CEE MCQs & SURE SHOTS

THE COMBINED PYQ-ANALYSIS HANDBOOK

729 unique CEE-style questions selected from the earlier 699-MCQ and 500-MCQ compilations, with answer selection, source explanations, exam reasoning notes and chapterwise subject navigation.

MBBS • BDS • BSc NURSING | A4 REFERENCE EDITION 2026

Before using this handbook

This is a consolidation of two earlier student compilations. “Memory-based” labels describe reconstructed reports, not independently authenticated MEC question statements. The 2026 model set and the separate advanced mock are practice material. Repeated questions are printed once. Explanations reproduce the underlying explanation from the two source booklets and add a structured method to use it in the examination; do not treat this as an official answer key.

Answer verification warning: A correct answer-letter match and uniqueness check is not a full scientific peer review of every item. For high-stakes publication, each question should receive independent subject-specialist review. Any substantial conflict with a current textbook should be resolved before distribution.

Question distribution

Subject	Unique questions
Physics	143
Chemistry	177
Botany	151
Zoology	182
MAT	76
TOTAL	729

How to learn from each worked answer

1. Cover the answer; solve or choose one option independently.
2. Read the correct choice and the provided reason; for a calculation, copy out the working.
3. Note the key test-taking rule or concept; then explain why tempting distractors are wrong.
4. Repeat incorrectly answered questions after 24 hours and again before the examination.

PHYSICS | 143 EXPLAINED MCQs

Source labels are preserved from the original compilations. Questions retain their original alternatives; answer choices and explanations are shown directly after each question.

PHYSICS 001 • GLOBAL 0001 001 / PHYSICS Q001 ADVANCED MOCK 2026 • ref Q131 | Master 699

[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)

CORRECT ANSWER C. h−μL

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

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 002 • GLOBAL 0002 002 / PHYSICS Q002 ADVANCED MOCK 2026 • ref Q133 | Master 699

[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

CORRECT ANSWER D. 1/3

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

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 003 • GLOBAL 0003 003 / PHYSICS Q003 ADVANCED MOCK 2026 • ref Q134 | Master 699

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

CORRECT ANSWER C. decrease; become less negative

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

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 004 • GLOBAL 0004 004 / PHYSICS Q004 ADVANCED MOCK 2026 • ref Q135 | Master 699

[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

CORRECT ANSWER B. 4v/3

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

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 005 • GLOBAL 0005 005 / PHYSICS Q005 ADVANCED MOCK 2026 • ref Q136 | Master 699

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

CORRECT ANSWER C. constant linear momentum and changing angular momentum

SOURCE EXPLANATION Net torque produces angular acceleration according to $\tau = I\alpha$.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 006 • GLOBAL 0006 006 / PHYSICS Q006 ADVANCED MOCK 2026 • ref Q138 | Master 699

[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

CORRECT ANSWER D. 3 N

SOURCE EXPLANATION The torque is $\tau = Fr\perp$. Equate the applied moment with the resisting moment about the pivot.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 007 • GLOBAL 0007 007 / PHYSICS Q007 ADVANCED MOCK 2026 • ref Q139 | Master 699

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

CORRECT ANSWER B. perpendicular to instantaneous displacement

SOURCE EXPLANATION Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to perpendicular to instantaneous displacement.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 008 • GLOBAL 0008 008 / PHYSICS Q008 ADVANCED MOCK 2026 • ref Q146 | Master 699

[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

CORRECT ANSWER D. 0.40

SOURCE EXPLANATION Thermal efficiency η = (Qin − Qout)/Qin. Substitute the heat received and rejected.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 009 • GLOBAL 0009 009 / PHYSICS Q009 ADVANCED MOCK 2026 • ref Q156 | Master 699

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

CORRECT ANSWER D. 2:1

SOURCE EXPLANATION Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to 2:1.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 010 • GLOBAL 0010 010 / PHYSICS Q010 ADVANCED MOCK 2026 • ref Q159 | Master 699

Kirchhoff junction rule follows directly from conservation of:

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

CORRECT ANSWER C. charge

SOURCE EXPLANATION Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to charge.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 011 • GLOBAL 0011 011 / PHYSICS Q011 ADVANCED MOCK 2026 • ref Q162 | Master 699

[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

CORRECT ANSWER B. 16 W

SOURCE EXPLANATION Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to 16 W.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 012 • GLOBAL 0012 012 / PHYSICS Q012 ADVANCED MOCK 2026 • ref Q175 | Master 699

A NAND gate output is 0 only when inputs are:

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

CORRECT ANSWER C. 1,1

SOURCE EXPLANATION Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to 1,1.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 013 • GLOBAL 0013 013 / PHYSICS Q013 ADVANCED MOCK 2026 • ref Q177 | Master 699

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

CORRECT ANSWER C. an antineutrino

SOURCE EXPLANATION Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to an antineutrino.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 014 • GLOBAL 0014 014 / PHYSICS Q014 ADVANCED MOCK 2026 • ref Q178 | Master 699

[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

CORRECT ANSWER D. 20 Mpc

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

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 015 • GLOBAL 0015 015 / PHYSICS Q015 ADVANCED MOCK 2026 • ref Q179 | Master 699

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

CORRECT ANSWER C. are neutral electromagnetic radiation with high penetration

SOURCE EXPLANATION 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.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 016 • GLOBAL 0016 016 / PHYSICS Q016 2024 • MEMORY-BASED • ref Q1 | Master 699

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

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

CORRECT ANSWER B. Torque

SOURCE EXPLANATION Net torque produces angular acceleration according to $\tau = I\alpha$.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 017 • GLOBAL 0017 017 / PHYSICS Q017 2024 • MEMORY-BASED • ref Q2 | Master 699

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

CORRECT ANSWER A. 1:2

SOURCE EXPLANATION For a fixed mass, $K = p^2/(2m)$; square-root or square relations are often tested.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 018 • GLOBAL 0018 018 / PHYSICS Q018 2024 • MEMORY-BASED • ref Q3 | Master 699

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

CORRECT ANSWER C. 7.2 g/cm³

SOURCE EXPLANATION By buoyancy, $\rho_{sphere} = (13.6 + 0.8)/2 = 7.2$ g/cm³.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 019 • GLOBAL 0019 019 / PHYSICS Q019 2024 • MEMORY-BASED • ref Q5 | Master 699

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

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

CORRECT ANSWER A. Permanent magnet

SOURCE EXPLANATION Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to Permanent magnet.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 020 • GLOBAL 0020 020 / PHYSICS Q020 2024 • MEMORY-BASED • ref Q6 | Master 699

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

CORRECT ANSWER D. The unit of Luminance is Lux/m2

SOURCE EXPLANATION 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.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 021 • GLOBAL 0021 021 / PHYSICS Q021 2024 • MEMORY-BASED • ref Q8 | Master 699

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

CORRECT ANSWER B. 48km/hr

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

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 022 • GLOBAL 0022 022 / PHYSICS Q022 2024 • MEMORY-BASED • ref Q10 | Master 699

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

CORRECT ANSWER B. 2√2:π

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

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 023 • GLOBAL 0023 023 / PHYSICS Q023 2024 • MEMORY-BASED • ref Q17 | Master 699

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

CORRECT ANSWER C. 19 Mpc

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

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 024 • GLOBAL 0024 024 / PHYSICS Q024 2024 • MEMORY-BASED • ref Q18 | Master 699

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

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

CORRECT ANSWER D. Viscosity

SOURCE EXPLANATION Apply the governing relation for mechanics and fluids and check units or

limiting cases. The result corresponds to Viscosity.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 025 • GLOBAL 0025 025 / PHYSICS Q025 2024 • MEMORY-BASED • ref Q22 | Master 699

Which of the following is a vector quantity?

