distinguishing feature in plant physiology and anatomy is exine; contrast it with the related processes in the alternatives.

422 / BOTANY Q102 2022 • ADAPTED • ref Q39

Water enters a typical root-hair cell from dilute soil solution primarily by:

A. Osmosis
B. Active pumping of water molecules
C. Simple diffusion of salts into cytoplasm
D. Capillary action only

ANSWER A — Osmosis
WHY Water follows a water-potential gradient across the selectively permeable plasma membrane.

423 / BOTANY Q103 2026 • MODEL SET

The first stable carbon-fixation product in C_4 photosynthesis is:

A. 3-phosphoglycerate
B. Oxaloacetate
C. Ribulose-1,5-bisphosphate
D. Glucose

ANSWER B — Oxaloacetate
WHY PEP carboxylase initially produces the four-carbon compound oxaloacetate.

GENETICS AND CELL BIOLOGY • 37 Qs

424 / BOTANY Q104 ADVANCED MOCK 2026 • ref Q46

Which evolutionary transition most reduced dependence of fertilization on external water?

A. Fragmentation in algae
B. Flagellated sperm in moss
C. Pollen formation in seed plants
D. Prothallus formation in fern

ANSWER C — Pollen formation in seed plants
WHY Pollen tubes allow sperm delivery without the external swimming water required in non-seed plants.

425 / BOTANY Q105 ADVANCED MOCK 2026 • ref Q50

In alternation of generations, meiosis directly produces:

A. gametes in all plants
B. a diploid zygote
C. haploid spores from diploid sporophyte cells
D. a multicellular sporophyte without mitosis

ANSWER C — haploid spores from diploid sporophyte cells
WHY The distinguishing feature in genetics and cell biology is haploid spores from diploid sporophyte cells; contrast it with the related processes in the alternatives.

426 / BOTANY Q106 ADVANCED MOCK 2026 • ref Q56

A plant cell in concentrated salt solution loses turgor but its wall retains shape. The immediate event is:

A. rupture caused by turgor
B. active uptake of all salt
C. exosmosis and plasmolysis
D. endosmosis and deplasmolysis

ANSWER C — exosmosis and plasmolysis
WHY Water exits a cell by osmosis in hypertonic solution, so the protoplast pulls away from the wall.

427 / BOTANY Q107 ADVANCED MOCK 2026 • ref Q57

Blocking spindle formation during mitosis most directly prevents:

A. cell-wall synthesis in every phase
B. chromosome segregation to daughter nuclei
C. DNA replication in interphase
D. transcription permanently

ANSWER B — chromosome segregation to daughter nuclei
WHY The spindle separates chromosomes during division; without it, normal segregation cannot occur.

428 / BOTANY Q108 ADVANCED MOCK 2026 • ref Q58

A secretory plant cell makes large amounts of protein. Which pathway is most directly involved?

A. Rough ER to Golgi to vesicles
B. Smooth ER to centriole only
C. Nucleus to cell wall by diffusion of DNA
D. Chloroplast to vacuole without ribosomes

ANSWER A — Rough ER to Golgi to vesicles
WHY Rough ER synthesizes secreted proteins, which are processed in the Golgi and carried in vesicles.

429 / BOTANY Q109 ADVANCED MOCK 2026 • ref Q59

If mitochondrial inner membranes lose their proton gradient, the most direct consequence is reduced:

A. light absorption by chlorophyll
B. ATP synthesis by oxidative phosphorylation
C. DNA replication in nucleus
D. cellulose synthesis in wall

ANSWER B — ATP synthesis by oxidative phosphorylation
WHY The distinguishing feature in genetics and cell biology is ATP synthesis by oxidative phosphorylation; contrast it with the related processes in the alternatives.

430 / BOTANY Q110 ADVANCED MOCK 2026 • ref Q60

A cell doubles its DNA content but does not divide. Relative to G1, it is most consistent with:

A. G0 with no replication
B. post-S or G2 phase
C. a haploid gamete necessarily
D. late cytokinesis only

ANSWER B — post-S or G2 phase
WHY DNA replication doubles DNA content in S phase; the G_2 cell retains it before mitosis.

431 / BOTANY Q111 ADVANCED MOCK 2026 • ref Q63

A point mutation changes a codon but not its amino acid. This illustrates:

A. degeneracy of the genetic code
B. polyploidy
C. absence of translation
D. crossing over

ANSWER A — degeneracy of the genetic code
WHY The genetic code is degenerate, so some base substitutions leave the encoded amino acid unchanged.

432 / BOTANY Q112 ADVANCED MOCK 2026 • ref Q66

Nondisjunction in meiosis I differs from meiosis II because meiosis I failure separates neither:

A. genes during transcription
B. centromeres during mitosis
C. homologous chromosomes
D. sister chromatids

ANSWER C — homologous chromosomes
WHY Meiosis I normally separates homologous chromosomes; nondisjunction leaves them together.

433 / BOTANY Q113 ADVANCED MOCK 2026 • ref Q70

Opening stomata requires guard cells to become turgid. Which change most directly promotes this?

A. Solute accumulation followed by water entry
B. Complete loss of guard-cell ions
C. Water leaving guard cells
D. Cell-wall digestion

ANSWER A — Solute accumulation followed by water entry
WHY Guard-cell ion accumulation lowers water potential so water enters by osmosis and pores open.

434 / BOTANY Q114 ADVANCED MOCK 2026 • ref Q78

Micropropagation can produce many uniform plants rapidly because differentiated plant cells often retain:

A. absence of DNA
B. totipotency
C. permanent haploidy
D. obligate heterotrophy

ANSWER B — totipotency
WHY Plant cells retain developmental potential, allowing clonal propagation under sterile culture.

435 / BOTANY Q115 ADVANCED MOCK 2026 • ref Q80

A genetically engineered insect-resistant crop reduces insecticide use, but resistance management is needed because:

A. all insects mutate only after spraying
B. the transgene disappears in one generation
C. natural selection cannot act on insects
D. selection can increase resistant insect genotypes

ANSWER D — selection can increase resistant insect genotypes
WHY Natural selection favors pre-existing heritable resistance alleles when insects encounter a pest-control agent.

436 / BOTANY Q116 2024 • MEMORY-BASED • ref Q3

Which of the following cell organelle is incorrectly matched with its function?

A. Chloroplast – Photosynthesis
B. Golgi bodies – Protein synthesis
C. Mitochondria – Oxidative Phosphorylation
D. Lysosome - Suicidal bags

ANSWER B — Golgi bodies – Protein synthesis
WHY The distinguishing feature in genetics and cell biology is Golgi bodies – Protein synthesis; contrast it with the related processes in the alternatives.

437 / **BOTANY Q117** 2024 • MEMORY-BASED • ref Q4

If a cell has 1.2×10^{-12} g DNA in G_1, what will its DNA mass be after replication in G_2?

A. 1.2×10^{-12} gm
B. 2.4×10^{-12} gm
C. 1.2×10^{-6} gm
D. 2.4×10^{-6} gm

ANSWER B — 2.4×10^{-12} gm
WHY The distinguishing feature in genetics and cell biology is 2.4×10^{-12} gm; contrast it with the related processes in the alternatives.

438 / **BOTANY Q118** 2024 • MEMORY-BASED • ref Q7

Histone protein found in DNA is:

A. Basic
B. Acidic
C. Amphoteric
D. Neutral

ANSWER A — Basic
WHY Histones are positively charged basic proteins that bind negatively charged DNA.

439 / **BOTANY Q119** 2024 • MEMORY-BASED • ref Q19

For a codon GUA in mRNA, the corresponding anticodon in tRNA will be:

A. GUC
B. CTU
C. CUA
D. CAU

ANSWER D — CAU
WHY The distinguishing feature in genetics and cell biology is CAU; contrast it with the related processes in the alternatives.

440 / **BOTANY Q120** 2024 • MEMORY-BASED • ref Q22

Which of the following is a common cell organelle between prokaryotes and eukaryotes?

A. Nucleus
B. Mitochondria
C. Ribosomes
D. Nucleolus

ANSWER C — Ribosomes
WHY The distinguishing feature in genetics and cell biology is Ribosomes; contrast it with the related processes in the alternatives.

441 / **BOTANY Q121** 2024 • ADAPTED • ref Q23

An organism with identical alleles of a gene at a locus is termed:

A. Hemizygous
B. Homozygous
C. Heterozygous
D. Polyploid

ANSWER B — Homozygous
WHY Homozygous means the two alleles at a diploid locus are the same.

442 / BOTANY Q122 2024 • MEMORY-BASED • ref Q39

If one chromosome is absent from a diploid set, the condition is termed as:

A. Trisomy
B. Monosomy
C. Nullisomy
D. Tetrasomy

ANSWER B — Monosomy
WHY The distinguishing feature in genetics and cell biology is Monosomy; contrast it with the related processes in the alternatives.

443 / BOTANY Q123 2024 • MEMORY-BASED • ref Q40

Maximum effect of genetic drift is seen in:

A. Slowly reproducing population
B. Small population
C. Large population
D. Rapidly growing population

ANSWER B — Small population
WHY Random allele-frequency changes are strongest in small populations.

444 / BOTANY Q124 2023 • MEMORY-BASED • ref Q107

Which of the following syndromes is caused due to the present of an additional copy of the 18th chromosome ?

A. Patau's Syndrome
B. Down's Syndrome
C. Edward's Syndrome
D. Klinefelter's Syndrome

ANSWER C — Edward's Syndrome
WHY The distinguishing feature in genetics and cell biology is Edward's Syndrome; contrast it with the related processes in the alternatives.

445 / BOTANY Q125 2023 • MEMORY-BASED • ref Q109

The part of the chromosome after the secondary constriction is known as:

A. Telomere
B. Chromomere
C. Nuclear Organizer
D. Satellite

ANSWER D — Satellite
WHY The distinguishing feature in genetics and cell biology is Satellite; contrast it with the related processes in the alternatives.

446 / BOTANY Q126 2023 • MEMORY-BASED • ref Q111

If the only person who has O -ve in a small population disappears, then the gene for the blood group O disappears. This is known as:

A. Gene pool
B. Genetic dnift
C. Mutation
D. Disaster

ANSWER B — Genetic dnift
WHY The distinguishing feature in genetics and cell biology is Genetic dnift; contrast it with the related processes in the alternatives.

447 / BOTANY Q127 2023 • MEMORY-BASED • ref Q112

Study of DNA and RNA is:

A. Genetics
B. Cytology
C. Molecular Biology
D. Physiology

ANSWER C — Molecular Biology
WHY The distinguishing feature in genetics and cell biology is Molecular Biology; contrast it with the related processes in the alternatives.

448 / BOTANY Q128 2023 • MEMORY-BASED • ref Q117

The presence of more than two allelic forms for a single gene is known as:

A. Epistatis
B. Pleiotropism
C. Blending Inheritance
D. Multiple Allelism

ANSWER D — Multiple Allelism
WHY The distinguishing feature in genetics and cell biology is Multiple Allelism; contrast it with the related processes in the alternatives.

449 / BOTANY Q129 2023 • MEMORY-BASED • ref Q126

Mitochondria is semi-autonomous organelle due to:

A. Presence of oxysome
B. Presence of naked DNA
C. Presence of cristae and matrix
D. Absence of RNA

ANSWER B — Presence of naked DNA
WHY The distinguishing feature in genetics and cell biology is Presence of naked DNA; contrast it with the related processes in the alternatives.

450 / BOTANY Q130 2023 • ADAPTED • ref Q133

Which soil bacterium is commonly engineered as a vector to deliver T-DNA into plant cells?

A. Bacillus subtilis
B. Escherichia coli only
C. Agrobacterium tumefaciens
D. Nitrosomonas

ANSWER C — Agrobacterium tumefaciens
WHY Agrobacterium transfers DNA through its modified Ti plasmid in many transformation protocols.

451 / BOTANY Q131 2023 • MEMORY-BASED • ref Q135

The process of modification, manipulation and recombination of the DNA of an organism in order to introduce new traits into the organism is known as:

A. Genetic Engineering
B. Recombinant DNA technology
C. Gene mutation
D. Gene pooling

ANSWER A — Genetic Engineering
WHY The distinguishing feature in genetics and cell biology is Genetic Engineering; contrast it with the related processes in the alternatives.

452 / BOTANY Q132 2025 • MEMORY-BASED • ref Q55

An enzyme that can cut DNA molecules at specific site is:

A. Lipose
B. Nuclease
C. Restriction Endonuclease
D. Ligose

ANSWER C — Restriction Endonuclease
WHY The distinguishing feature in genetics and cell biology is Restriction Endonuclease; contrast it with the related processes in the alternatives.

453 / BOTANY Q133 2025 • MEMORY-BASED • ref Q76

Which chromosome has centromere at center?

A. Metacentric
B. Sub-metacentric
C. Telocentric
D. Acrocentric

ANSWER A — Metacentric
WHY The distinguishing feature in genetics and cell biology is Metacentric; contrast it with the related processes in the alternatives.

454 / BOTANY Q134 2025 • MEMORY-BASED • ref Q83

Which of the following unwinds DNA molecule?

A. Helicase
B. Ligase
C. Polymerase
D. Topoisomerase

ANSWER A — Helicase
WHY The distinguishing feature in genetics and cell biology is Helicase; contrast it with the related processes in the alternatives.

455 / BOTANY Q135 2022 • ADAPTED • ref Q1

Where are ribosomal RNA and ribosomal subunits chiefly assembled in eukaryotic cells?