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

CORRECT ANSWER B. Electric field

SOURCE EXPLANATION Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to Electric field.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 026 • GLOBAL 0026 026 / PHYSICS Q026 2024 • MEMORY-BASED • ref Q23 | Master 699

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

CORRECT ANSWER D. No change in atomic number and atomic mass

SOURCE EXPLANATION Gamma emission changes nuclear energy but not mass number or atomic number.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 027 • GLOBAL 0027 027 / PHYSICS Q027 2024 • MEMORY-BASED • ref Q27 | Master 699

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

CORRECT ANSWER A. 1:2

SOURCE EXPLANATION Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to 1:2.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 028 • GLOBAL 0028 028 / PHYSICS Q028 2024 • MEMORY-BASED • ref Q29 | Master 699

Which of the following has maximum penetrating power?

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

CORRECT ANSWER C. γ rays

SOURCE EXPLANATION Apply the governing relation for mechanics and fluids and check units or

limiting cases. The result corresponds to γ rays.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 029 • GLOBAL 0029 029 / PHYSICS Q029 2024 • MEMORY-BASED • ref Q33 | Master 699

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

CORRECT ANSWER A. Down with an acceleration

SOURCE EXPLANATION Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to Down with an acceleration.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 030 • GLOBAL 0030 030 / PHYSICS Q030 2024 • MEMORY-BASED • ref Q35 | Master 699

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

CORRECT ANSWER A. Big Bang theory

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

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 031 • GLOBAL 0031 031 / PHYSICS Q031 2024 • MEMORY-BASED • ref Q39 | Master 699

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

CORRECT ANSWER B. 22.4 km/s

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

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 032 • GLOBAL 0032 032 / PHYSICS Q032 2024 • MEMORY-BASED • ref Q47 | Master 699

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

CORRECT ANSWER D. All have equal KE

SOURCE EXPLANATION Apply the governing relation for mechanics and fluids and check units or

limiting cases. The result corresponds to All have equal KE.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 033 • GLOBAL 0033 033 / PHYSICS Q033 2023 • MEMORY-BASED • ref Q1 | Master 699

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

CORRECT ANSWER A. Block A moves down the plane

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

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 034 • GLOBAL 0034 034 / PHYSICS Q034 2023 • MEMORY-BASED • ref Q4 | Master 699

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

CORRECT ANSWER A. 11 km/s

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

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 035 • GLOBAL 0035 035 / PHYSICS Q035 2023 • MEMORY-BASED • ref Q7 | Master 699

Web of spider shines due to

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

CORRECT ANSWER A. Diffraction

SOURCE EXPLANATION Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to Diffraction.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 036 • GLOBAL 0036 036 / PHYSICS Q036 2023 • MEMORY-BASED • ref Q14 | Master 699

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

CORRECT ANSWER A. Greater than that for cold air

SOURCE EXPLANATION Apply the governing relation for mechanics and fluids and check units or

limiting cases. The result corresponds to Greater than that for cold air.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 037 • GLOBAL 0037 037 / PHYSICS Q037 2023 • MEMORY-BASED • ref Q15 | Master 699

Red color of sky during sunrise & sunset is due to

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

CORRECT ANSWER B. Scattering of light

SOURCE EXPLANATION Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to Scattering of light.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 038 • GLOBAL 0038 038 / PHYSICS Q038 2023 • MEMORY-BASED • ref Q18 | Master 699

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

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

CORRECT ANSWER B. Convex

SOURCE EXPLANATION Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to Convex.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 039 • GLOBAL 0039 039 / PHYSICS Q039 2023 • MEMORY-BASED • ref Q41 | Master 699

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

CORRECT ANSWER A. Metacentre above C.G

SOURCE EXPLANATION Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to Metacentre above C.G.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 040 • GLOBAL 0040 040 / PHYSICS Q040 2025 • ADAPTED • ref Q176 | Master 699

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

CORRECT ANSWER B. Angle of repose

SOURCE EXPLANATION At limiting friction, the angle of repose satisfies tan θ = μs.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 041 • GLOBAL 0041 041 / PHYSICS Q041 2025 • MEMORY-BASED • ref Q177 | Master 699

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

CORRECT ANSWER A. Decreases

SOURCE EXPLANATION Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to Decreases.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 042 • GLOBAL 0042 042 / PHYSICS Q042 2025 • MEMORY-BASED • ref Q178 | Master 699

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

CORRECT ANSWER A. To produce a large torque from a small effort

SOURCE EXPLANATION 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.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 043 • GLOBAL 0043 043 / PHYSICS Q043 2022 • MEMORY-BASED • ref Q4 | Master 699

If momentum increases by 100% then KE increases by

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

CORRECT ANSWER C. 300%

SOURCE EXPLANATION Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to 300%.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 044 • GLOBAL 0044 044 / PHYSICS Q044 2022 • MEMORY-BASED • ref Q12 | Master 699

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

CORRECT ANSWER B. Decreases

SOURCE EXPLANATION Apply the governing relation for mechanics and fluids and check units or

limiting cases. The result corresponds to Decreases.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 045 • GLOBAL 0045 045 / PHYSICS Q045 2022 • MEMORY-BASED • ref Q25 | Master 699

When B-decay of an element occurs then it forms

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

CORRECT ANSWER A. Isobars

SOURCE EXPLANATION Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to Isobars.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 046 • GLOBAL 0046 046 / PHYSICS Q046 2022 • ADAPTED • ref Q26 | Master 699

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

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

CORRECT ANSWER C. NOR

SOURCE EXPLANATION NOR is the negation of OR, so its output is 1 only for all-zero inputs.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 047 • GLOBAL 0047 047 / PHYSICS Q047 2022 • ADAPTED • ref Q30 | Master 699

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

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

CORRECT ANSWER B. 5,730 years

SOURCE EXPLANATION Radiocarbon dating uses a ^{14}C half-life of about 5,730 years.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 048 • GLOBAL 0048 048 / PHYSICS Q048 2022 • MEMORY-BASED • ref Q37 | Master 699

Bats can locomote at night due to echolocation by producing

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

CORRECT ANSWER A. Ultrasonic

SOURCE EXPLANATION Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to Ultrasonic.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated

conditions.

PHYSICS 049 • GLOBAL 0049 049 / PHYSICS Q049 2022 • MEMORY-BASED • ref Q38 | Master 699

Angle of deviation is maximum for

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

CORRECT ANSWER B. Violet

SOURCE EXPLANATION Apply the governing relation for mechanics and fluids and check units or limiting cases. The result corresponds to Violet.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 050 • GLOBAL 0050 050 / PHYSICS Q050 2022 • ADAPTED • ref Q41 | Master 699

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. $\sqrt{T}$

CORRECT ANSWER D. $\sqrt{T}$

SOURCE EXPLANATION $v_{rms} = \sqrt{(3RT/M)}$, so speed rises with the square root of absolute temperature.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 051 • GLOBAL 0051 051 / PHYSICS Q051 2021 • ADAPTED | Master 699

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

CORRECT ANSWER B. One half

SOURCE EXPLANATION Final speed is v/2 by momentum conservation, leaving half of the starting kinetic energy.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 052 • GLOBAL 0052 052 / PHYSICS Q052 2021 • ADAPTED | Master 699

Which best describes uniform circular motion?

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

CORRECT ANSWER B. Periodic but not SHM

SOURCE EXPLANATION The velocity direction continually changes; circular motion repeats but is not itself SHM.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 053 • GLOBAL 0053 053 / PHYSICS Q053 2021 • ADAPTED | Master 699

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

CORRECT ANSWER B. Non-wetting

SOURCE EXPLANATION Contact angles greater than 90° indicate cohesive forces dominate wetting.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 054 • GLOBAL 0054 054 / PHYSICS Q054 2021 • ADAPTED | Master 699

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

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

CORRECT ANSWER C. 80 kg

SOURCE EXPLANATION Extra displaced mass = 4 × 2 × 0.01 × 1000 = 80 kg.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 055 • GLOBAL 0055 055 / PHYSICS Q055 2021 • ADAPTED | Master 699

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%

CORRECT ANSWER B. 2%

SOURCE EXPLANATION $p \propto \sqrt{K}$, so a small percentage change in p is half that in K.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 056 • GLOBAL 0056 056 / PHYSICS Q056 ADVANCED MOCK 2026 • ref Q132 | Master 699

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

CORRECT ANSWER A. The larger-angle projectile has greater height and longer flight time

SOURCE EXPLANATION A projectile range is $R = u^2\sin(2\theta)/g$. Complementary angles θ and $(90°-\theta)$ give equal ranges.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 057 • GLOBAL 0057 057 / PHYSICS Q057 ADVANCED MOCK 2026 • ref Q137 | Master 699

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

CORRECT ANSWER A. downward acceleration g+a

SOURCE EXPLANATION In an upward-accelerating lift, effective downward acceleration is g+a; apply kinematics in the accelerating frame.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 058 • GLOBAL 0058 058 / PHYSICS Q058 ADVANCED MOCK 2026 • ref Q157 | Master 699

[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

CORRECT ANSWER B. 10 V

SOURCE EXPLANATION Apply Ohm law V = IR and the correct series/parallel relationship.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 059 • GLOBAL 0059 059 / PHYSICS Q059 ADVANCED MOCK 2026 • ref Q160 | Master 699

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

CORRECT ANSWER B. zero

SOURCE EXPLANATION Apply the governing relation for electricity and magnetism and check units or limiting cases. The result corresponds to zero.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 060 • GLOBAL 0060 060 / PHYSICS Q060 ADVANCED MOCK 2026 • ref Q161 | Master 699

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

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

CORRECT ANSWER D. attract

SOURCE EXPLANATION Apply the governing relation for electricity and magnetism and check units or limiting cases. The result corresponds to attract.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 061 • GLOBAL 0061 061 / PHYSICS Q061 ADVANCED MOCK 2026 • ref Q163 | Master 699

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

CORRECT ANSWER C. the change in magnetic flux producing it

SOURCE EXPLANATION 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.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 062 • GLOBAL 0062 062 / PHYSICS Q062 ADVANCED MOCK 2026 • ref Q164 | Master 699

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

CORRECT ANSWER B. no continuously changing magnetic flux

SOURCE EXPLANATION Apply the governing relation for electricity and magnetism and check units or limiting cases. The result corresponds to no continuously changing magnetic flux.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 063 • GLOBAL 0063 063 / PHYSICS Q063 ADVANCED MOCK 2026 • ref Q165 | Master 699

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

CORRECT ANSWER D. redistribute until their field cancels the internal applied field

SOURCE EXPLANATION 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.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 064 • GLOBAL 0064 064 / PHYSICS Q064 ADVANCED MOCK 2026 • ref Q166 | Master 699

[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

CORRECT ANSWER B. 4:1

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

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 065 • GLOBAL 0065 065 / PHYSICS Q065 ADVANCED MOCK 2026 • ref Q167 | Master 699

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

CORRECT ANSWER D. Potential difference and stored energy

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

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 066 • GLOBAL 0066 066 / PHYSICS Q066 ADVANCED MOCK 2026 • ref Q168 | Master 699

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

CORRECT ANSWER D. the centre of a uniformly charged spherical shell

SOURCE EXPLANATION 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.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 067 • GLOBAL 0067 067 / PHYSICS Q067 ADVANCED MOCK 2026 • ref Q173 | Master 699

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

CORRECT ANSWER D. increases strongly after threshold

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

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 068 • GLOBAL 0068 068 / PHYSICS Q068 2024 • MEMORY-BASED • ref Q7 | Master 699

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

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

CORRECT ANSWER B. NAND

SOURCE EXPLANATION Apply the governing relation for electricity and magnetism and check units or limiting cases. The result corresponds to NAND.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 069 • GLOBAL 0069 069 / PHYSICS Q069 2024 • MEMORY-BASED • ref Q9 | Master 699

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

A. V ∝ r
B. V ∝ 1/r
C. V ∝ r2
D. V ∝ 1/r2

CORRECT ANSWER D. V ∝ 1/r2

SOURCE EXPLANATION Apply the governing relation for electricity and magnetism and check units or limiting cases. The result corresponds to V ∝ 1/r2.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 070 • GLOBAL 0070 070 / PHYSICS Q070 2024 • MEMORY-BASED • ref Q13 | Master 699

The unit of self inductance is:

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

CORRECT ANSWER B. Volt-sec/Ampere

SOURCE EXPLANATION The induced emf opposes flux change: e = −L dI/dt.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 071 • GLOBAL 0071 071 / PHYSICS Q071 2024 • MEMORY-BASED • ref Q14 | Master 699

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

CORRECT ANSWER B. 2:1

SOURCE EXPLANATION Joule heating is H = I^2Rt; in a series circuit current is common.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 072 • GLOBAL 0072 072 / PHYSICS Q072 2024 • ADAPTED • ref Q24 | Master 699

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

CORRECT ANSWER C. 1 μF

SOURCE EXPLANATION For n identical capacitors in series, C_eq = C/n = 5/5 = 1 μF.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 073 • GLOBAL 0073 073 / PHYSICS Q073 2024 • ADAPTED • ref Q25 | Master 699

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

CORRECT ANSWER B. ½nCV²

SOURCE EXPLANATION Equivalent capacitance is nC; hence U = ½(nC)V².

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 074 • GLOBAL 0074 074 / PHYSICS Q074 2024 • MEMORY-BASED • ref Q43 | Master 699

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

CORRECT ANSWER A. Directly proportional to Current

SOURCE EXPLANATION Apply the governing relation for electricity and magnetism and check units or limiting cases. The result corresponds to Directly proportional to Current.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 075 • GLOBAL 0075 075 / PHYSICS Q075 2023 • MEMORY-BASED • ref Q47 | Master 699

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

CORRECT ANSWER C. East-west

SOURCE EXPLANATION Apply the governing relation for electricity and magnetism and check units or limiting cases. The result corresponds to East-west.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 076 • GLOBAL 0076 076 / PHYSICS Q076 EXPECTED • PRACTICE | Master 699

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

CORRECT ANSWER B. Both base–emitter and base–collector junctions are forward-biased

SOURCE EXPLANATION An ideal saturated BJT switch has both p–n junctions forward-biased.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 077 • GLOBAL 0077 077 / PHYSICS Q077 2022 • MEMORY-BASED • ref Q19 | Master 699

Highest magnetic permeability is

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

CORRECT ANSWER A. Ferromagnetic

SOURCE EXPLANATION Apply the governing relation for electricity and magnetism and check units or limiting cases. The result corresponds to Ferromagnetic.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 078 • GLOBAL 0078 078 / PHYSICS Q078 2022 • MEMORY-BASED • ref Q20 | Master 699

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

CORRECT ANSWER D. No change in orientation

SOURCE EXPLANATION Apply the governing relation for electricity and magnetism and check units or limiting cases. The result corresponds to No change in orientation.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 079 • GLOBAL 0079 079 / PHYSICS Q079 2022 • MEMORY-BASED • ref Q21 | Master 699

Self inductance is independent of

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

CORRECT ANSWER D. Resistance

SOURCE EXPLANATION The induced emf opposes flux change: $e = -L\,dI/dt$.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 080 • GLOBAL 0080 080 / PHYSICS Q080 2021 • ADAPTED | Master 699

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

CORRECT ANSWER B. 11.2 km/s

SOURCE EXPLANATION Escape speed depends on gravitational potential and starting position, not launch direction.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 081 • GLOBAL 0081 081 / PHYSICS Q081 2026 • MODEL SET | Master 699

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

CORRECT ANSWER D. No time-varying magnetic flux

SOURCE EXPLANATION Faraday induction requires changing linked magnetic flux.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 082 • GLOBAL 0082 082 / PHYSICS Q082 ADVANCED MOCK 2026 • ref Q141 | Master 699

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

CORRECT ANSWER C. Change in internal energy

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

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 083 • GLOBAL 0083 083 / PHYSICS Q083 ADVANCED MOCK 2026 • ref Q142 | Master 699

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

CORRECT ANSWER A. expands as if the missing material also expanded

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

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 084 • GLOBAL 0084 084 / PHYSICS Q084 ADVANCED MOCK 2026 • ref Q144 | Master 699