A. Nucleolus
B. Plasma membrane
C. Lysosome
D. Peroxisome

ANSWER A — Nucleolus
WHY The nucleolus is the major site of rRNA transcription and ribosomal assembly.

456 / BOTANY Q136 2022 • MEMORY-BASED • ref Q2

Nucleus has maximum size during

A. Prophase
B. Interphase
C. Metaphase
D. Anaphase

ANSWER B — Interphase
WHY The distinguishing feature in genetics and cell biology is Interphase; contrast it with the related processes in the alternatives.

457 / **BOTANY Q137** 2022 • MEMORY-BASED • ref Q4

Plant cells are connected with each other by means of

A. Tight junction
B. Gap junction
C. Plasmodesmata
D. Desmoneme

ANSWER C — Plasmodesmata
WHY The distinguishing feature in genetics and cell biology is Plasmodesmata; contrast it with the related processes in the alternatives.

458 / **BOTANY Q138** 2022 • MEMORY-BASED • ref Q28

Lf the gametes of parental generation are reversed in the offspring's then the cross is

A. Reverse cross
B. Reciprocal cross
C. Test cross
D. Dthybrid cross ,

ANSWER B — Reciprocal cross
WHY The distinguishing feature in genetics and cell biology is Reciprocal cross; contrast it with the related processes in the alternatives.

459 / **BOTANY Q139** 2022 • MEMORY-BASED • ref Q30

Sickle cell anaemic person is

A. mero prone to malaria]
B. less prone to malaria
C. More prone to typhoid
D. Less prone to typhoid

ANSWER B — less prone to malaria
WHY The distinguishing feature in genetics and cell biology is less prone to malaria; contrast it with the related processes in the alternatives.

460 / **BOTANY Q140** 2022 • MEMORY-BASED • ref Q37

Genetic drift is due to

A. high no. of alleles in gene pool
B. change in frequency of allel in generation of generation ¢
C. high order of frequency of allele
D. transfer of allele from one to another

ANSWER B — change in frequency of allel in generation of generation ¢
WHY Random allele-frequency changes are strongest in small populations.

CELL MEMBRANE TRANSPORT • 1 Qs

461 / **BOTANY Q141** EXPECTED • PRACTICE

Removal of substances from a cell by fusion of secretory vesicles with its plasma membrane is:

A. Pinocytosis
B. Endocytosis
C. Exocytosis
D. Facilitated diffusion

ANSWER C — Exocytosis
WHY Exocytosis expels vesicle contents by membrane fusion.

CELL BIOLOGY • 1 Qs

462 / BOTANY Q142 EXPECTED • PRACTICE

At the end of S phase, a cell's DNA amount relative to G1 is:

A. Half
B. Same
C. Double
D. Four times

ANSWER C — Double
WHY DNA replication doubles the genetic material before division.

GENETICS • 2 Qs

463 / BOTANY Q143 EXPECTED • PRACTICE

In AaBb × AaBb, assuming independent assortment, the double-recessive phenotype has probability:

A. 1/4
B. 1/8
C. 1/16
D. 3/16

ANSWER C — 1/16
WHY Each recessive phenotype has 1/4 probability; multiply to get 1/16.

464 / BOTANY Q144 EXPECTED • PRACTICE

Crossing over between homologues occurs mainly during:

A. Leptotene
B. Pachytene
C. Diplotene
D. Diakinesis

ANSWER B — Pachytene
WHY Exchange between nonsister chromatids occurs at pachytene of prophase I.

PLANT PHYSIOLOGY • 3 Qs

465 / BOTANY Q145 EXPECTED • PRACTICE

Opening of stomata in light is directly linked with increased turgor in:

A. Guard cells
B. Root hairs
C. Companion cells
D. Tracheids

ANSWER A — Guard cells
WHY Ion-driven water uptake makes guard cells turgid.

466 / BOTANY Q146 EXPECTED • PRACTICE

The oxygen released during oxygenic photosynthesis originates from:

A. CO_2
B. Water
C. Glucose
D. Chlorophyll

ANSWER B — Water
WHY Photolysis of H_2O at PSII releases molecular oxygen.

467 / BOTANY Q147 EXPECTED • PRACTICE

The hormone most strongly associated with stem elongation and bolting is:

A. Abscisic acid
B. Ethylene
C. Gibberellin
D. Cytokinin only

ANSWER C — Gibberellin
WHY Gibberellins stimulate internodal growth and bolting.

BIODIVERSITY • 1 Qs

468 / BOTANY Q148 EXPECTED • PRACTICE

The dominant life-cycle generation in moss is:

A. Sporophyte
B. Gametophyte
C. Zygote
D. Embryo

ANSWER B — Gametophyte
WHY The green independent moss plant is the gametophyte.

PLANT ANATOMY • 1 Qs

469 / BOTANY Q149 EXPECTED • PRACTICE

In dicot stems, vascular bundles are usually arranged:

A. Scattered randomly
B. In a ring
C. Only at the center
D. Absent

ANSWER B — In a ring
WHY A ring of open collateral bundles characterizes the typical dicot stem.

ECOLOGY • 1 Qs

470 / BOTANY Q150 EXPECTED • PRACTICE

In an ecosystem, energy transfer between trophic levels is generally:

A. 100%
B. 90%
C. Around 10%
D. Always 50%

ANSWER C — Around 10%
WHY Only a small fraction of production typically becomes biomass at the next trophic level.

APPLIED BOTANY • 1 Qs

471 / BOTANY Q151 EXPECTED • PRACTICE

The bacterial enzyme widely used for precise DNA cleavage at specified recognition sites is:

A. DNA ligase
B. Restriction endonuclease
C. Amylase
D. Helicase only

ANSWER B — Restriction endonuclease
WHY Restriction endonucleases recognize and cut defined DNA sequences.

CEE MCQ's & Su

04 / ZOOLOGY

182 explained CEE-style MCQs • Source themes + expected practice

Practice the topic first. Then use the answer ribbon and WHY note to make each item a micro-revision.

ANIMAL DIVERSITY AND EVOLUTION • 33 Qs

472 / ZOOLOGY Q001 ADVANCED MOCK 2026 • ref Q1

After selection, a population resumes random mating with recessive-allele frequency q=0.20 and no other evolutionary force. What heterozygote frequency is expected in the next zygotes?

A. 0.64
B. 0.32
C. 0.80
D. 0.04

ANSWER B — 0.32

WHY Potential energy mg(h−h′) is lost to friction μmgL, so h′ = h − μL.

473 / ZOOLOGY Q002 ADVANCED MOCK 2026 • ref Q2

Miller-Urey type synthesis supports chemical evolution but does not by itself demonstrate:

A. abiotic formation of organic monomers
B. the plausibility of prebiotic chemistry
C. energy-driven atmospheric reactions
D. self-replication and heredity in protocells

ANSWER D — self-replication and heredity in protocells

WHY Momentum gives final speed (2×6)/(2+1)=4 m/s. Initial KE 36 J, final KE 24 J, so 1/3 is lost.

474 / ZOOLOGY Q003 ADVANCED MOCK 2026 • ref Q6

Which feature best separates chordates from superficially fish-like non-chordates at some stage of life?

A. Bilateral symmetry
B. Segmented muscles alone
C. A complete digestive tract
D. A dorsal hollow nerve cord associated with a notochord

ANSWER D — A dorsal hollow nerve cord associated with a notochord

WHY The relevant feature of animal diversity and evolution is A dorsal hollow nerve cord associated with a notochord; the other choices refer to different structures or mechanisms.

475 / ZOOLOGY Q004 ADVANCED MOCK 2026 • ref Q12

In earthworm, closing nephridiopores while filtration continues would initially disturb:

A. locomotion by setae only
B. gas exchange through gills
C. intracellular digestion
D. nitrogenous waste removal and water balance

ANSWER D — nitrogenous waste removal and water balance

WHY Nephridia remove nitrogenous wastes and regulate fluid composition through their external openings.

476 / ZOOLOGY Q005 ADVANCED MOCK 2026 • ref Q14

A frog remains submerged in cool, well-aerated water. Which change most supports continued respiration?

A. Exclusive positive-pressure lung ventilation
B. Dry keratinized skin
C. Moist vascular skin with reduced metabolic demand
D. Closure of all skin capillaries

ANSWER C — Moist vascular skin with reduced metabolic demand
WHY Thin, moist, well-perfused skin enables cutaneous gas exchange while submerged.

477 / ZOOLOGY Q006 ADVANCED MOCK 2026 • ref Q15

In a bony fish, puncture of the swim bladder would most directly require greater muscular effort to:

A. excrete ammonia
B. maintain depth in water
C. oxygenate blood at gills
D. digest proteins

ANSWER B — maintain depth in water
WHY The swim bladder controls buoyancy; without it, a fish must swim harder to maintain depth.

478 / ZOOLOGY Q007 ADVANCED MOCK 2026 • ref Q17

Compared with a frog, a rabbit sustains higher aerobic activity partly because its circulation:

A. uses skin as its only respiratory organ
B. separates pulmonary and systemic blood more completely
C. delivers blood without capillaries
D. has one atrium and one ventricle

ANSWER B — separates pulmonary and systemic blood more completely
WHY The mammalian four-chambered heart completely separates oxygenated and deoxygenated blood.

479 / ZOOLOGY Q008 2024 • ADAPTED • ref Q7

The rasping feeding organ of most molluscs is called the:

A. Osphradium
B. Radula
C. Ctenidium
D. Nephridium

ANSWER B — Radula
WHY A radula is a toothed chitinous ribbon used for scraping food.

480 / ZOOLOGY Q009 2024 • ADAPTED • ref Q9

Which vertebra of a frog primarily articulates with the skull?

A. Atlas
B. Axis
C. Sacral vertebra
D. Urostyle

ANSWER A — Atlas
WHY The atlas is the first vertebra and supports the skull; frogs do not have six cervical vertebrae.

481 / ZOOLOGY Q010 2024 • ADAPTED • ref Q16

Which feature of a segmented triploblastic animal strongly supports classification as Arthropoda?

A. Paired wings in every species
B. Presence of antennae in all groups
C. Mouthparts in every species
D. Jointed appendages and a chitinous exoskeleton

ANSWER D — Jointed appendages and a chitinous exoskeleton
WHY Arthropods share segmented bodies, jointed appendages and chitinous cuticle.

482 / ZOOLOGY Q011 2024 • ADAPTED • ref Q20

The malarial pigment haemozoin is produced when Plasmodium detoxifies which toxic digestion by-product?

A. Free heme from haemoglobin
B. Glucose
C. Albumin
D. Cholesterol

ANSWER A — Free heme from haemoglobin
WHY Haemoglobin digestion releases free heme, which the parasite converts to haemozoin.

483 / ZOOLOGY Q012 2024 • MEMORY-BASED • ref Q25

Evolution of enterocoelom first occurred in:

A. Mollusca
B. Chordata
C. Hemichordate
D. Echinodermata

ANSWER D — Echinodermata
WHY The relevant feature of animal diversity and evolution is Echinodermata; the other choices refer to different structures or mechanisms.

484 / ZOOLOGY Q013 2024 • ADAPTED • ref Q26

Which structure is not necessarily present throughout the adult life of every chordate?

A. Dorsal hollow nerve cord at some stage
B. Notochord at some stage
C. Pharyngeal slits at some stage
D. A persistent vertebral column

ANSWER D — A persistent vertebral column
WHY All chordates show core characters during development, but not all are vertebrates.

485 / ZOOLOGY Q014 2024 • MEMORY-BASED • ref Q27

Frog's mouth is difficult to open due to the presence of:

A. Fossa on upper jaw
B. Elevations on lower jaw
C. Premaxillary teeth
D. Fossa on upper jaw and elevations on lower jaw

ANSWER D — Fossa on upper jaw and elevations on lower jaw
WHY The relevant feature of animal diversity and evolution is Fossa on upper jaw and elevations on lower jaw; the other choices refer to different structures or mechanisms.

486 / ZOOLOGY Q015 2024 • MEMORY-BASED • ref Q31

Which of the following is not a bony fish?

A. Elasmobranchii
B. Teleostomi
C. Lung fishes
D. Coelocanths

ANSWER A — Elasmobranchii
WHY The relevant feature of animal diversity and evolution is Elasmobranchii; the other choices refer to different structures or mechanisms.

487 / ZOOLOGY Q016 2024 • MEMORY-BASED • ref Q32

Classification of Protozoa is based on:

A. Shape
B. Number of nuclei
C. Locomotary organelles
D. Size

ANSWER C — Locomotary organelles
WHY The relevant feature of animal diversity and evolution is Locomotary organelles; the other choices refer to different structures or mechanisms.

488 / ZOOLOGY Q017 2024 • MEMORY-BASED • ref Q33

Which segment of Earthworm contains the male genital aperture?

A. 10th
B. 17th
C. 18th
D. 19th

ANSWER C — 18th
WHY The relevant feature of animal diversity and evolution is 18th; the other choices refer to different structures or mechanisms.

489 / ZOOLOGY Q018 2024 • MEMORY-BASED • ref Q35

Which segments of earthworm lack setae?

A. First and Last
B. First three
C. Clitellar
D. First, last and clitellar

ANSWER D — First, last and clitellar
WHY The relevant feature of animal diversity and evolution is First, last and clitellar; the other choices refer to different structures or mechanisms.

490 / ZOOLOGY Q019 2023 • MEMORY-BASED • ref Q144

Which of the following is true for protozoa?