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

CORRECT ANSWER A. temperature

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

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 085 • GLOBAL 0085 085 / PHYSICS Q085 ADVANCED MOCK 2026 • ref Q145 | Master 699

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

CORRECT ANSWER B. second law of thermodynamics

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

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 086 • GLOBAL 0086 086 / PHYSICS Q086 ADVANCED MOCK 2026 • ref Q147 | Master 699

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

CORRECT ANSWER B. higher rms speed

SOURCE EXPLANATION Apply the governing relation for heat and thermodynamics and check units or limiting cases. The result corresponds to higher rms speed.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 087 • GLOBAL 0087 087 / PHYSICS Q087 2024 • MEMORY-BASED • ref Q21 | Master 699

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

CORRECT ANSWER A. Increase

SOURCE EXPLANATION Apply the governing relation for heat and thermodynamics and check units or limiting cases. The result corresponds to Increase.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 088 • GLOBAL 0088 088 / PHYSICS Q088 2024 • MEMORY-BASED • ref Q31 | Master 699

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

CORRECT ANSWER C. Isobaric > Isothermal > Adiabatic > Isochoric

SOURCE EXPLANATION Apply the governing relation for heat and thermodynamics and check units or limiting cases. The result corresponds to Isobaric > Isothermal > Adiabatic > Isochoric.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 089 • GLOBAL 0089 089 / PHYSICS Q089 2024 • ADAPTED • ref Q42 | Master 699

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

CORRECT ANSWER A. T_h = 100 K, T_c = 10 K

SOURCE EXPLANATION $\eta = 1 - T_c/T_h$. The first pair gives 90%, exceeding the other pairs.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 090 • GLOBAL 0090 090 / PHYSICS Q090 2024 • MEMORY-BASED • ref Q46 | Master 699

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

CORRECT ANSWER C. 0.6 m/s

SOURCE EXPLANATION Apply the governing relation for heat and thermodynamics and check units or limiting cases. The result corresponds to 0.6 m/s.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 091 • GLOBAL 0091 091 / PHYSICS Q091 2023 • MEMORY-BASED • ref Q32 | Master 699

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

CORRECT ANSWER B. Ical

SOURCE EXPLANATION Apply the governing relation for heat and thermodynamics and check units or limiting cases. The result corresponds to Ical.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 092 • GLOBAL 0092 092 / PHYSICS Q092 EXPECTED • PRACTICE | Master 699

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

CORRECT ANSWER C. 210°C

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

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 093 • GLOBAL 0093 093 / PHYSICS Q093 2023 • MEMORY-BASED • ref Q35 | Master 699

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

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

CORRECT ANSWER B. Decreases

SOURCE EXPLANATION Apply the governing relation for heat and thermodynamics and check units or limiting cases. The result corresponds to Decreases.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 094 • GLOBAL 0094 094 / PHYSICS Q094 2023 • MEMORY-BASED • ref Q37 | Master 699

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

CORRECT ANSWER C. 2g

SOURCE EXPLANATION Apply the governing relation for heat and thermodynamics and check units or limiting cases. The result corresponds to 2g.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 095 • GLOBAL 0095 095 / PHYSICS Q095 EXPECTED • PRACTICE | Master 699

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

CORRECT ANSWER C. 10/9

SOURCE EXPLANATION Boyle law $P_1V = P_2(0.9V)$ gives $P_2/P_1 = 1/0.9 = 10/9$.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 096 • GLOBAL 0096 096 / PHYSICS Q096 2022 • MEMORY-BASED • ref Q40 | Master 699

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

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

CORRECT ANSWER A. Temperature

SOURCE EXPLANATION Apply the governing relation for heat and thermodynamics and check units or limiting cases. The result corresponds to Temperature.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 097 • GLOBAL 0097 097 / PHYSICS Q097 2026 • MODEL SET | Master 699

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

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

CORRECT ANSWER B. Zero

SOURCE EXPLANATION Ideal-gas internal energy depends only on temperature, which remains constant.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 098 • GLOBAL 0098 098 / PHYSICS Q098 ADVANCED MOCK 2026 • ref Q148 | Master 699

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

CORRECT ANSWER C. remains fixed by the source

SOURCE EXPLANATION Frequency remains set by the driving source across the boundary; wave speed and wavelength can change.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 099 • GLOBAL 0099 099 / PHYSICS Q099 ADVANCED MOCK 2026 • ref Q149 | Master 699

[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

CORRECT ANSWER C. v/8L

SOURCE EXPLANATION Apply the governing relation for waves and optics and check units or limiting cases. The result corresponds to v/8L.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 100 • GLOBAL 0100 100 / PHYSICS Q100 ADVANCED MOCK 2026 • ref Q150 | Master 699

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

CORRECT ANSWER B. zero

SOURCE EXPLANATION Apply the governing relation for waves and optics and check units or limiting cases. The result corresponds to zero.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being

tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 101 • GLOBAL 0101 101 / PHYSICS Q101 ADVANCED MOCK 2026 • ref Q151 | Master 699

[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

CORRECT ANSWER C. 15 cm

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

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 102 • GLOBAL 0102 102 / PHYSICS Q102 ADVANCED MOCK 2026 • ref Q152 | Master 699

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

CORRECT ANSWER D. Frequency and color as set by frequency

SOURCE EXPLANATION 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.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 103 • GLOBAL 0103 103 / PHYSICS Q103 ADVANCED MOCK 2026 • ref Q153 | Master 699

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

CORRECT ANSWER C. diverges incoming rays so the eye focuses them on retina

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

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 104 • GLOBAL 0104 104 / PHYSICS Q104 ADVANCED MOCK 2026 • ref Q154 | Master 699

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

CORRECT ANSWER A. decrease

SOURCE EXPLANATION Apply the governing relation for waves and optics and check units or limiting cases. The result corresponds to decrease.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and

compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 105 • GLOBAL 0105 105 / PHYSICS Q105 ADVANCED MOCK 2026 • ref Q155 | Master 699

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

CORRECT ANSWER B. from denser to rarer with incidence above critical angle

SOURCE EXPLANATION 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.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 106 • GLOBAL 0106 106 / PHYSICS Q106 ADVANCED MOCK 2026 • ref Q169 | Master 699

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

CORRECT ANSWER D. each photon lacks sufficient energy

SOURCE EXPLANATION Apply the governing relation for waves and optics and check units or limiting cases. The result corresponds to each photon lacks sufficient energy.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 107 • GLOBAL 0107 107 / PHYSICS Q107 2024 • MEMORY-BASED • ref Q16 | Master 699

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

CORRECT ANSWER A. 413 km/s

SOURCE EXPLANATION Photon energy ≈ 1240/500 = 2.48 eV. Kmax ≈ 0.48 eV, hence vmax ≈ 4.1 × 10^5 m/s.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 108 • GLOBAL 0108 108 / PHYSICS Q108 2024 • ADAPTED • ref Q30 | Master 699

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

A. 1.22D/λ
B. 1.22λ/D
C. λD/1.22
D. D/λ

CORRECT ANSWER B. 1.22λ/D

SOURCE EXPLANATION The diffraction-limited angular separation is approximately θ = 1.22λ/D.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being

tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 109 • GLOBAL 0109 109 / PHYSICS Q109 2024 • MEMORY-BASED • ref Q45 | Master 699

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

CORRECT ANSWER C. Coherent sources are necessary and sufficient conditions for Interference

SOURCE EXPLANATION 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.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 110 • GLOBAL 0110 110 / PHYSICS Q110 2024 • ADAPTED • ref Q48 | Master 699

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

CORRECT ANSWER C. 0.24 nm

SOURCE EXPLANATION Duane–Hunt law gives $\lambda_{min} = hc/eV = 1240/5200$ nm ≈ 0.24 nm.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 111 • GLOBAL 0111 111 / PHYSICS Q111 2023 • MEMORY-BASED • ref Q30 | Master 699

Refractive index doesn't depend on:

- **A.** Temperature
- **B.** Intensity
- **C.** Wavelength
- **D.** Optical density

CORRECT ANSWER B. Intensity

SOURCE EXPLANATION For thin lenses, use $1/f = 1/v - 1/u$ with the chosen sign convention.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 112 • GLOBAL 0112 112 / PHYSICS Q112 2025 • MEMORY-BASED • ref Q171 | Master 699

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

CORRECT ANSWER C. Both on frequency and wavelength of incident ray

SOURCE EXPLANATION For thin lenses, use $1/f = 1/v - 1/u$ with the chosen sign convention.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated

conditions.