A. One nuclei
B. One celled
C. One vacuole
D. Cell walled

ANSWER B — One celled
WHY The relevant feature of animal diversity and evolution is One celled; the other choices refer to different structures or mechanisms.

491 / ZOOLOGY Q020 2023 • MEMORY-BASED • ref Q146

The terminal duct of septal nephridia of earthworm opens into

A. Intestine
B. Septal excretory duct
C. Paired supra intestinal excretory canal
D. Dorsal blood vessel

ANSWER B — Septal excretory duct
WHY The relevant feature of animal diversity and evolution is Septal excretory duct; the other choices refer to different structures or mechanisms.

492 / ZOOLOGY Q021 2023 • MEMORY-BASED • ref Q148

Which one of the following laryngotracheal cartilage are present in frog?

A. 1 arytenoid & 2 cricoid
B. 2 arytenoid & 1 cricoid
C. 1 enicoid & 1 arytenoid
D. 2 cricoid & 2 arytenoid

ANSWER B — 2 arytenoid & 1 cricoid
WHY The relevant feature of animal diversity and evolution is 2 arytenoid & 1 cricoid; the other choices refer to different structures or mechanisms.

493 / ZOOLOGY Q022 2023 • MEMORY-BASED • ref Q150

Gall bladder location in frog?

A. In between two lobes of liver & invisible
B. Between two small left lobes
C. Between night & left lobe
D. between right lobes

ANSWER A — In between two lobes of liver & invisible
WHY The relevant feature of animal diversity and evolution is In between two lobes of liver & invisible; the other choices refer to different structures or mechanisms.

494 / ZOOLOGY Q023 2023 • MEMORY-BASED • ref Q152

In male frog, loud croaking is due to

A. Vocal cord resonating
B. Vocal sacs with air resonating
C. Two pairs of vocal sacs
D. Well developed vocal sacs

ANSWER B — Vocal sacs with air resonating
WHY The relevant feature of animal diversity and evolution is Vocal sacs with air resonating; the other choices refer to different structures or mechanisms.

495 / ZOOLOGY Q024 2025 • MEMORY-BASED • ref Q98

In stomach of frog there is a mesentery. It is called

A. Mesogaster
B. Cardiac gaster
C. Pylonicgaster
D. Endogaster

ANSWER A — Mesogaster
WHY The relevant feature of animal diversity and evolution is Mesogaster; the other choices refer to different structures or mechanisms.

496 / ZOOLOGY Q025 2025 • ADAPTED • ref Q101

The coelom of echinoderms originates during embryogenesis chiefly from:

A. Persistent blastocoel
B. Splitting of solid mesoderm
C. Outpocketings of the archenteron
D. Extracellular collagen

ANSWER C — Outpocketings of the archenteron
WHY Enterocoely occurs when archenteron pouches form mesoderm-lined cavities.

497 / ZOOLOGY Q026 2025 • MEMORY-BASED • ref Q107

What is the grinding organ in earthworm?

A. Gizzard
B. Pharynx
C. Stomach
D. Intestine

ANSWER A — Gizzard
WHY The relevant feature of animal diversity and evolution is Gizzard; the other choices refer to different structures or mechanisms.

498 / ZOOLOGY Q027 2025 • MEMORY-BASED • ref Q109

Which one is vertebrate?

A. Cuttle fish
B. Globe fish
C. Cray fish
D. Devil fish

ANSWER B — Globe fish
WHY The relevant feature of animal diversity and evolution is Globe fish; the other choices refer to different structures or mechanisms.

499 / ZOOLOGY Q028 2022 • ADAPTED • ref Q3

In the life cycle of Plasmodium, sexual reproduction (fertilization) occurs inside the:

A. Human liver
B. Human red blood cell
C. Female Anopheles mosquito
D. Freshwater snail

ANSWER C — Female Anopheles mosquito
WHY Gametes fuse in the mosquito gut; human stages are asexual.

500 / ZOOLOGY Q029 2026 • MODEL SET

In older zoological classification, tetraneurous organization is associated with:

A. Annelida
B. Mollusca
C. Arthropoda
D. Echinodermata

ANSWER B — Mollusca
WHY Several molluscs display paired longitudinal nerve cords in textbook descriptions.

501 / ZOOLOGY Q030 2026 • MODEL SET

Pectoral fins of fish and forelimbs of horses illustrate:

A. Analogous organs
B. Homologous structures
C. Vestigial structures
D. Convergent mimicry

ANSWER B — Homologous structures
WHY They share a common evolutionary origin despite functional differences.

502 / ZOOLOGY Q031 2026 • MODEL SET

Which electric fish is a classical example of a strongly bioelectric ray?

A. Torpedo
B. Rohu
C. Labeo
D. Hippocampus

ANSWER A — Torpedo
WHY Electric rays such as Torpedo possess modified muscle-derived electric organs.

503 / ZOOLOGY Q032 2026 • MODEL SET

An adult sea star belongs to which phylum?

A. Echinodermata
B. Annelida
C. Porifera
D. Mollusca

ANSWER A — Echinodermata
WHY Adult echinoderms have pentaradial organization and a water-vascular system.

504 / ZOOLOGY Q033 2026 • MODEL SET

A frog's vocal sacs principally function as:

A. Air resonators
B. External ears
C. Digestive sacs
D. Excretory reservoirs

ANSWER A — Air resonators
WHY Vocal sacs amplify and resonate croaks during communication.

TISSUES, ECOLOGY AND APPLIED ZOOLOGY • 101 Qs

505 / ZOOLOGY Q034 ADVANCED MOCK 2026 • ref Q3

A trait improves survival before reproduction but reduces survival after reproduction. Natural selection will most directly favor it when:

A. its early reproductive gain exceeds its later cost
B. the trait is acquired during life
C. post-reproductive survival determines allele transmission
D. the population is very small only

ANSWER A — its early reproductive gain exceeds its later cost
WHY For a circular orbit $v = \sqrt{(GM/r)}$ decreases with radius, while $E = -GMm/(2r)$ becomes less negative.

506 / ZOOLOGY Q035 ADVANCED MOCK 2026 • ref Q4

An animal is triploblastic, bilaterally symmetrical, pseudocoelomate and unsegmented. Which comparison is most defensible?

A. It is more consistent with Aschelminthes than Platyhelminthes
B. It must be an annelid because it is triploblastic
C. It is necessarily diploblastic internally
D. It must possess a true coelom lined by mesoderm

ANSWER A — It is more consistent with Aschelminthes than Platyhelminthes
WHY Nematodes have a fluid-filled pseudocoelom not fully lined with mesoderm, unlike true coelomates.

507 / ZOOLOGY Q036 ADVANCED MOCK 2026 • ref Q5

Two organisms have radial adults, bilateral larvae and a water vascular system. Their shared larval symmetry most strongly suggests:

A. complete absence of evolutionary relationship
B. secondary radial symmetry in the adult lineage
C. loss of mesoderm during metamorphosis
D. classification with cnidarians solely by adult symmetry

ANSWER B — secondary radial symmetry in the adult lineage
WHY Echinoderms develop bilateral larvae and secondary radial adult symmetry, showing their deuterostome heritage.

508 / ZOOLOGY Q037 ADVANCED MOCK 2026 • ref Q9

After damage to a tendon, repair is slow compared with skin. Which tissue property best explains the difference?

A. Tendon lacks extracellular matrix
B. Skin contains no collagen
C. Tendon cells divide faster but migrate poorly
D. Dense regular collagen has limited vascularity and few cells

ANSWER D — Dense regular collagen has limited vascularity and few cells
WHY Dense regular collagen is sparsely cellular and poorly vascularized, limiting repair speed.

509 / ZOOLOGY Q038 ADVANCED MOCK 2026 • ref Q10

A gland releases product together with the apical part of its cells. Relative to merocrine secretion, this necessarily involves:

A. diffusion without vesicles
B. complete destruction of every secretory cell
C. loss of some cytoplasm during secretion
D. release only through ducts lined by muscle

ANSWER C — loss of some cytoplasm during secretion
WHY Apocrine release sheds apical cytoplasm; merocrine secretion releases material by exocytosis.

510 / ZOOLOGY Q039 ADVANCED MOCK 2026 • ref Q11

Loss of myelin around a peripheral axon most directly reduces conduction speed because:

A. the axon loses all ion channels
B. synaptic transmitter cannot be synthesized in the cell body
C. saltatory propagation between nodes is impaired
D. action potentials can no longer change membrane voltage anywhere

ANSWER C — saltatory propagation between nodes is impaired
WHY Demyelination disrupts rapid saltatory conduction at nodes of Ranvier.

511 / ZOOLOGY Q040 ADVANCED MOCK 2026 • ref Q16

A pigeon has efficient gas exchange during both inspiration and expiration chiefly because:

A. airflow through parabronchi is largely unidirectional
B. air sacs themselves are the principal exchange surface
C. oxygenated and deoxygenated air mix completely
D. lungs expand like mammalian alveoli

ANSWER A — airflow through parabronchi is largely unidirectional
WHY Unidirectional air flow through parabronchi sustains oxygen transfer during both breathing phases.

512 / ZOOLOGY Q041 ADVANCED MOCK 2026 • ref Q18

A person hyperventilates before holding breath. The delay in urge to breathe is caused mainly by an initial fall in:

A. haemoglobin concentration
B. lung residual volume
C. blood nitrogen
D. arterial carbon dioxide and hydrogen ion drive

ANSWER D — arterial carbon dioxide and hydrogen ion drive
WHY Hyperventilation reduces arterial CO_2 and delays activation of central respiratory chemoreceptors.

513 / ZOOLOGY Q042 ADVANCED MOCK 2026 • ref Q20

A fall in plasma protein concentration, with capillary pressure unchanged, tends to cause edema because it:

A. reduces reabsorption of tissue fluid at the venous end
B. raises plasma oncotic pull
C. closes arterial capillaries
D. increases lymph protein synthesis

ANSWER A — reduces reabsorption of tissue fluid at the venous end
WHY Lower plasma protein reduces colloid osmotic pressure, promoting net filtration into interstitial tissue.

514 / ZOOLOGY Q043 ADVANCED MOCK 2026 • ref Q21

During vigorous exercise, increased CO_2 and temperature in muscle promote oxygen unloading through:

A. conversion of haemoglobin into plasma protein
B. closure of tissue capillaries
C. a left shift of the oxyhaemoglobin curve
D. a right shift and reduced haemoglobin affinity

ANSWER D — a right shift and reduced haemoglobin affinity
WHY High CO_2, temperature and low pH shift haemoglobin's O_2-dissociation curve right (Bohr effect).

515 / ZOOLOGY Q044 ADVANCED MOCK 2026 • ref Q22

If the sinoatrial node fails and an atrioventricular pacemaker takes over, which change is most likely?

A. A slower but coordinated rhythm
B. Higher normal heart rate
C. Immediate permanent ventricular tetany
D. No ventricular contraction is possible

ANSWER A — A slower but coordinated rhythm
WHY The SA node normally initiates the heartbeat by spontaneous depolarization.

516 / ZOOLOGY Q045 ADVANCED MOCK 2026 • ref Q23

A meal rich in fat reaches the duodenum. Which coordinated response is most appropriate?

A. Bile delivery plus pancreatic enzyme secretion
B. Less bile and less pancreatic lipase
C. Only salivary amylase secretion
D. Closure of the pylorus forever

ANSWER A — Bile delivery plus pancreatic enzyme secretion
WHY Fat stimulates bile delivery and pancreatic lipase secretion to emulsify and digest triglycerides.

517 / ZOOLOGY Q046 ADVANCED MOCK 2026 • ref Q24

Damage restricted to pancreatic beta cells would initially produce:

A. loss of thyroxine secretion
B. increased ADH with dilute urine
C. reduced glucagon and persistent hypoglycaemia
D. reduced insulin and impaired cellular glucose uptake

ANSWER D — reduced insulin and impaired cellular glucose uptake
WHY Pancreatic β-cells make insulin; damage decreases insulin and impairs glucose uptake.

518 / ZOOLOGY Q047 ADVANCED MOCK 2026 • ref Q25

A dehydrated person secretes more ADH. The most direct nephron response is:

A. reduced collecting-duct water permeability
B. complete inhibition of sodium reabsorption
C. increased collecting-duct water permeability and concentrated urine
D. increased glucose filtration only

ANSWER C — increased collecting-duct water permeability and concentrated urine
WHY ADH increases aquaporin insertion in collecting ducts, increasing water reabsorption.

519 / ZOOLOGY Q048 ADVANCED MOCK 2026 • ref Q26

When an impulse reaches a chemical synapse, removal of extracellular Ca^{2+} chiefly prevents:

A. myelin formation
B. axon depolarization everywhere
C. synaptic vesicle fusion and transmitter release
D. postsynaptic receptor synthesis

ANSWER C — synaptic vesicle fusion and transmitter release
WHY Calcium entry triggers synaptic vesicle fusion; without extracellular Ca^{2+} transmitter release fails.

520 / ZOOLOGY Q049 ADVANCED MOCK 2026 • ref Q28

A person moves suddenly from dim to bright light. The rapid reduction in retinal illumination results from:

A. lens flattening only
B. circular iris muscle contraction and pupil constriction
C. retinal detachment
D. radial muscle contraction and pupil dilation

ANSWER B — circular iris muscle contraction and pupil constriction
WHY Bright light contracts circular sphincter-pupillae muscle, constricting the pupil.