PHYSICS 113 • GLOBAL 0113 113 / PHYSICS Q113 2022 • MEMORY-BASED • ref Q32 | Master 699

Which of following wave is not polarizable?

A. Light
B. X-ray
C. Sound
D. IR

CORRECT ANSWER C. Sound

SOURCE EXPLANATION Only transverse waves can show polarization.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 114 • GLOBAL 0114 114 / PHYSICS Q114 ADVANCED MOCK 2026 • ref Q170 | Master 699

[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

CORRECT ANSWER C. 1/8

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

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 115 • GLOBAL 0115 115 / PHYSICS Q115 ADVANCED MOCK 2026 • ref Q171 | Master 699

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

CORRECT ANSWER B. E3−E2 in magnitude

SOURCE EXPLANATION Bohr theory accurately describes hydrogen-like one-electron systems.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 116 • GLOBAL 0116 116 / PHYSICS Q116 ADVANCED MOCK 2026 • ref Q172 | Master 699

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

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

CORRECT ANSWER C. momentum magnitude

SOURCE EXPLANATION Apply the governing relation for modern physics and check units or limiting cases. The result corresponds to momentum magnitude.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 117 • GLOBAL 0117 117 / PHYSICS Q117 ADVANCED MOCK 2026 • ref Q174 | Master 699

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

CORRECT ANSWER B. increases because more electron-hole pairs are generated

SOURCE EXPLANATION 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.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 118 • GLOBAL 0118 118 / PHYSICS Q118 ADVANCED MOCK 2026 • ref Q176 | Master 699

[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

CORRECT ANSWER D. 186 MeV

SOURCE EXPLANATION Apply the governing relation for modern physics and check units or limiting cases. The result corresponds to 186 MeV.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 119 • GLOBAL 0119 119 / PHYSICS Q119 ADVANCED MOCK 2026 • ref Q180 | Master 699

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

CORRECT ANSWER A. maximum kinetic energy of emitted electrons

SOURCE EXPLANATION Use Kmax = hf − φ; no electrons are emitted below the threshold frequency.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 120 • GLOBAL 0120 120 / PHYSICS Q120 2024 • MEMORY-BASED • ref Q15 | Master 699

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

CORRECT ANSWER B. The energy gap in insulators is the widest

SOURCE EXPLANATION Insulators have large band gaps; semiconductors have smaller ones and conductors have overlapping or touching bands.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 121 • GLOBAL 0121 121 / PHYSICS Q121 2024 • MEMORY-BASED • ref Q19 | Master 699

The quark combination of proton is:

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

CORRECT ANSWER A. uud

SOURCE EXPLANATION A proton contains two up quarks and one down quark: uud.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 122 • GLOBAL 0122 122 / PHYSICS Q122 2024 • MEMORY-BASED • ref Q20 | Master 699

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

CORRECT ANSWER D. Indium

SOURCE EXPLANATION Apply the governing relation for modern physics and check units or limiting cases. The result corresponds to Indium.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 123 • GLOBAL 0123 123 / PHYSICS Q123 2024 • ADAPTED • ref Q34 | Master 699

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

CORRECT ANSWER A. Operate predictably in reverse breakdown

SOURCE EXPLANATION A Zener diode provides a specified reverse breakdown voltage for regulation.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 124 • GLOBAL 0124 124 / PHYSICS Q124 2024 • MEMORY-BASED • ref Q49 | Master 699

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

CORRECT ANSWER C. 1.85 x 109 s

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

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 125 • GLOBAL 0125 125 / PHYSICS Q125 2023 • MEMORY-BASED • ref Q6 | Master 699

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

- **A.** Low wavelength

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

CORRECT ANSWER A. Low wavelength

SOURCE EXPLANATION Hard X-rays have higher photon energy and shorter wavelength than soft X-rays.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 126 • GLOBAL 0126 126 / PHYSICS Q126 2023 • MEMORY-BASED • ref Q9 | Master 699

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

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

CORRECT ANSWER A. Intensity

SOURCE EXPLANATION Use Kmax = hf − φ; no electrons are emitted below the threshold frequency.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 127 • GLOBAL 0127 127 / PHYSICS Q127 2023 • ADAPTED • ref Q11 | Master 699

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

CORRECT ANSWER B. $\bar{u}\,\bar{d}\,\bar{d}$

SOURCE EXPLANATION A neutron has udd valence quarks; the antineutron has their corresponding antiquarks.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 128 • GLOBAL 0128 128 / PHYSICS Q128 2023 • MEMORY-BASED • ref Q17 | Master 699

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

CORRECT ANSWER A. Diffusion of charge carriers

SOURCE EXPLANATION Apply the governing relation for modern physics and check units or limiting cases. The result corresponds to Diffusion of charge carriers.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 129 • GLOBAL 0129 129 / PHYSICS Q129 2023 • MEMORY-BASED • ref Q27 | Master 699

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-

CORRECT ANSWER D. Ratio of Planck's constant & charge of e-

SOURCE EXPLANATION Use Kmax = hf − φ; no electrons are emitted below the threshold frequency.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 130 • GLOBAL 0130 130 / PHYSICS Q130 2023 • MEMORY-BASED • ref Q45 | Master 699

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

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

CORRECT ANSWER A. Trivalent

SOURCE EXPLANATION Apply the governing relation for modern physics and check units or limiting cases. The result corresponds to Trivalent.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 131 • GLOBAL 0131 131 / PHYSICS Q131 EXPECTED • PRACTICE | Master 699

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

CORRECT ANSWER B. eV < erg < J < cal

SOURCE EXPLANATION 1 eV ≈ 1.60×10^{-19} J; 1 erg = 10^{-7} J; 1 cal ≈ 4.184 J.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 132 • GLOBAL 0132 132 / PHYSICS Q132 2022 • MEMORY-BASED • ref Q18 | Master 699

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

CORRECT ANSWER B. Path of proton is less curved

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

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 133 • GLOBAL 0133 133 / PHYSICS Q133 2026 • MODEL SET | Master 699

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

CORRECT ANSWER **A. Zero**

SOURCE EXPLANATION Einstein's equation Kmax = hf − φ gives zero at threshold.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 134 • GLOBAL 0134 134 / PHYSICS Q134 EXPECTED • PRACTICE | Master 699

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

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

CORRECT ANSWER **A. Momentum**

SOURCE EXPLANATION λ = h/p for matter waves.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 135 • GLOBAL 0135 135 / PHYSICS Q135 EXPECTED • PRACTICE | Master 699

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

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

CORRECT ANSWER **C. 1/8**

SOURCE EXPLANATION The remaining quantity is $(1/2)^3 = 1/8$.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 136 • GLOBAL 0136 136 / PHYSICS Q136 EXPECTED • PRACTICE | Master 699

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

CORRECT ANSWER **B. Zero**

SOURCE EXPLANATION Gravity reduces the vertical speed to zero at the apex, but horizontal speed persists.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 137 • GLOBAL 0137 137 / PHYSICS Q137 EXPECTED • PRACTICE | Master 699

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

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

CORRECT ANSWER **B. Increases**

SOURCE EXPLANATION Continuity A v = constant makes speed larger in a narrower tube.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 138 • GLOBAL 0138 138 / PHYSICS Q138 EXPECTED • PRACTICE | Master 699

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

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

CORRECT ANSWER B. 40%

SOURCE EXPLANATION $\eta = 1 - T_c/T_h = 1 - 300/500 = 0.40$.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 139 • GLOBAL 0139 139 / PHYSICS Q139 EXPECTED • PRACTICE | Master 699