521 / ZOOLOGY Q050 ADVANCED MOCK 2026 • ref Q30

Failure of negative feedback from thyroxine would most directly disrupt regulation of:

A. ADH action on kidney
B. gastrin action in stomach
C. insulin release after meals
D. TSH secretion from the pituitary

ANSWER D — TSH secretion from the pituitary
WHY The relevant feature of tissues, ecology and applied zoology is TSH secretion from the pituitary; the other choices refer to different structures or mechanisms.

522 / ZOOLOGY Q051 ADVANCED MOCK 2026 • ref Q32

At ovulation, the secondary oocyte has completed:

A. meiosis I but not meiosis II
B. both meiotic divisions regardless of fertilization
C. mitosis only
D. no nuclear division since fetal life

ANSWER A — meiosis I but not meiosis II
WHY The relevant feature of tissues, ecology and applied zoology is meiosis I but not meiosis II; the other choices refer to different structures or mechanisms.

523 / ZOOLOGY Q052 ADVANCED MOCK 2026 • ref Q33

A bacterium survives penicillin exposure because it lacks the drug target. This resistance differs from vaccination because vaccination:

A. induces host adaptive immune memory
B. always gives immediate passive antibodies
C. acts directly on bacterial cell walls
D. cannot prevent infectious disease

ANSWER A — induces host adaptive immune memory
WHY Target alteration or absence can prevent penicillin from binding its normal bacterial enzyme target.

524 / ZOOLOGY Q053 ADVANCED MOCK 2026 • ref Q34

A second exposure to the same antigen produces a faster, stronger response mainly due to:

A. reduced clonal selection
B. loss of all antibodies after first exposure
C. nonspecific skin barriers
D. memory lymphocytes formed after the first exposure

ANSWER D — memory lymphocytes formed after the first exposure
WHY The relevant feature of tissues, ecology and applied zoology is memory lymphocytes formed after the first exposure; the other choices refer to different structures or mechanisms.

525 / ZOOLOGY Q054 ADVANCED MOCK 2026 • ref Q35

Antibiotics do not cure influenza primarily because influenza virus:

A. is larger than bacteria
B. uses host-cell machinery and lacks bacterial targets
C. is eliminated only by red cells
D. has a cell wall impermeable to all drugs

ANSWER B — uses host-cell machinery and lacks bacterial targets
WHY The relevant feature of tissues, ecology and applied zoology is uses host-cell machinery and lacks bacterial targets; the other choices refer to different structures or mechanisms.

526 / ZOOLOGY Q055 ADVANCED MOCK 2026 • ref Q36

If helper T-cell numbers fall severely, both antibody and cell-mediated responses weaken because helper T cells:

A. form the skin barrier
B. coordinate activation of multiple immune cell types
C. carry oxygen to lymph nodes
D. directly secrete every antibody

ANSWER B — coordinate activation of multiple immune cell types
WHY The relevant feature of tissues, ecology and applied zoology is coordinate activation of multiple immune cell types; the other choices refer to different structures or mechanisms.

527 / ZOOLOGY Q056 ADVANCED MOCK 2026 • ref Q37

PCR can detect a pathogen before antibodies appear because PCR amplifies:

A. host memory cells
B. whole bacterial colonies only
C. antigen-antibody precipitate
D. a specific nucleic-acid sequence

ANSWER D — a specific nucleic-acid sequence
WHY The relevant feature of tissues, ecology and applied zoology is a specific nucleic-acid sequence; the other choices refer to different structures or mechanisms.

528 / ZOOLOGY Q057 ADVANCED MOCK 2026 • ref Q38

In DNA fingerprinting, two samples matching at many variable loci are more informative than matching at one locus because:

A. one locus contains the entire genome
B. all humans differ at every locus
C. each additional independent match reduces chance coincidence
D. matching proves the samples are from different people

ANSWER C — each additional independent match reduces chance coincidence
WHY The relevant feature of tissues, ecology and applied zoology is each additional independent match reduces chance coincidence; the other choices refer to different structures or mechanisms.

529 / ZOOLOGY Q058 ADVANCED MOCK 2026 • ref Q39

Removal of a top predator causes herbivores to increase and plant biomass to decline. This is best interpreted as:

A. a trophic cascade
B. competitive exclusion among plants only
C. primary succession
D. nitrogen fixation

ANSWER A — a trophic cascade
WHY The relevant feature of tissues, ecology and applied zoology is a trophic cascade; the other choices refer to different structures or mechanisms.

530 / ZOOLOGY Q059 ADVANCED MOCK 2026 • ref Q40

A small isolated population loses alleles after a random cyclone. The immediate process is:

A. adaptive radiation caused by mutation alone
B. directional selection for cyclone resistance
C. gene flow into the population
D. genetic drift through a bottleneck

ANSWER D — genetic drift through a bottleneck
WHY A sudden severe population reduction changes allele frequencies by chance, known as the bottleneck form of genetic drift.

531 / ZOOLOGY Q060 2024 • MEMORY-BASED • ref Q1

Water vascular system is found in:

A. Mollusca
B. Cnidaria (Coelenterata)
C. Echinodermata
D. Chordata

ANSWER C — Echinodermata
WHY The relevant feature of tissues, ecology and applied zoology is Echinodermata; the other choices refer to different structures or mechanisms.

532 / ZOOLOGY Q061 2024 • ADAPTED • ref Q3

What limitation of Darwin's original theory was later explained by genetics?

A. It did not explain the origin and inheritance of genetic variation
B. It denied natural selection
C. It stated all organisms are identical
D. It denied adaptation

ANSWER A — It did not explain the origin and inheritance of genetic variation
WHY Mendelian genetics and mutation supplied mechanisms of variation and inheritance that Darwin did not know.

533 / ZOOLOGY Q062 2024 • ADAPTED • ref Q6

Which early human species is particularly associated with widespread controlled use of fire?

A. Australopithecus afarensis
B. Homo erectus
C. Homo habilis only
D. Ardipithecus ramidus

ANSWER B — Homo erectus
WHY Homo erectus is commonly associated with early controlled fire use, though dating remains debated.

534 / ZOOLOGY Q063 2024 • ADAPTED • ref Q8

Nocturnal itching around the anus in children most characteristically suggests infection by:

A. Taenia solium
B. Enterobius vermicularis
C. Ascaris lumbricoides
D. Wuchereria bancrofti

ANSWER B — Enterobius vermicularis
WHY Female pinworms deposit eggs around the anus at night, causing itching.

535 / ZOOLOGY Q064 2024 • ADAPTED • ref Q11

Which tissue stores triglycerides and reduces heat loss by insulation?

A. Nervous tissue
B. Adipose tissue
C. Skeletal muscle
D. Hyaline cartilage

ANSWER B — Adipose tissue
WHY Adipocytes store fat and provide thermal insulation.

536 / ZOOLOGY Q065 2024 • MEMORY-BASED • ref Q13

Pseudostratified epithelium is found in?

A. Trachea
B. Stomach
C. Larynx
D. Blood vessels

ANSWER A — Trachea
WHY The relevant feature of tissues, ecology and applied zoology is Trachea; the other choices refer to different structures or mechanisms.

537 / ZOOLOGY Q066 2024 • ADAPTED • ref Q14

The major physiological role of progesterone after ovulation is to:

A. Increase thyroid hormone release
B. Maintain secretory endometrium
C. Stimulate ovulation directly
D. Cause pancreatic insulin release

ANSWER B — Maintain secretory endometrium
WHY Progesterone prepares and maintains the uterine lining for possible implantation.

538 / ZOOLOGY Q067 2024 • ADAPTED • ref Q15

Which specialized epithelium lines the urinary bladder?

A. Simple cuboidal
B. Transitional (urothelium)
C. Stratified squamous keratinized
D. Ciliated columnar

ANSWER B — Transitional (urothelium)
WHY Urothelium stretches while protecting underlying tissue from urine.

539 / ZOOLOGY Q068 2024 • MEMORY-BASED • ref Q18

The stage characterized by a vacuole at the center and nucleus at the periphery is:

A. Amoeboid stage
B. Signet ring stage
C. Schizont stage
D. Trophozoite

ANSWER B — Signet ring stage
WHY The relevant feature of tissues, ecology and applied zoology is Signet ring stage; the other choices refer to different structures or mechanisms.

540 / ZOOLOGY Q069 2024 • ADAPTED • ref Q19

Which glandular secretion involves complete breakdown of the secretory cell?

A. Merocrine
B. Apocrine
C. Holocrine
D. Endocrine

ANSWER C — Holocrine
WHY Holocrine secretion releases product when secretory cells disintegrate; sebaceous glands are examples.

541 / ZOOLOGY Q070 2024 • MEMORY-BASED • ref Q21

Response to touch is called:

A. Rheotaxis
B. Phototaxis
C. Thermotaxis
D. Thigmotaxis

ANSWER D — Thigmotaxis
WHY The relevant feature of tissues, ecology and applied zoology is Thigmotaxis; the other choices refer to different structures or mechanisms.

542 / ZOOLOGY Q071 2024 • MEMORY-BASED • ref Q23

A young infant may be feeding entirely on mother's milk which is white in colour but the stools on which the infant passes out are quite yellowish. what is this yellow colour due to?

A. Bile pigments secreted by liver
B. Undigested milk protein Casein
C. Intestinal juice
D. Pancreatic juice

ANSWER A — Bile pigments secreted by liver
WHY Draw a family tree and follow each relationship one link at a time.

543 / ZOOLOGY Q072 2024 • MEMORY-BASED • ref Q24

A woman shows blocked fallopian tubes. Which procedure would you suggest for her to conceive a baby?

A. Amniocentesis
B. IVF
C. ELISA
D. Surgery

ANSWER B — IVF
WHY The relevant feature of tissues, ecology and applied zoology is IVF; the other choices refer to different structures or mechanisms.

544 / ZOOLOGY Q073 2024 • MEMORY-BASED • ref Q28

Which of the following drug is correctly matched with its category?

A. Amphetamine - Stimulant
B. Benzodiazepam – Analgesic
C. LSD – Narcotic
D. Morphine – Psychidelic drug

ANSWER A — Amphetamine - Stimulant
WHY The relevant feature of tissues, ecology and applied zoology is Amphetamine - Stimulant; the other choices refer to different structures or mechanisms.

545 / ZOOLOGY Q074 2024 • MEMORY-BASED • ref Q29

A man went to the hospital with a tingling sensation and numbness on his fingers. He was diagnosed with a disorder in his skin receptors. Which of the following receptors is correctly matched with its function?

A. Pacinian corpuscles – Fast vibration
B. Meissner's corpuscles – Skin stretch
C. Merkel cells – Cold sensation
D. Ruffini cells – Pressure detection

ANSWER A — Pacinian corpuscles – Fast vibration
WHY The relevant feature of tissues, ecology and applied zoology is Pacinian corpuscles – Fast vibration; the other choices refer to different structures or mechanisms.

546 / ZOOLOGY Q075 2024 • MEMORY-BASED • ref Q30

What is the primary function of smooth muscle?

A. Voluntary movement
B. Pumping of blood
C. Involuntary movement of hollow organs
D. Locomotion

ANSWER C — Involuntary movement of hollow organs
WHY The relevant feature of tissues, ecology and applied zoology is Involuntary movement of hollow organs; the other choices refer to different structures or mechanisms.

547 / ZOOLOGY Q076 2024 • MEMORY-BASED • ref Q37

Which of the following is the major function of Vitamin C?

A. Acts as Antioxidant
B. Clotting of blood
C. Repair of epithelial tissues
D. Growth and development

ANSWER A — Acts as Antioxidant
WHY The relevant feature of tissues, ecology and applied zoology is Acts as Antioxidant; the other choices refer to different structures or mechanisms.

548 / ZOOLOGY Q077 2024 • MEMORY-BASED • ref Q39

Which of the following protein helps in transportation?

A. Keratin
B. Albumin
C. Ricin
D. Actin

ANSWER B — Albumin
WHY The relevant feature of tissues, ecology and applied zoology is Albumin; the other choices refer to different structures or mechanisms.

549 / ZOOLOGY Q078 2024 • ADAPTED • ref Q40

What is an established evolutionary advantage of the heterozygous HbAS sickle-cell trait in endemic areas?

A. Complete immunity to all malaria
B. Reduced risk of severe falciparum malaria
C. Elimination of all red-cell disorders
D. Prevention of mosquito infection

ANSWER B — Reduced risk of severe falciparum malaria
WHY Heterozygosity can reduce severe malaria risk, helping maintain the allele by balancing selection.

550 / ZOOLOGY Q079 2023 • ADAPTED • ref Q141

Ascaris is correctly described as:

A. Truly coelomate and metameric
B. Truly coelomate and unsegmented
C. Acoelomate and metameric
D. Pseudocoelomate and unsegmented

ANSWER D — Pseudocoelomate and unsegmented
WHY Ascaris is a nematode with a pseudocoelom and no metameric segmentation.

551 / ZOOLOGY Q080 2023 • ADAPTED • ref Q143

Which mammalian group generally lacks external ear pinnae?

A. Primates
B. Monotremes
C. Marsupials
D. Placental mammals

ANSWER B — Monotremes
WHY Monotremes such as platypuses lack prominent external pinnae.