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

CORRECT ANSWER B. +4 D

SOURCE EXPLANATION Power $P = 1/f(m) = 1/0.25 = +4$ D.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 140 • GLOBAL 0140 140 / PHYSICS Q140 EXPECTED • PRACTICE | Master 699

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

CORRECT ANSWER B. Decrease

SOURCE EXPLANATION From $d \sin\theta = n\lambda$, a larger d reduces $\sin\theta$.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

PHYSICS 141 • GLOBAL 0141 141 / PHYSICS Q141 EXPECTED • PRACTICE | Master 699

Two equal 6 Ω resistors in parallel have equivalent resistance:

A. 12 Ω
B. 6 Ω
C. 3 Ω
D. 1.5 Ω

CORRECT ANSWER C. 3 Ω

SOURCE EXPLANATION For two equal parallel resistors $R_{eq} = R/2 = 3$ Ω.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and

compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 142 • GLOBAL 0142 142 / PHYSICS Q142 EXPECTED • PRACTICE | Master 699

The energy stored in a capacitor is:

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

CORRECT ANSWER C. $CV^2/2$

SOURCE EXPLANATION U = 1/2 CV^2 for a capacitor charged to potential V.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the given quantities with SI units; select the governing law from the explanation; substitute without rounding early; check dimensions and compare the result with all four options. If the question asks for a ratio, cancel the common factors first.

PHYSICS 143 • GLOBAL 0143 143 / PHYSICS Q143 EXPECTED • PRACTICE | Master 699

Majority carriers in an n-type semiconductor are:

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

CORRECT ANSWER B. Electrons

SOURCE EXPLANATION Donor impurities increase mobile conduction electrons.

SOLUTION / REVISION METHOD EXAM REASONING: Identify the physical law or definition being tested, track directions/sign conventions, and reject options violating units, conservation, or the stated conditions.

CHEMISTRY | 177 EXPLAINED MCQs

Source labels are preserved from the original compilations. Questions retain their original alternatives; answer choices and explanations are shown directly after each question.

CHEMISTRY 001 • GLOBAL 0144 144 / CHEMISTRY Q001 ADVANCED MOCK 2026 • ref Q81 | Master 699

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

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

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

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 002 • GLOBAL 0145 145 / CHEMISTRY Q002 ADVANCED MOCK 2026 • ref Q83 | Master 699

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

CORRECT ANSWER C. 1:4

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

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 003 • GLOBAL 0146 146 / CHEMISTRY Q003 ADVANCED MOCK 2026 • ref Q85 | Master 699

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

CORRECT ANSWER B. unchanged

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

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 004 • GLOBAL 0147 147 / CHEMISTRY Q004 ADVANCED MOCK 2026 • ref Q87 | Master 699

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

CORRECT ANSWER C. q=0,w=0,ΔU=0

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

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 005 • GLOBAL 0148 148 / CHEMISTRY Q005 ADVANCED MOCK 2026 • ref Q89 | Master 699

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+]

CORRECT ANSWER A. 100 times the [H+]

SOURCE EXPLANATION The hydrogen-ion concentration changes by a factor of ten for each one-unit pH difference.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 006 • GLOBAL 0149 149 / CHEMISTRY Q006 ADVANCED MOCK 2026 • ref Q90 | Master 699

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 ΔG°+RT lnQ=0
- **D.** standard free energy never relates to K

CORRECT ANSWER C. Q has adjusted so ΔG°+RT lnQ=0

SOURCE EXPLANATION At equilibrium ΔG = ΔG° + RT lnQ = 0; ΔG° itself need not equal zero.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 007 • GLOBAL 0150 150 / CHEMISTRY Q007 ADVANCED MOCK 2026 • ref Q92 | Master 699

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

CORRECT ANSWER D. low pressure and high temperature

SOURCE EXPLANATION Low pressure and high temperature minimize intermolecular attraction and finite-volume effects.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 008 • GLOBAL 0151 151 / CHEMISTRY Q008 ADVANCED MOCK 2026 • ref Q93 | Master 699

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

CORRECT ANSWER B. K to decrease as equilibrium favors reactants

SOURCE EXPLANATION Heating an exothermic equilibrium favors the endothermic reverse direction and lowers K.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 009 • GLOBAL 0152 152 / CHEMISTRY Q009 ADVANCED MOCK 2026 • ref Q95 | Master 699

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

CORRECT ANSWER D. Cu^{2+} reduction is favored over water reduction under the stated conditions

SOURCE EXPLANATION 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.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 010 • GLOBAL 0153 153 / CHEMISTRY Q010 ADVANCED MOCK 2026 • ref Q97 | Master 699

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

CORRECT ANSWER A. H+ and OH− react stoichiometrically to water

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

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 011 • GLOBAL 0154 154 / CHEMISTRY Q011 ADVANCED MOCK 2026 • ref Q98 | Master 699

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

CORRECT ANSWER A. paired-electron repulsion in a 2p orbital

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

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 012 • GLOBAL 0155 155 / CHEMISTRY Q012 ADVANCED MOCK 2026 • ref Q101 | Master 699

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

CORRECT ANSWER A. stronger hydrogen bonding

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: stronger hydrogen bonding.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 013 • GLOBAL 0156 156 / CHEMISTRY Q013 ADVANCED MOCK 2026 • ref Q105 | Master 699

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

CORRECT ANSWER D. behave as basic oxide toward acid and acidic oxide toward base

SOURCE EXPLANATION Al_2O_3 is amphoteric: it reacts as a base with acids and as an acid with strong bases.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 014 • GLOBAL 0157 157 / CHEMISTRY Q014 ADVANCED MOCK 2026 • ref Q116 | Master 699

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

CORRECT ANSWER C. halide concentration alone in the rate-determining ionization

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

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 015 • GLOBAL 0158 158 / CHEMISTRY Q015 ADVANCED MOCK 2026 • ref Q117 | Master 699

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

CORRECT ANSWER B. backside attack can occur with low steric hindrance

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

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 016 • GLOBAL 0159 159 / CHEMISTRY Q016 ADVANCED MOCK 2026 • ref Q127 | Master 699

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

CORRECT ANSWER D. equilibrium yield and reaction rate

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: equilibrium yield and reaction rate.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 017 • GLOBAL 0160 160 / CHEMISTRY Q017 2024 • MEMORY-BASED • ref Q10 | Master 699

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

CORRECT ANSWER C. Isotherm

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Isotherm.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 018 • GLOBAL 0161 161 / CHEMISTRY Q018 2024 • MEMORY-BASED • ref Q12 | Master 699

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

CORRECT ANSWER C. Due to association by Hydrogen bonding

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

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 019 • GLOBAL 0162 162 / CHEMISTRY Q019 2024 • MEMORY-BASED • ref Q15 | Master 699

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

CORRECT ANSWER C. Down process

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Down process.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 020 • GLOBAL 0163 163 / CHEMISTRY Q020 2024 • MEMORY-BASED • ref Q21 | Master 699

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

A. $PCl_5\ (g) \rightleftharpoons PCl_3(g) + Cl_2(g)$

B. $N_2(g) + O_2(g) \rightleftharpoons 2NO(g)$
C. $H_2(g) + I_2(g) \rightleftharpoons 2HI(g)$
D. $2SO2(g) + O_2(g) \rightleftharpoons 2SO3(g)$

CORRECT ANSWER D. $2SO2(g) + O_2(g) \rightleftharpoons 2SO3(g)$

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: $2SO2(g) + O_2(g) \rightleftharpoons 2SO3(g)$.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 021 • GLOBAL 0164 164 / CHEMISTRY Q021 2024 • MEMORY-BASED • ref Q25 | Master 699

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

CORRECT ANSWER D. Decrease in Hydration energy

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Decrease in Hydration energy.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 022 • GLOBAL 0165 165 / CHEMISTRY Q022 2024 • MEMORY-BASED • ref Q26 | Master 699

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

CORRECT ANSWER C. Mol-2L2s-1

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Mol-2L2s-1.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 023 • GLOBAL 0166 166 / CHEMISTRY Q023 2024 • MEMORY-BASED • ref Q28 | Master 699