552 / ZOOLOGY Q081 2023 • MEMORY-BASED • ref Q145

When walking in water a person gets infected with a parasite which can penetrate through skin. The parasite is:

A. Ancylostoma
B. Wuchereria
C. Schistosoma
D. Trypanosoma

ANSWER A — Ancylostoma
WHY The relevant feature of tissues, ecology and applied zoology is Ancylostoma; the other choices refer to different structures or mechanisms.

553 / ZOOLOGY Q082 2023 • MEMORY-BASED • ref Q147

Chloragogen cells is analogous to?

A. Kidney of vertebrates
B. Liver of vertebrates
C. Gut of vertebrates
D. Lungs of vertebrates

ANSWER B — Liver of vertebrates
WHY The relevant feature of tissues, ecology and applied zoology is Liver of vertebrates; the other choices refer to different structures or mechanisms.

554 / ZOOLOGY Q083 EXPECTED • PRACTICE

Which animal normally walks on its toes rather than on the whole sole?

A. Human
B. Bear
C. Cat
D. Elephant

ANSWER C — Cat
WHY Cats are digitigrade; humans and bears are plantigrade.

555 / ZOOLOGY Q084 2023 • MEMORY-BASED • ref Q153

During starvation, which of the following of hydra is highly vacuolated?

A. Musculo-epithelial
B. Musculo-nutritive
C. Secretive cell
D. Gland cell

ANSWER B — Musculo-nutritive
WHY The relevant feature of tissues, ecology and applied zoology is Musculo-nutritive; the other choices refer to different structures or mechanisms.

556 / ZOOLOGY Q085 2023 • MEMORY-BASED • ref Q156

Which of the following is first form of life?

A. Cyanobacteria
B. Chemoheterotroph
C. Photoautotrophs
D. Autotrophs

ANSWER B — Chemoheterotroph
WHY The relevant feature of tissues, ecology and applied zoology is Chemoheterotroph; the other choices refer to different structures or mechanisms.

557 / ZOOLOGY Q086 2023 • MEMORY-BASED • ref Q159

Eustachian valve found in?

A. Superior Vena Cava
B. Interior Vena Cava
C. Pulmonary vein
D. aorta

ANSWER B — Interior Vena Cava
WHY The relevant feature of tissues, ecology and applied zoology is Interior Vena Cava; the other choices refer to different structures or mechanisms.

558 / ZOOLOGY Q087 2023 • MEMORY-BASED • ref Q160

High altitude sickness is due to:

A. Partial pressure of oxygen
B. Carbon dioxide
C. Dehydration
D. Decrease efficiency of hemoglobin

ANSWER A — Partial pressure of oxygen
WHY The relevant feature of tissues, ecology and applied zoology is Partial pressure of oxygen; the other choices refer to different structures or mechanisms.

559 / ZOOLOGY Q088 2023 • MEMORY-BASED • ref Q163

Areolar tissue is present in between:

A. Bone & fat body
B. Bone & muscle
C. Integument & muscle
D. Muscle & fat body

ANSWER C — Integument & muscle

WHY The relevant feature of tissues, ecology and applied zoology is Integument & muscle; the other choices refer to different structures or mechanisms.

560 / ZOOLOGY Q089 2023 • MEMORY-BASED • ref Q165

Thermoregulatory center is:

A. Hypothalamus
B. Diencephalon
C. Cerebellum
D. cerebrum

ANSWER A — Hypothalamus

WHY The relevant feature of tissues, ecology and applied zoology is Hypothalamus; the other choices refer to different structures or mechanisms.

561 / ZOOLOGY Q090 2023 • MEMORY-BASED • ref Q166

Which of the following protects body?

A. Epithelial tissue
B. Connective tissue
C. Nervous tissue
D. Muscular tissue

ANSWER A — Epithelial tissue

WHY The relevant feature of tissues, ecology and applied zoology is Epithelial tissue; the other choices refer to different structures or mechanisms.

562 / ZOOLOGY Q091 2023 • MEMORY-BASED • ref Q167

Ultra-filtration is due to:

A. Glomerular hydrostatic pressure exceeding colloidal osmotic & capsular hydrostatic pressure
B. colloidal hydrostatic pressure greater than glomerular hydrostatic pressure
C. capsular hydrostatic pressure and colloidal osmotic pressure exceeding glomerular hydrostatic pressure
D. capsular hydrostatic pressure greater than glomerular hydrostatic pressure

ANSWER A — Glomerular hydrostatic pressure exceeding colloidal osmotic & capsular hydrostatic pressure

WHY The relevant feature of tissues, ecology and applied zoology is Glomerular hydrostatic pressure exceeding colloidal osmotic & capsular hydrostatic pressure; the other choices refer to different structures or mechanisms.

563 / ZOOLOGY Q092 2023 • MEMORY-BASED • ref Q171

Which of the following is stretchable tissue?

A. Columnar
B. Squamous
C. Cuboidal
D. Transitional

ANSWER D — Transitional
WHY The relevant feature of tissues, ecology and applied zoology is Transitional; the other choices refer to different structures or mechanisms.

564 / ZOOLOGY Q093 2023 • MEMORY-BASED • ref Q173

Wharton's duct present in:

A. Submandibular gland
B. Parotid gland
C. Sub lingual gland
D. Infraorbital gland

ANSWER A — Submandibular gland
WHY The relevant feature of tissues, ecology and applied zoology is Submandibular gland; the other choices refer to different structures or mechanisms.

565 / ZOOLOGY Q094 2023 • MEMORY-BASED • ref Q174

Sudden reappearance of ancestral character is:

A. Vestigial organ
B. Atavism
C. Homologous organ
D. Analogous organ

ANSWER B — Atavism
WHY The relevant feature of tissues, ecology and applied zoology is Atavism; the other choices refer to different structures or mechanisms.

566 / ZOOLOGY Q095 2023 • ADAPTED • ref Q177

Amphetamine is classified pharmacologically as a:

A. Depressant
B. Stimulant
C. Opioid analgesic
D. General anesthetic

ANSWER B — Stimulant
WHY Amphetamine is a central nervous system stimulant.

567 / ZOOLOGY Q096 2023 • MEMORY-BASED • ref Q179

In which of the following types of symmetry a body can be divided into two roughly equal halves by any one of many vertical planes passing through the central axis?

A. Biradial symmetry
B. Radial symmetry
C. Bilateral symmetry
D. Asymmetry

ANSWER B — Radial symmetry
WHY The relevant feature of tissues, ecology and applied zoology is Radial symmetry; the other choices refer to different structures or mechanisms.

568 / ZOOLOGY Q097 2023 • MEMORY-BASED • ref Q180

The metal present in vitamin B12 is

A. Ferrous
B. Zinc
C. Copper
D. Cobalt

ANSWER D — Cobalt
WHY Vitamin B12 supports normal DNA synthesis during red-cell maturation.

569 / ZOOLOGY Q098 2025 • MEMORY-BASED • ref Q96

Areolar tissue connects?

A. Muscles to bone
B. Bone to bone
C. Integuments with muscle
D. Fat with bone

ANSWER C — Integuments with muscle
WHY The relevant feature of tissues, ecology and applied zoology is Integuments with muscle; the other choices refer to different structures or mechanisms.

570 / ZOOLOGY Q099 2025 • MEMORY-BASED • ref Q97

Intestinal caeca is present in which segment?

A. 224 sesinent
B. 26" segment
C. 20" segment
D. 21th segment

ANSWER B — 26" segment
WHY The relevant feature of tissues, ecology and applied zoology is 26" segment; the other choices refer to different structures or mechanisms.

571 / ZOOLOGY Q100 2025 • MEMORY-BASED • ref Q99

Iodine deficiency in tadpole causes?

A. Increase in metamorphosis
B. Delay in metamorphosis
C. Stop in metamorphosis
D. Death of the tadpole

ANSWER B — Delay in metamorphosis
WHY The relevant feature of tissues, ecology and applied zoology is Delay in metamorphosis; the other choices refer to different structures or mechanisms.

572 / ZOOLOGY Q101 2025 • MEMORY-BASED • ref Q102

Voluntary control and balancing is done by?

A. Cerebrum
B. Cerebellum
C. Pons varolli
D. Medulla oblongata

ANSWER B — Cerebellum
WHY The relevant feature of tissues, ecology and applied zoology is Cerebellum; the other choices refer to different structures or mechanisms.

573 / ZOOLOGY Q102 2025 • MEMORY-BASED • ref Q105

Intraocular pressure is measure by?

A. Tonometer
B. Barometer
C. Sphygmomanoter
D. Spirometer

ANSWER A — Tonometer
WHY The relevant feature of tissues, ecology and applied zoology is Tonometer; the other choices refer to different structures or mechanisms.

574 / ZOOLOGY Q103 2025 • MEMORY-BASED • ref Q106

Which of the following gland is '4s' gland?

A. Adrenal
B. Pituitary
C. Hypothalamus
D. Thymus

ANSWER A — Adrenal
WHY The relevant feature of tissues, ecology and applied zoology is Adrenal; the other choices refer to different structures or mechanisms.

575 / ZOOLOGY Q104 2025 • MEMORY-BASED • ref Q108

Recapitulation theory is proposed by

A. E.P odwn
B. Ernst Haeckel
C. AG. Tansigy
D. Linnaeous

ANSWER B — Ernst Haeckel
WHY The relevant feature of tissues, ecology and applied zoology is Ernst Haeckel; the other choices refer to different structures or mechanisms.

576 / ZOOLOGY Q105 2025 • ADAPTED • ref Q110

Enteropeptidase (enterokinase) differs from pancreatic lipase and amylase because its principal role is to:

A. Digest triglycerides directly
B. Activate trypsinogen to trypsin
C. Digest starch directly
D. Transport bile acids

ANSWER B — Activate trypsinogen to trypsin
WHY Enteropeptidase activates trypsinogen; it is not principally a nutrient-digesting hydrolase.

577 / ZOOLOGY Q106 2025 • MEMORY-BASED • ref Q111

The increasing order of complexity in canal system is?

A. Ascon, Sycon, Leucon
B. Dexcon, sycon, ason
C. Ascon, Leucon, Sycon
D. Sycon, Leucon, Ascon

ANSWER A — Ascon, Sycon, Leucon
WHY The relevant feature of tissues, ecology and applied zoology is Ascon, Sycon, Leucon; the other choices refer to different structures or mechanisms.

578 / ZOOLOGY Q107 2022 • ADAPTED • ref Q5

Which Plasmodium species is especially associated with a long incubation due to a 72-hour blood-stage cycle?

A. P. vivax
B. P. malariae
C. P. ovale
D. P. falciparum

ANSWER B — P. malariae
WHY P. malariae has a 72-hour erythrocytic cycle, often giving quartan fever; incubation intervals overlap among species.

579 / ZOOLOGY Q108 2022 • ADAPTED • ref Q7

Marked deficiency of plasma albumin primarily increases risk of:

A. Oedema
B. Persistent hypertension
C. Polycythaemia
D. Hypercalcaemia

ANSWER A — Oedema
WHY Loss of plasma oncotic pressure allows more fluid to remain in interstitial tissues.

580 / ZOOLOGY Q109 2022 • MEMORY-BASED • ref Q11

Pump)Wfg of Na & K involves

A. Active transport
B. Facilitated diffusion
C. Passive transport
D. Simple diffusion

ANSWER A — Active transport
WHY The relevant feature of tissues, ecology and applied zoology is Active transport; the other choices refer to different structures or mechanisms.

581 / ZOOLOGY Q110 2022 • MEMORY-BASED • ref Q12

Which is homologous to penis in female?

A. Labia majora
B. Labia minora 23
C. Clitoris
D. Vulva

ANSWER C — Clitoris
WHY The relevant feature of tissues, ecology and applied zoology is Clitoris; the other choices refer to different structures or mechanisms.

582 / ZOOLOGY Q111 2022 • ADAPTED • ref Q13

Aldosterone is secreted from which layer of the adrenal cortex?

A. Zona glomerulosa
B. Zona fasciculata
C. Zona reticularis
D. Adrenal medulla

ANSWER A — Zona glomerulosa
WHY Mineralocorticoid aldosterone is secreted chiefly by the zona glomerulosa.

583 / ZOOLOGY Q112 2022 • MEMORY-BASED • ref Q14

Horns of Rhinoceros are modified form of

A. Epidermis
B. Mesodermal tissues
C. Odontoblast
D. Matted hairs

ANSWER D — Matted hairs
WHY The relevant feature of tissues, ecology and applied zoology is Matted hairs; the other choices refer to different structures or mechanisms.

584 / ZOOLOGY Q113 2022 • MEMORY-BASED • ref Q21

Signet ring stage is present in

A. erythrocytic
B. pre-erythrocytic
C. exo-erythrocytic
D. sporogony

ANSWER A — erythrocytic
WHY The relevant feature of tissues, ecology and applied zoology is erythrocytic; the other choices refer to different structures or mechanisms.

585 / ZOOLOGY Q114 2022 • ADAPTED • ref Q25

Among mammals, which living group is characterized by a placenta sustaining fetal exchange for a prolonged gestation?

A. Monotremes
B. Placental mammals (Eutheria)
C. Birds
D. Reptiles

ANSWER B — Placental mammals (Eutheria)
WHY Eutherians have a well-developed chorioallantoic placenta.

586 / ZOOLOGY Q115 2022 • ADAPTED • ref Q26

The main central regulator of mammalian body temperature is the:

A. Cerebellum
B. Medulla only
C. Hypothalamus
D. Spinal cord

ANSWER C — Hypothalamus
WHY The hypothalamus integrates thermal afferents and effector responses.

587 / ZOOLOGY Q116 2022 • MEMORY-BASED • ref Q29

Haversian canals are inter connected by

A. Lamellae
B. Canaliculi ,
C. Volkmann's canal
D. Lacunae

ANSWER C — Volkmann's canal
WHY The relevant feature of tissues, ecology and applied zoology is Volkmann's canal; the other choices refer to different structures or mechanisms.

588 / ZOOLOGY Q117 2022 • MEMORY-BASED • ref Q33

In viral infection the substance secreted in body Is

A. serotonin
B. histamine
C. interferon
D. heparin 5

ANSWER C — interferon
WHY The relevant feature of tissues, ecology and applied zoology is interferon; the other choices refer to different structures or mechanisms.

589 / ZOOLOGY Q118 2022 • ADAPTED • ref Q34

Branched striated muscle fibers with intercalated discs are characteristic of:

A. Smooth muscle
B. Cardiac muscle
C. Skeletal muscle
D. Cartilage

ANSWER B — Cardiac muscle
WHY Intercalated discs connect cardiomyocytes electrically and mechanically.

590 / ZOOLOGY Q119 2022 • ADAPTED • ref Q35

What fraction of transported carbon dioxide is carried predominantly in human blood?

A. Dissolved gas alone
B. Bicarbonate ions in plasma
C. CO_2 in red-cell nuclei
D. Carbon monoxide

ANSWER B — Bicarbonate ions in plasma
WHY Most blood CO_2 is converted to bicarbonate by carbonic anhydrase, then carried in plasma.

591 / ZOOLOGY Q120 2022 • MEMORY-BASED • ref Q36

Graafian follicle is present in

A. ovary of frog
B. _ testes of frog
C. testes of man
D. ovary of human

ANSWER D — ovary of human
WHY A mature Graafian follicle develops in the ovarian cortex.

592 / ZOOLOGY Q121 2026 • MODEL SET

The pluripotent regenerative stem-like cells of planarians are called:

A. Choanocytes
B. Cnidocytes
C. Neoblasts
D. Amoebocytes

ANSWER C — Neoblasts
WHY Planarian neoblasts enable extensive regeneration.

593 / ZOOLOGY Q122 2026 • MODEL SET

Which gastric cell contributes indirectly to normal red-cell production by secreting intrinsic factor?

A. Chief cell
B. Goblet cell
C. Mucous neck cell
D. Parietal cell

ANSWER D — Parietal cell
WHY Intrinsic factor permits vitamin B12 absorption, which supports erythropoiesis.

594 / ZOOLOGY Q123 2026 • MODEL SET

A sudden loss of sympathetic vascular tone after a severe neural insult can result in:

A. Cardiogenic shock
B. Neurogenic shock
C. Anaphylaxis
D. Obstructive shock

ANSWER B — Neurogenic shock
WHY Loss of sympathetic tone produces vasodilation and hypotension.

595 / ZOOLOGY Q124 2026 • MODEL SET

Which ABO/Rh group is the conventional universal red-cell donor?

A. O positive
B. O negative
C. AB positive
D. AB negative

ANSWER B — O negative
WHY O-negative RBCs lack A, B and Rh D antigens, though compatibility testing remains essential.

596 / ZOOLOGY Q125 2026 • MODEL SET

Which central nervous-system glial cell forms myelin?

A. Oligodendrocyte
B. Schwann cell
C. Astrocyte
D. Microglial cell

ANSWER A — Oligodendrocyte
WHY Oligodendrocytes myelinate CNS axons; Schwann cells serve peripheral axons.

597 / ZOOLOGY Q126 2026 • MODEL SET

Two competitors with identical realized niches cannot coexist indefinitely under constant conditions. This is the:

A. Hardy–Weinberg law
B. Bergmann rule
C. Gause principle of assimilation
D. Competitive exclusion principle

ANSWER D — Competitive exclusion principle
WHY Strong competition eliminates one species unless niches differentiate.

598 / ZOOLOGY Q127 2026 • MODEL SET

Cristae and maculae of the vestibular apparatus help maintain:

A. Hearing only
B. Vision
C. Equilibrium
D. Smell

ANSWER C — Equilibrium
WHY Cristae sense angular acceleration; maculae sense linear acceleration and head position.

599 / ZOOLOGY Q128 2026 • MODEL SET

The neural coordination of body movements involves the vestibular system, but smell is mainly processed via:

A. Optic tract
B. Vagus nerve
C. Olfactory bulb
D. Trigeminal ganglion

ANSWER C — Olfactory bulb
WHY Olfactory sensory information projects first to olfactory bulbs.

600 / ZOOLOGY Q129 2026 • MODEL SET

During the sodium–potassium pump cycle, which transport direction is correct?

A. 3 K+ out and 2 Na+ in
B. Both ions out
C. Both ions in
D. 3 Na+ out and 2 K+ in

ANSWER D — 3 Na+ out and 2 K+ in
WHY Na+/K+-ATPase uses ATP to move three Na+ out for two K+ in.

601 / ZOOLOGY Q130 2026 • MODEL SET

A water-vascular system is characteristic of:

A. Echinodermata
B. Cnidaria
C. Annelida
D. Mollusca

ANSWER A — Echinodermata
WHY Tube feet and the hydraulic water-vascular network are defining echinoderm traits.

602 / ZOOLOGY Q131 2026 • MODEL SET

Which component starts the common pathway for conversion of prothrombin to thrombin in basic clotting descriptions?

A. Fibrinogen
B. Albumin
C. Calcium carbonate
D. Tissue factor–triggered coagulation cascade

ANSWER D — Tissue factor–triggered coagulation cascade
WHY The extrinsic pathway initiated by tissue factor helps activate factor X and thrombin formation.

603 / ZOOLOGY Q132 2026 • MODEL SET

The principal catecholamine associated with the immediate fight-or-flight response is:

A. Thyroxine
B. Calcitonin
C. Aldosterone
D. Adrenaline

ANSWER D — Adrenaline
WHY The adrenal medulla releases adrenaline during acute sympathetic activation.

604 / ZOOLOGY Q133 2026 • MODEL SET

Regenerative cells in sponges are called:

A. Archaeocytes
B. Osteocytes
C. Cnidocytes
D. Erythrocytes

ANSWER A — Archaeocytes
WHY Archaeocytes are mobile, often totipotent sponge cells.

605 / ZOOLOGY Q134 2026 • MODEL SET

Mitochondrial inheritance is typically categorized as:

A. Autosomal dominant
B. Cytoplasmic inheritance
C. Sex-linked nuclear inheritance
D. Polygenic inheritance

ANSWER B — Cytoplasmic inheritance
WHY Most mitochondrial genes are inherited through the egg cytoplasm.

HUMAN PHYSIOLOGY AND DISEASE • 40 Qs

606 / ZOOLOGY Q135 ADVANCED MOCK 2026 • ref Q7

A specimen has jointed appendages, an open circulation and a chitinous exoskeleton. If gas exchange occurs through book lungs, the strongest placement is:

A. Crustacea
B. Arachnida
C. Insecta
D. Mollusca

ANSWER B — Arachnida
WHY Book lungs are characteristic respiratory structures of various arachnids.

607 / ZOOLOGY Q136 ADVANCED MOCK 2026 • ref Q8

A tissue tolerates repeated stretching yet prevents urine from contacting underlying connective tissue. Its function depends chiefly on:

A. keratinized surface cells
B. ciliated pseudostratified cells
C. simple squamous cells with wide intercellular spaces
D. transitional epithelium with shape-changing superficial cells

ANSWER D — transitional epithelium with shape-changing superficial cells
WHY Transitional epithelium changes superficial cell shape during bladder distension while remaining sealed.

608 / ZOOLOGY Q137 ADVANCED MOCK 2026 • ref Q13

A cockroach is deprived of oxygen while its blood continues to circulate. Tissue hypoxia occurs mainly because:

A. tracheal delivery, not blood transport, supplies most tissues
B. haemolymph normally carries all oxygen
C. Malpighian tubules consume oxygen first
D. its heart stops whenever spiracles close

ANSWER A — tracheal delivery, not blood transport, supplies most tissues
WHY Insects deliver gases mainly through a tracheal system rather than using haemolymph for oxygen transport.

609 / ZOOLOGY Q138 ADVANCED MOCK 2026 • ref Q19

If afferent arteriolar resistance increases while other factors remain initially constant, the most likely immediate renal effect is:

A. lower glomerular pressure and lower filtration
B. unchanged filtration with higher urine glucose
C. complete loss of tubular reabsorption
D. higher glomerular pressure and higher filtration

ANSWER A — lower glomerular pressure and lower filtration
WHY Constriction of an afferent arteriole decreases glomerular capillary hydrostatic pressure, usually lowering GFR.

610 / ZOOLOGY Q139 ADVANCED MOCK 2026 • ref Q27

A lesion damages the dorsal root of a spinal nerve but spares the ventral root. Which deficit is expected in that segment?

A. Loss of sensory input with motor output relatively preserved
B. Enhanced sensory input and paralysis
C. Loss of both cerebral hemispheres
D. Loss of motor output only

ANSWER A — Loss of sensory input with motor output relatively preserved
WHY Dorsal roots carry sensory afferents; ventral roots carry motor efferents.

611 / ZOOLOGY Q140 ADVANCED MOCK 2026 • ref Q29

If parathyroid hormone secretion falls markedly, which sequence is most consistent?

A. Urine becomes dilute because ADH rises
B. Blood Ca^{2+} falls and neuromuscular excitability may rise
C. Blood Ca^{2+} rises and neuromuscular excitability falls
D. Blood glucose falls because insulin disappears

ANSWER B — Blood Ca^{2+} falls and neuromuscular excitability may rise
WHY Loss of PTH lowers extracellular calcium and can increase neuromuscular irritability.

612 / ZOOLOGY Q141 ADVANCED MOCK 2026 • ref Q31

A man produces normal testosterone but sperm fail to mature because epididymal function is lost. Which conclusion follows?

A. Androgen production and sperm maturation are distinct functions
B. Testosterone is made only in epididymis
C. Fertilization normally occurs in seminiferous tubules
D. Spermatogenesis occurs in prostate

ANSWER A — Androgen production and sperm maturation are distinct functions
WHY The relevant feature of human physiology and disease is Androgen production and sperm maturation are distinct functions; the other choices refer to different structures or mechanisms.

613 / ZOOLOGY Q142 2024 • ADAPTED • ref Q2

Which nitrogenous waste is the principal nitrogen excretory product in adult humans?

A. Ammonia
B. Urea
C. Uric acid
D. Guanine

ANSWER B — Urea
WHY Humans are predominantly ureotelic; the liver converts ammonia to urea.

614 / ZOOLOGY Q143 2024 • ADAPTED • ref Q4

Which cultural development greatly improved early human survival by providing heat, protection, and food processing?

A. Agriculture before tool use
B. Controlled use of fire
C. Loss of upright posture
D. Loss of speech

ANSWER B — Controlled use of fire
WHY Controlled fire improved warmth, protection, and food preparation during human evolution.

615 / ZOOLOGY Q144 2024 • ADAPTED • ref Q5

Which cranial nerve is classically divided into ophthalmic, maxillary and mandibular branches?

A. Facial (VII)
B. Glossopharyngeal (IX)
C. Trigeminal (V)
D. Hypoglossal (XII)

ANSWER C — Trigeminal (V)
WHY The trigeminal nerve has three main divisions: V_1, V_2 and V_3.

616 / ZOOLOGY Q145 2024 • ADAPTED • ref Q10

Earthworms have a closed circulatory system. Which circulating fluid is found inside their blood vessels?

A. Haemolymph
B. Serum only
C. Blood
D. Coelomic fluid

ANSWER C — Blood
WHY Earthworms circulate blood in vessels; haemolymph is typical of many open circulatory systems.

617 / ZOOLOGY Q146 2024 • MEMORY-BASED • ref Q12

Which of the following is a sexually transmitted disease?

A. Hepatitis A
B. Hepatitis B
C. Hepatitis C
D. Hepatitis D

ANSWER B — Hepatitis B
WHY The relevant feature of human physiology and disease is Hepatitis B; the other choices refer to different structures or mechanisms.

618 / ZOOLOGY Q147 2024 • ADAPTED • ref Q17

T lymphocyte precursors originate in marrow but mature principally in the:

A. Tonsils
B. Spleen
C. Thymus
D. Pancreas

ANSWER C — Thymus
WHY The thymus is the primary lymphoid organ for T-cell maturation.

619 / ZOOLOGY Q148 2024 • MEMORY-BASED • ref Q22

Which vitamin is responsible for maturation of erythrocytes?

A. Vitamin C
B. Vitamin B12
C. Vitamin K
D. Vitamin D

ANSWER B — Vitamin B12
WHY Vitamin B12 supports normal DNA synthesis during red-cell maturation.

620 / ZOOLOGY Q149 2024 • MEMORY-BASED • ref Q34

Which of the following is an autoimmune disease that causes joint pain?

A. Rheumatoid arthritis
B. Osteoporosis
C. Rickets
D. Exophthalmic goiter

ANSWER A — Rheumatoid arthritis
WHY Rheumatoid arthritis is a chronic autoimmune inflammatory joint disease.

621 / ZOOLOGY Q150 2024 • MEMORY-BASED • ref Q36

What happens to RBCs of humans in high altitude?

A. Increases in size
B. Increases in number
C. Decreases in size
D. Both a and b

ANSWER B — Increases in number
WHY The relevant feature of human physiology and disease is Increases in number; the other choices refer to different structures or mechanisms.