Graphite is used in nuclear reactors as:

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

CORRECT ANSWER B. To reduce neutron velocity

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: To reduce neutron velocity.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 024 • GLOBAL 0167 167 / CHEMISTRY Q024 2024 • MEMORY-BASED • ref Q29 | Master 699

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

CORRECT ANSWER B. Hund's rule of Maximum multiplicity

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

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 025 • GLOBAL 0168 168 / CHEMISTRY Q025 2024 • MEMORY-BASED • ref Q38 | Master 699

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

CORRECT ANSWER B. 139.5

SOURCE EXPLANATION Limiting molar conductivity of $BaCl_2$ is 127 + 2(76) = 279; its equivalent conductivity is 279/2 = 139.5.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 026 • GLOBAL 0169 169 / CHEMISTRY Q026 2024 • MEMORY-BASED • ref Q45 | Master 699

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

CORRECT ANSWER C. Ultraviolet region

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Ultraviolet region.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 027 • GLOBAL 0170 170 / CHEMISTRY Q027 2024 • MEMORY-BASED • ref Q48 | Master 699

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

CORRECT ANSWER D. Inversely proportional to square root of molecular weight

SOURCE EXPLANATION Graham law states rate $\propto 1/\sqrt{M}$ under comparable conditions.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 028 • GLOBAL 0171 171 / CHEMISTRY Q028 2023 • MEMORY-BASED • ref Q59 | Master 699

Which allotrope of carbon is used as superconductor?

A. Fullerene
B. Graphite

C. Diamond
D. Lamp black

CORRECT ANSWER A. Fullerene

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Fullerene.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 029 • GLOBAL 0172 172 / CHEMISTRY Q029 2023 • MEMORY-BASED • ref Q73 | Master 699

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

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

CORRECT ANSWER A. 12.7

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: 12.7.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 030 • GLOBAL 0173 173 / CHEMISTRY Q030 2023 • MEMORY-BASED • ref Q90 | Master 699

Which allotrope of phosphorus produces phosphorescence?

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

CORRECT ANSWER D. White phosphorus

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: White phosphorus.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 031 • GLOBAL 0174 174 / CHEMISTRY Q031 2025 • ADAPTED • ref Q16 | Master 699

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

CORRECT ANSWER D. HNO_3 acts as an oxidizing acid and nitrate is reduced

SOURCE EXPLANATION Nitric acid oxidizes the metal and nitrate is reduced; H_2 evolution is usually suppressed.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 032 • GLOBAL 0175 175 / CHEMISTRY Q032 2025 • MEMORY-BASED • ref Q20 | Master 699

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

CORRECT ANSWER A. (n-1) d orbital

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

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 033 • GLOBAL 0176 176 / CHEMISTRY Q033 2025 • ADAPTED • ref Q24 | Master 699

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

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

CORRECT ANSWER D. Charcoal

SOURCE EXPLANATION Charcoal lacks long-range periodic crystal structure; graphite and diamond are crystalline.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 034 • GLOBAL 0177 177 / CHEMISTRY Q034 2022 • MEMORY-BASED • ref Q7 | Master 699

Person frequently working with phosphorous may suffer from

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

CORRECT ANSWER A. Phossy jaw

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Phossy jaw.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 035 • GLOBAL 0178 178 / CHEMISTRY Q035 2022 • ADAPTED • ref Q26 | Master 699

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

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

CORRECT ANSWER B. Ions

SOURCE EXPLANATION Positive and negative ions transport charge through an electrolyte.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 036 • GLOBAL 0179 179 / CHEMISTRY Q036 2022 • MEMORY-BASED • ref Q33 | Master 699

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

CORRECT ANSWER B. Slowest reaction of species

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Slowest reaction of species.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 037 • GLOBAL 0180 180 / CHEMISTRY Q037 2022 • ADAPTED • ref Q34 | Master 699

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

CORRECT ANSWER B. Heisenberg uncertainty principle

SOURCE EXPLANATION $\Delta x \cdot \Delta p \geq \hbar/2$; exact position and momentum cannot both be specified arbitrarily well.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 038 • GLOBAL 0181 181 / CHEMISTRY Q038 2022 • MEMORY-BASED • ref Q37 | Master 699

Amino acid is amphoteric due to

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

CORRECT ANSWER C. Alkalinity & acidity

SOURCE EXPLANATION Amino acids contain both acidic –COOH and basic $–NH_2$ functional groups.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 039 • GLOBAL 0182 182 / CHEMISTRY Q039 EXPECTED • PRACTICE | Master 699

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

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

CORRECT ANSWER B. Half

SOURCE EXPLANATION Boyle's law gives $P \propto 1/V$ at fixed T and n.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 040 • GLOBAL 0183 183 / CHEMISTRY Q040 ADVANCED MOCK 2026 • ref Q82 | Master 699

A spontaneous process has $\Delta H>0$. Which condition must make spontaneity possible?

- **A.** Entropy of surroundings alone must rise while universe entropy falls
- **B.** $\Delta S<0$ at all temperatures
- **C.** $T\Delta S>\Delta H$ with $\Delta S>0$
- **D.** $\Delta G>0$

CORRECT ANSWER C. $T\Delta S>\Delta H$ with $\Delta S>0$

SOURCE EXPLANATION Use $\Delta G = \Delta H - T\Delta S$. For an endothermic process to be spontaneous, $T\Delta S$ must exceed ΔH.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 041 • GLOBAL 0184 184 / CHEMISTRY Q041 ADVANCED MOCK 2026 • ref Q84 | Master 699

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

CORRECT ANSWER A. pH=pKa because [HA]=[A−]

SOURCE EXPLANATION Henderson–Hasselbalch gives $pH = pKa + \log([A^-]/[HA])$; at half neutralization the ratio is 1.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 042 • GLOBAL 0185 185 / CHEMISTRY Q042 ADVANCED MOCK 2026 • ref Q86 | Master 699

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 $\Delta G°$
- **D.** increases equilibrium constant

CORRECT ANSWER A. lowers activation barriers for both directions

SOURCE EXPLANATION A catalyst creates a lower-energy pathway for both directions but does not change their equilibrium constant.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 043 • GLOBAL 0186 186 / CHEMISTRY Q043 ADVANCED MOCK 2026 • ref Q88 | Master 699

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

CORRECT ANSWER D. raises its reduction potential

SOURCE EXPLANATION The Nernst equation shows increased oxidized-to-reduced ratio generally raises a reduction half-cell potential.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 044 • GLOBAL 0187 187 / CHEMISTRY Q044 ADVANCED MOCK 2026 • ref Q91 | Master 699

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

CORRECT ANSWER A. ionic product exceeds Ksp

SOURCE EXPLANATION Adding a common ion raises the ionic product and drives the dissolution equilibrium toward undissolved salt.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 045 • GLOBAL 0188 188 / CHEMISTRY Q045 ADVANCED MOCK 2026 • ref Q94 | Master 699

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)

CORRECT ANSWER D. NaCl (complete dissociation)

SOURCE EXPLANATION Colligative freezing-point depression depends on total dissolved-particle concentration, including dissociation.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 046 • GLOBAL 0189 189 / CHEMISTRY Q046 ADVANCED MOCK 2026 • ref Q96 | Master 699

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

CORRECT ANSWER B. activation energy

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: activation energy.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 047 • GLOBAL 0190 190 / CHEMISTRY Q047 ADVANCED MOCK 2026 • ref Q99 | Master 699

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

CORRECT ANSWER A. metallic character decreases and electronegativity increases

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

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 048 • GLOBAL 0191 191 / CHEMISTRY Q048 ADVANCED MOCK 2026 • ref Q100 | Master 699

$AlCl_3$ 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

CORRECT ANSWER A. can accept an electron pair into an incomplete valence shell

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

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 049 • GLOBAL 0192 192 / CHEMISTRY Q049 ADVANCED MOCK 2026 • ref Q102 | Master 699