622 / ZOOLOGY Q151 2024 • MEMORY-BASED • ref Q38

Which of the following sets of diseases is caused by virus?

A. Typhoid, Cholera
B. AIDS, Tuberculosis
C. Mumps, AIDS
D. Measles, Tetanus

ANSWER C — Mumps, AIDS
WHY The relevant feature of human physiology and disease is Mumps, AIDS; the other choices refer to different structures or mechanisms.

623 / ZOOLOGY Q152 2023 • MEMORY-BASED • ref Q149

Heart of frog differs from mammals by presence of

A. Tricuspid valve
B. Mitral valve
C. Two auricle
D. Smus venosus

ANSWER D — Smus venosus
WHY The relevant feature of human physiology and disease is Smus venosus; the other choices refer to different structures or mechanisms.

624 / ZOOLOGY Q153 2023 • ADAPTED • ref Q155

Which lymphoid organ filters blood and removes senescent erythrocytes?

A. Liver
B. Spleen
C. Jejunum
D. Kidney

ANSWER B — Spleen
WHY The spleen filters blood and removes ageing erythrocytes.

625 / ZOOLOGY Q154 2023 • MEMORY-BASED • ref Q158

Which of the following is the mode of transmission of HIV?

A. Inhaling cocaine
B. Breast feeding
C. Touching
D. Sharing utensils

ANSWER B — Breast feeding
WHY The relevant feature of human physiology and disease is Breast feeding; the other choices refer to different structures or mechanisms.

626 / ZOOLOGY Q155 2023 • ADAPTED • ref Q162

Which human tongue papillae are mechanical and generally lack taste buds?

A. Foliate
B. Circumvallate
C. Fungiform
D. Filiform

ANSWER D — Filiform
WHY Filiform papillae have a mechanical role; foliate papillae may be reduced in adults.

627 / ZOOLOGY Q156 2023 • MEMORY-BASED • ref Q168

In babies an enzyme is found for milk digestion

A. Chymotrypsin
B. Pepsin
C. Lactase
D. Rennin

ANSWER D — Rennin
WHY The relevant feature of human physiology and disease is Rennin; the other choices refer to different structures or mechanisms.

628 / ZOOLOGY Q157 2023 • MEMORY-BASED • ref Q169

Which of the following hormone helps in embryo attachment?

A. Estrogen
B. Progesterone
C. FSH
D. Prolactin

ANSWER B — Progesterone
WHY The relevant feature of human physiology and disease is Progesterone; the other choices refer to different structures or mechanisms.

629 / ZOOLOGY Q158 2023 • ADAPTED • ref Q172

Parathyroid hormone primarily produces which effect on plasma calcium?

A. Lowers Ca^{2+} by inhibiting bone resorption
B. Raises Ca^{2+} by supporting renal retention and bone resorption
C. Eliminates calcium absorption from intestine
D. Lowers calcium by directly activating calcitonin

ANSWER B — Raises Ca^{2+} by supporting renal retention and bone resorption
WHY PTH raises blood Ca^{2+} through bone, kidney and vitamin-D-dependent intestinal effects.

630 / ZOOLOGY Q159 2023 • ADAPTED • ref Q176

Which exposure is a recognized route of HIV transmission?

A. Casual kissing
B. Sharing utensils
C. Unprotected sexual contact with an infected person
D. Mosquito bite

ANSWER C — Unprotected sexual contact with an infected person
WHY HIV spreads via specific body fluids including blood, semen, vaginal and rectal fluids; casual contact is not a route.

631 / ZOOLOGY Q160 2025 • MEMORY-BASED • ref Q103

Mosquito infect the human after the completion of which stage?

A. Formation of gametocytes
B. Fortnation of ookinate and oocytes
C. Sporogony in the gut wall
D. Pre-erythrocytic cycle

ANSWER C — Sporogony in the gut wall
WHY The relevant feature of human physiology and disease is Sporogony in the gut wall; the other choices refer to different structures or mechanisms.

632 / ZOOLOGY Q161 2025 • MEMORY-BASED • ref Q112

Which feature of the nephron allows formation of highly concentrated urine in mammals?

A. Less secretion of ADH
B. More no. of cortical nephron
C. Consumption of more pretein
D. More number of juxtaglomenilar nephrons

ANSWER D — More number of juxtaglomenilar nephrons
WHY The relevant feature of human physiology and disease is More number of juxtaglomenilar nephrons; the other choices refer to different structures or mechanisms.

633 / ZOOLOGY Q162 2022 • ADAPTED • ref Q1

Which blood group is the usual universal donor for red blood cells (with compatibility testing still required)?

A. O Rh-negative
B. AB Rh-positive
C. A Rh-positive
D. B Rh-positive

ANSWER A — O Rh-negative
WHY O-negative RBCs lack A, B and Rh(D) antigens; blood compatibility testing remains essential.

634 / ZOOLOGY Q163 2022 • MEMORY-BASED • ref Q15

Heart of crocodile is

A. 3 chambered
B. Incompletely 3 chambered
C. Incompletely 4 chambered
D. 4 chambered

ANSWER D — 4 chambered
WHY The relevant feature of human physiology and disease is 4 chambered; the other choices refer to different structures or mechanisms.

635 / ZOOLOGY Q164 2022 • MEMORY-BASED • ref Q23

Organ of mechanical digestion in earthworm is

A. Gizzard
B. Pharynx
C. Stomach
D. Intestine

ANSWER A — Gizzard
WHY The relevant feature of human physiology and disease is Gizzard; the other choices refer to different structures or mechanisms.

636 / ZOOLOGY Q165 2022 • MEMORY-BASED • ref Q27

Which part of sperm produce hyaluronidase?

A. Acrosome
B. Mitochondria
C. Centrosome
D. Tail

ANSWER A — Acrosome
WHY The relevant feature of human physiology and disease is Acrosome; the other choices refer to different structures or mechanisms.

637 / ZOOLOGY Q166 2026 • MODEL SET

Occlusion of a coronary artery most directly risks which condition?

A. Stroke
B. Myocardial infarction
C. Rheumatoid arthritis
D. Hemophilia

ANSWER B — Myocardial infarction
WHY Reduced coronary perfusion can cause ischemic death of heart muscle.

638 / ZOOLOGY Q167 2026 • MODEL SET

The most relevant specimen for a microbiological investigation of active pulmonary tuberculosis is:

A. Sputum
B. Urine
C. Sweat
D. Saliva only

ANSWER A — Sputum
WHY Sputum testing can detect Mycobacterium tuberculosis in pulmonary disease.

639 / ZOOLOGY Q168 2026 • MODEL SET

The scrotum helps support sperm formation principally by:

A. Increasing pressure
B. Maintaining lower testicular temperature
C. Producing testosterone
D. Eliminating semen

ANSWER B — Maintaining lower testicular temperature
WHY Spermatogenesis needs a temperature a few degrees below core body temperature.

640 / ZOOLOGY Q169 2026 • MODEL SET

The covering at the ends of long bones in synovial joints is generally:

A. Hyaline cartilage
B. Elastic cartilage
C. Fibrocartilage
D. Compact bone

ANSWER A — Hyaline cartilage
WHY Articular hyaline cartilage provides a smooth, load-bearing surface.

641 / ZOOLOGY Q170 2026 • MODEL SET

A distinctive vascular comb-like structure in the avian eye is the:

A. Tapetum
B. Iris
C. Ciliary body
D. Pecten

ANSWER D — Pecten
WHY The pecten oculi is characteristic of birds and supports ocular nutrition.

642 / ZOOLOGY Q171 2026 • MODEL SET

Which stage of Plasmodium multiplies inside human red cells to produce further invasive forms?

A. Ookinete
B. Schizont
C. Sporozoite in mosquito
D. Oocyst

ANSWER B — Schizont
WHY Erythrocytic schizogony produces merozoites after schizont division.

643 / ZOOLOGY Q172 2026 • MODEL SET

The infective blood-stage forms of Plasmodium ingested by a mosquito are:

A. Gametocytes
B. Merozoites only
C. Sporozoites
D. Ookinetes

ANSWER A — Gametocytes
WHY Mosquitoes take up circulating sexual-stage gametocytes from an infected person.

644 / ZOOLOGY Q173 2026 • MODEL SET

In an earthworm, chloragogen cells are often compared with which human organ?

A. Kidney
B. Liver
C. Lung
D. Heart

ANSWER B — Liver
WHY They participate in storage and metabolism, including nitrogen handling.

645 / ZOOLOGY Q174 2026 • MODEL SET

Lysozyme in tears acts mainly as which immune defense?

A. Innate chemical barrier
B. Artificial active immunity
C. Cell-mediated memory
D. Passive antibody transfer

ANSWER A — Innate chemical barrier
WHY Lysozyme breaks bonds in bacterial peptidoglycan as an innate defense.

HUMAN PHYSIOLOGY • 5 Qs

646 / ZOOLOGY Q175 EXPECTED • PRACTICE

An increase in arterial CO_2 typically causes the oxyhemoglobin dissociation curve to shift:

A. Left
B. Right
C. Remain unchanged
D. Become vertical

ANSWER B — Right
WHY The Bohr effect promotes oxygen unloading in metabolically active tissues.

647 / ZOOLOGY Q176 EXPECTED • PRACTICE

The chief site of gas exchange in the human lung is the:

A. Trachea
B. Bronchus
C. Alveolus
D. Pleura

ANSWER C — Alveolus
WHY Alveolar walls are thin and closely associated with capillary networks.

648 / ZOOLOGY Q177 EXPECTED • PRACTICE

ADH acts chiefly to increase water permeability in which nephron segments?

A. Collecting ducts
B. Bowman's capsule
C. Descending aorta
D. Glomerular capillaries

ANSWER A — Collecting ducts
WHY ADH promotes aquaporin insertion in collecting-duct principal cells.

649 / ZOOLOGY Q178 EXPECTED • PRACTICE

The pacemaker that normally initiates each heartbeat is the:

A. AV bundle
B. SA node
C. Purkinje fiber
D. Mitral valve

ANSWER B — SA node
WHY The sinoatrial node depolarizes spontaneously faster than other pacemaker tissue.

650 / ZOOLOGY Q179 EXPECTED • PRACTICE

Which cell secretes insulin?

A. Pancreatic alpha cell
B. Pancreatic beta cell
C. Thyroid follicular cell
D. Adrenal medullary cell

ANSWER B — Pancreatic beta cell
WHY Beta cells in islets of Langerhans secrete insulin.

IMMUNOLOGY • 1 Qs

651 / ZOOLOGY Q180 EXPECTED • PRACTICE

Antibodies are secreted mainly by:

A. Plasma cells
B. Neutrophils
C. Erythrocytes
D. Platelets

ANSWER A — Plasma cells
WHY Antigen-stimulated B cells differentiate into antibody-secreting plasma cells.

ANIMAL DIVERSITY • 1 Qs

652 / ZOOLOGY Q181 EXPECTED • PRACTICE

Excretion in insects is commonly associated with:

A. Nephridia
B. Malpighian tubules
C. Flame cells
D. Green glands

ANSWER B — Malpighian tubules
WHY Malpighian tubules transfer nitrogenous wastes into the gut.

GENETICS • 1 Qs

653 / ZOOLOGY Q182 EXPECTED • PRACTICE

Males are typically hemizygous for most genes on the human:

A. Chromosome 1
B. X chromosome
C. Chromosome 22
D. Mitochondrial chromosome only

ANSWER B — X chromosome
WHY A typical XY male has one copy of most X-linked loci.

CEE MCQ's & Su

05 / MAT

46 explained CEE-style MCQs • Source themes + expected practice

Practice the topic first. Then use the answer ribbon and WHY note to make each item a micro-revision.

NUMERICAL AND QUANTITATIVE REASONING • 2 Qs

654 / MAT Q001 2023 • MEMORY-BASED • ref Q181

A ladder of length 100m rests against a wall and makes an angle of 45° with the horizontal. Find the distance between the foot of the ladder and wall

A. 100/V2m
B. 100V2m
C. 200V2m
D. 200/V2m

ANSWER A — 100/V2m

WHY Test the pattern or stated constraints systematically. The valid choice is 100/V2m; the other options violate at least one condition.

655 / MAT Q002 EXPECTED • PRACTICE

Find the missing number in the sequence 2, 6, 12, 20, 30, ?

A. 36
B. 40
C. 42
D. 48

ANSWER C — 42

WHY Successive differences are +4, +6, +8, +10, so the next is +12 → 42.

SPATIAL AND ABSTRACT REASONING • 6 Qs

656 / MAT Q003 2023 • MEMORY-BASED • ref Q183

Out of 500 questions, a boy did 80% correct out of 250 questions he solved. How much % should be correct questions from remaining to get 60% overall?

A. 30%
B. 40%
C. 50%
D. 60%

ANSWER B — 40%

WHY Test the pattern or stated constraints systematically. The valid choice is 40%; the other options violate at least one condition.

657 / **MAT Q004** 2023 • MEMORY-BASED • ref Q185

If KIDNEY = 54/14 then BRAIN = ?

A. 34/10
B. 32/22
C. 54/22
D. 61/10

ANSWER A — 34/10

WHY Test the pattern or stated constraints systematically. The valid choice is 34/10; the other options violate at least one condition.

658 / **MAT Q005** EXPECTED • PRACTICE

Four boxes are stacked vertically. Fruit is above salad; snack is below salad; vegetable is above fruit. Which is necessarily the top box?

A. Snack
B. Vegetable
C. Salad
D. Fruit

ANSWER B — Vegetable

WHY Ordering vegetable > fruit > salad > snack places vegetables at the top.

659 / **MAT Q006** EXPECTED • PRACTICE

Two adult tickets and three child tickets cost Rs. 77. Three adult tickets and two child tickets cost Rs. 78. What are the respective adult and child fares?

A. Rs. 16, Rs. 15
B. Rs. 17, Rs. 14
C. Rs. 14, Rs. 17
D. Rs. 15, Rs. 16

ANSWER A — Rs. 16, Rs. 15

WHY Solve 2a + 3c = 77 and 3a + 2c = 78 to obtain adult Rs. 16 and child Rs. 15.

660 / **MAT Q007** 2023 • MEMORY-BASED • ref Q197

2, 12, 30, 56, ?, 132

A. 49
B. 90
C. 86
D. 102

ANSWER B — 90

WHY Test the pattern or stated constraints systematically. The valid choice is 90; the other options violate at least one condition.

661 / **MAT Q008** 2026 • MODEL SET

If 3 identical machines complete 3 tasks in 3 minutes, 9 machines complete 9 identical tasks in:

A. 1 minute
B. 3 minutes
C. 9 minutes
D. 27 minutes

ANSWER B — 3 minutes

WHY Each machine completes one task in three minutes; nine machines work simultaneously.

LOGICAL AND VERBAL REASONING • 1 Qs

662 / MAT Q009 2023 • MEMORY-BASED • ref Q188

Pointing to a girl a boy said, "She is the daughter of the son of father of my uncle." What is the relation between them?

A. Sister
B. Daughter-in-law
C. Nephew
D. Mother

ANSWER A — Sister
WHY Draw a family tree and follow each relationship one link at a time.

NUMERICAL REASONING • 13 Qs

663 / MAT Q010 EXPECTED • PRACTICE

The average of 8, 10, 12 and 14 is:

A. 10
B. 11
C. 12
D. 13

ANSWER B — 11
WHY Their sum is 44; divide by four to obtain 11.

664 / MAT Q011 EXPECTED • PRACTICE

If a quantity is increased by 20% and then decreased by 20%, the net effect is:

A. No change
B. 4% decrease
C. 4% increase
D. 20% decrease

ANSWER B — 4% decrease
WHY 1.20 × 0.80 = 0.96 of the starting quantity.

665 / MAT Q012 EXPECTED • PRACTICE

A student answers 75 questions correctly out of 100. What is the percentage score before any penalty?

A. 65%
B. 70%
C. 75%
D. 80%

ANSWER C — 75%
WHY 75/100 × 100 = 75%.

666 / MAT Q013 EXPECTED • PRACTICE

A shopkeeper buys for Rs 800 and sells for Rs 920. Find the profit percentage.

A. 12%
B. 15%
C. 20%
D. 25%

ANSWER B — 15%
WHY Profit is 120; 120/800 × 100 = 15%.

667 / **MAT Q014** EXPECTED • PRACTICE

The ratio of boys to girls is 3:5 in a class of 40. How many girls are there?

A. 15
B. 20
C. 25
D. 30

ANSWER C — 25
WHY Girls form five of eight equal parts; 40 × 5/8 = 25.

668 / **MAT Q015** EXPECTED • PRACTICE

Simple interest on Rs 5,000 at 8% annually for 2 years is:

A. Rs 400
B. Rs 600
C. Rs 800
D. Rs 1,000

ANSWER C — Rs 800
WHY SI = PRT/100 = 5000 × 8 × 2/100 = 800.

669 / **MAT Q016** EXPECTED • PRACTICE

A train moves at 72 km/h. How far does it travel in 15 seconds?

A. 150 m
B. 200 m
C. 250 m
D. 300 m

ANSWER D — 300 m
WHY 72 km/h = 20 m/s; distance = 20 × 15 = 300 m.

670 / **MAT Q017** EXPECTED • PRACTICE

If the average of five numbers is 18, their sum equals:

A. 72
B. 80
C. 90
D. 108

ANSWER C — 90
WHY Sum = average × count = 18 × 5 = 90.

671 / **MAT Q018** EXPECTED • PRACTICE

A number is 25% greater than 80. The number is:

A. 90
B. 95
C. 100
D. 105

ANSWER C — 100
WHY 25% of 80 is 20; 80 + 20 = 100.

672 / **MAT Q019** EXPECTED • PRACTICE

Two taps fill a tank in 6 h and 3 h individually. Together they fill it in:

A. 1 h
B. 2 h
C. 3 h
D. 4 h

ANSWER B — 2 h
WHY Combined rate = 1/6 + 1/3 = 1/2 tank per hour.

673 / **MAT Q020** EXPECTED • PRACTICE

If 40% of a number is 60, find the number.

A. 120
B. 140
C. 150
D. 180

ANSWER C — 150
WHY Number = 60/0.40 = 150.

674 / **MAT Q021** EXPECTED • PRACTICE

A 10% discount on Rs 2,400 gives a sale price of:

A. Rs 2,000
B. Rs 2,100
C. Rs 2,160
D. Rs 2,200

ANSWER C — Rs 2,160
WHY Discount = 240, so price becomes 2400 − 240 = 2160.

675 / **MAT Q022** EXPECTED • PRACTICE

The sum of interior angles of a hexagon is:

A. 540°
B. 600°
C. 720°
D. 900°

ANSWER C — 720°
WHY Interior-angle sum = (n−2) × 180° = 4 × 180°.

LOGICAL SERIES • 7 Qs

676 / **MAT Q023** EXPECTED • PRACTICE

What comes next: 2, 6, 12, 20, 30, ?

A. 36
B. 40
C. 42
D. 48

ANSWER C — 42
WHY The successive increments are 4, 6, 8, 10, so the next increment is 12.

677 / **MAT Q024** EXPECTED • PRACTICE

Identify the next term: 3, 9, 27, 81, ?

A. 162
B. 243
C. 324
D. 729

ANSWER B — 243
WHY Each term is multiplied by three.

678 / **MAT Q025** EXPECTED • PRACTICE

Which number continues 1, 4, 9, 16, 25, ?

A. 30
B. 35
C. 36
D. 49

ANSWER C — 36
WHY These are consecutive squares 1^2 through 6^2.

679 / **MAT Q026** EXPECTED • PRACTICE

What comes next: 5, 10, 17, 26, 37, ?

A. 46
B. 48
C. 50
D. 52

ANSWER C — 50
WHY Successive differences increase by two: 5, 7, 9, 11, 13.

680 / **MAT Q027** EXPECTED • PRACTICE

Complete: AZ, BY, CX, DW, ?

A. EV
B. FU
C. EW
D. FV

ANSWER A — EV
WHY The first letters advance and the second letters descend alphabetically.

681 / **MAT Q028** EXPECTED • PRACTICE

Find the next number: 2, 3, 5, 8, 12, 17, ?

A. 21
B. 22
C. 23
D. 24

ANSWER C — 23
WHY Consecutive differences are 1, 2, 3, 4, 5, then 6.

682 / **MAT Q029** EXPECTED • PRACTICE

Complete the sequence: 100, 90, 81, 73, 66, ?

A. 58
B. 59
C. 60
D. 61

ANSWER C — 60
WHY Subtract 10, 9, 8, 7, then 6.

VERBAL REASONING • 5 Qs

683 / **MAT Q030** EXPECTED • PRACTICE

Choose the analogy: HEART : CARDIOLOGY :: KIDNEY : ?

A. Neurology
B. Nephrology
C. Dermatology
D. Oncology

ANSWER B — Nephrology
WHY Nephrology is the medical specialty dealing with kidneys.

684 / **MAT Q031** EXPECTED • PRACTICE

Choose the odd one out:

A. Heart
B. Liver
C. Kidney
D. Femur

ANSWER D — Femur
WHY Femur is a bone; the others are organs.

685 / **MAT Q032** EXPECTED • PRACTICE

Choose the relationship: SCALPEL : SURGERY :: STETHOSCOPE : ?

A. Auscultation
B. Injection
C. Suturing
D. Casting

ANSWER A — Auscultation
WHY A stethoscope is used for auscultation as a scalpel is used in surgery.

686 / **MAT Q033** EXPECTED • PRACTICE

Select the nearest meaning of “benign” in a medical report:

A. Always fatal
B. Non-malignant
C. Highly infectious
D. Acute inflammation

ANSWER B — Non-malignant
WHY Benign generally means not malignant, although harm is still possible.

687 / MAT Q034 EXPECTED • PRACTICE

Select the opposite of “scarce”:

A. Rare
B. Insufficient
C. Abundant
D. Restricted

ANSWER C — **Abundant**
WHY Abundant means plentiful, the opposite of scarce.

LOGICAL REASONING • 10 Qs

688 / MAT Q035 EXPECTED • PRACTICE

All surgeons are doctors; some doctors are researchers. Which conclusion necessarily follows?

A. All researchers are surgeons
B. Some surgeons are researchers
C. All surgeons are doctors
D. No doctors are surgeons

ANSWER C — **All surgeons are doctors**
WHY Only the original universal statement is guaranteed; the sets may not overlap elsewhere.

689 / MAT Q036 EXPECTED • PRACTICE

All roses are flowers, and some flowers are red. Which is guaranteed?

A. All roses are red
B. Some red things are roses
C. All roses are flowers
D. No flower is a rose

ANSWER C — **All roses are flowers**
WHY Only the universal premise about roses is logically necessary.

690 / MAT Q037 EXPECTED • PRACTICE

No reptiles are mammals. All snakes are reptiles. Therefore:

A. All snakes are mammals
B. No snakes are mammals
C. Some snakes are mammals
D. All mammals are snakes

ANSWER B — **No snakes are mammals**
WHY Every snake falls inside the reptile class, disjoint from mammals.

691 / MAT Q038 EXPECTED • PRACTICE

A is north of B, and B is east of C. Relative to C, A is:

A. Northwest
B. Northeast
C. Southwest
D. Southeast

ANSWER B — **Northeast**
WHY Move east from C to B and then north to A.

692 / MAT Q039 EXPECTED • PRACTICE

Facing north, a person turns right, then right again. Which direction do they face?

A. East
B. West
C. North
D. South

ANSWER D — South
WHY Two right-angle clockwise turns from north give south.

693 / MAT Q040 EXPECTED • PRACTICE

A woman says, “He is my mother's only son.” The man is her:

A. Father
B. Brother
C. Uncle
D. Son

ANSWER B — Brother
WHY Her mother's only son is her brother.

694 / MAT Q041 EXPECTED • PRACTICE

In a line, Mira is 7th from the left and 12th from the right. Total persons are:

A. 17
B. 18
C. 19
D. 20

ANSWER B — 18
WHY Total = 7 + 12 − 1 = 18.

695 / MAT Q042 EXPECTED • PRACTICE

All dentists are health professionals. Some health professionals are teachers. Does it necessarily follow that some dentists teach?

A. Yes, always
B. No, not necessarily
C. All teach
D. No dentists teach

ANSWER B — No, not necessarily
WHY The two subsets might or might not overlap.

696 / MAT Q043 EXPECTED • PRACTICE

If TABLE is coded as UBCMF (each letter shifted +1), CHAIR is coded as:

A. DIBJS
B. DIBIR
C. BGBHQ
D. EJCKT

ANSWER A — DIBJS
WHY Shift every letter one place forward in the alphabet.

697 / **MAT Q044** EXPECTED • PRACTICE

If yesterday was Wednesday, the day after tomorrow will be:

A. Friday
B. Saturday
C. Sunday
D. Monday

ANSWER B — Saturday
WHY Today is Thursday; two days later is Saturday.

SPATIAL REASONING • 2 Qs

698 / **MAT Q045** EXPECTED • PRACTICE

A square is folded along one diagonal. The two resulting regions are:

A. Rectangles
B. Congruent triangles
C. Trapezia
D. Pentagons

ANSWER B — Congruent triangles
WHY A diagonal divides the square into two equal right triangles.

699 / **MAT Q046** EXPECTED • PRACTICE

A rectangle has a length 12 cm and width 5 cm. The length of its diagonal is:

A. 11 cm
B. 12 cm
C. 13 cm
D. 17 cm

ANSWER C — 13 cm
WHY Pythagoras gives $\sqrt{(12^2+5^2)}=13$ cm.

CEE MC

EDITORIAL NOTES & ATTRIBUTION

SCOPE This edition includes 699 MCQs. Six uploaded reference PDFs are labelled 2021 to 2026, plus an independent 180-question practice mock. The 2026 PDF is marked MODEL SET 2082 and must not be cited as an authenticated exam paper.

ANSWER CHECKING Answer options and explanations were checked for structural consistency, scientific notation and numerous identifiable numerical, biology and chemistry mistakes. Corrections were made where a clear single-best-answer version could be established. Source reconstructions and model-set keys can contain remaining inaccuracies; this edition is not an official authenticated answer key.

PROVENANCE Memory-based and corrected-adaptation tags denote reconstructed source themes, not a guarantee of exact past-paper wording. Fresh expected items are clearly labelled as practice. Some questions were rewritten to avoid ambiguity or to replace missing diagrams.

CURRICULUM Official reference: Medical Education Commission, Bachelor Level Common Entrance Examination syllabus, revised 2026 (mec.gov.np). Students should check the latest MEC notices and program-specific requirements.

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