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

CORRECT ANSWER D. simultaneously oxidized and reduced

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: simultaneously oxidized and reduced.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 050 • GLOBAL 0193 193 / CHEMISTRY Q050 ADVANCED MOCK 2026 • ref Q103 | Master 699

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

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

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

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 051 • GLOBAL 0194 194 / CHEMISTRY Q051 ADVANCED MOCK 2026 • ref Q104 | Master 699

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

CORRECT ANSWER C. partially filled d orbitals permitting d-level transitions

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

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 052 • GLOBAL 0195 195 / CHEMISTRY Q052 ADVANCED MOCK 2026 • ref Q106 | Master 699

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

CORRECT ANSWER B. larger ions lose electrons more readily despite hydration effects

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

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 053 • GLOBAL 0196 196 / CHEMISTRY Q053 ADVANCED MOCK 2026 • ref Q107 | Master 699

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

CORRECT ANSWER B. insoluble carbonates with CO_2 and water

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

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 054 • GLOBAL 0197 197 / CHEMISTRY Q054 ADVANCED MOCK 2026 • ref Q108 | Master 699

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

CORRECT ANSWER B. the more stable tertiary carbocation pathway is favored

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

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 055 • GLOBAL 0198 198 / CHEMISTRY Q055 ADVANCED MOCK 2026 • ref Q114 | Master 699

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

CORRECT ANSWER B. Ethanol and dimethyl ether

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Ethanol and dimethyl ether.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 056 • GLOBAL 0199 199 / CHEMISTRY Q056 ADVANCED MOCK 2026 • ref Q115 | Master 699

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

CORRECT ANSWER A. a net excess of one enantiomer

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: a net excess of one enantiomer.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 057 • GLOBAL 0200 200 / CHEMISTRY Q057 ADVANCED MOCK 2026 • ref Q121 | Master 699

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

CORRECT ANSWER A. amino and carboxyl groups with loss of water

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

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 058 • GLOBAL 0201 201 / CHEMISTRY Q058 ADVANCED MOCK 2026 • ref Q125 | Master 699

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

CORRECT ANSWER C. form insoluble salts with fatty-acid anions

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

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 059 • GLOBAL 0202 202 / CHEMISTRY Q059 ADVANCED MOCK 2026 • ref Q126 | Master 699

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

CORRECT ANSWER C. is regenerated while converting ozone to oxygen

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

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 060 • GLOBAL 0203 203 / CHEMISTRY Q060 ADVANCED MOCK 2026 • ref Q128 | Master 699

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

CORRECT ANSWER A. within the steep pH change near equivalence

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

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 061 • GLOBAL 0204 204 / CHEMISTRY Q061 ADVANCED MOCK 2026 • ref Q129 | Master 699

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

CORRECT ANSWER C. precise but inaccurate

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: precise but inaccurate.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 062 • GLOBAL 0205 205 / CHEMISTRY Q062 ADVANCED MOCK 2026 • ref Q130 | Master 699

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

CORRECT ANSWER B. remove soluble adhering impurities without dissolving appreciable precipitate

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

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 063 • GLOBAL 0206 206 / CHEMISTRY Q063 2024 • MEMORY-BASED • ref Q1 | Master 699

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

CORRECT ANSWER A. 44.8 L of N_2

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: 44.8 L of N_2.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 064 • GLOBAL 0207 207 / CHEMISTRY Q064 2024 • ADAPTED • ref Q2 | Master 699

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

CORRECT ANSWER B. Friedel–Crafts alkylation

SOURCE EXPLANATION Friedel–Crafts alkylation substitutes an alkyl group onto an aromatic ring.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 065 • GLOBAL 0208 208 / CHEMISTRY Q065 2024 • MEMORY-BASED • ref Q3 | Master 699

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

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

CORRECT ANSWER B. NO_2

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: NO_2.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 066 • GLOBAL 0209 209 / CHEMISTRY Q066 2024 • MEMORY-BASED • ref Q4 | Master 699

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

CORRECT ANSWER A. Phenol

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Phenol.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 067 • GLOBAL 0210 210 / CHEMISTRY Q067 2024 • MEMORY-BASED • ref Q6 | Master 699

Invert sugar contains:

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

CORRECT ANSWER D. Glucose + Fructose

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Glucose + Fructose.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 068 • GLOBAL 0211 211 / CHEMISTRY Q068 2024 • MEMORY-BASED • ref Q7 | Master 699

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

CORRECT ANSWER C. 3o>2o>1o

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: 3o>2o>1o.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 069 • GLOBAL 0212 212 / CHEMISTRY Q069 2024 • MEMORY-BASED • ref Q8 | Master 699

What is the stereochemistry of the product in SN_2 reaction?

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

CORRECT ANSWER C. Walden Inversion

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Walden Inversion.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 070 • GLOBAL 0213 213 / CHEMISTRY Q070 2024 • MEMORY-BASED • ref Q9 | Master 699

When chloroform reacts with conc. HNO_3, it gives:

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

CORRECT ANSWER B. Chloropicrin

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Chloropicrin.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 071 • GLOBAL 0214 214 / CHEMISTRY Q071 2024 • MEMORY-BASED • ref Q11 | Master 699

Turnbull's blue is:

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

CORRECT ANSWER C. Ferroferricyanide

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Ferroferricyanide.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 072 • GLOBAL 0215 215 / CHEMISTRY Q072 2024 • MEMORY-BASED • ref Q13 | Master 699

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

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

CORRECT ANSWER A. Unsaturated

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Unsaturated.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 073 • GLOBAL 0216 216 / CHEMISTRY Q073 2024 • MEMORY-BASED • ref Q14 | Master 699

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

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

CORRECT ANSWER B. Neutrons

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Neutrons.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 074 • GLOBAL 0217 217 / CHEMISTRY Q074 2024 • MEMORY-BASED • ref Q17 | Master 699

The conjugate acid of HCO_3- is

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

CORRECT ANSWER A. H_2CO_3

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: H_2CO_3.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 075 • GLOBAL 0218 218 / CHEMISTRY Q075 2024 • MEMORY-BASED • ref Q18 | Master 699

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

CORRECT ANSWER B. NH_4Cl + NH_4OH

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: NH_4Cl + NH_4OH.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 076 • GLOBAL 0219 219 / CHEMISTRY Q076 2024 • MEMORY-BASED • ref Q19 | Master 699

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.** $FeSO_4$

CORRECT ANSWER C. $FeSO_4.NO$

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: $FeSO_4.NO$.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 077 • GLOBAL 0220 220 / CHEMISTRY Q077 2024 • MEMORY-BASED • ref Q20 | Master 699

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

CORRECT ANSWER A. 1,3,1

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: 1,3,1.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 078 • GLOBAL 0221 221 / CHEMISTRY Q078 2024 • MEMORY-BASED • ref Q22 | Master 699

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

CORRECT ANSWER B. 4 O and 2 N atoms

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

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 079 • GLOBAL 0222 222 / CHEMISTRY Q079 2024 • MEMORY-BASED • ref Q23 | Master 699

Activation energy of a reaction can be decreased by:

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

CORRECT ANSWER B. Using Catalyst

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Using Catalyst.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 080 • GLOBAL 0223 223 / CHEMISTRY Q080 2024 • MEMORY-BASED • ref Q24 | Master 699

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 $Ca(HCO_3)_2$

CORRECT ANSWER C. Soluble $Ca(HCO_3)_2$

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

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 081 • GLOBAL 0224 224 / CHEMISTRY Q081 2024 • MEMORY-BASED • ref Q27 | Master 699

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

CORRECT ANSWER D. 0.1 N

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: 0.1 N.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 082 • GLOBAL 0225 225 / CHEMISTRY Q082 2024 • MEMORY-BASED • ref Q30 | Master 699

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

CORRECT ANSWER A. +2, 0, -2

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: +2, 0, -2.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 083 • GLOBAL 0226 226 / CHEMISTRY Q083 2024 • MEMORY-BASED • ref Q31 | Master 699

In the manufacture of Iron, limestone is used as:

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

CORRECT ANSWER C. Flux

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Flux.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 084 • GLOBAL 0227 227 / CHEMISTRY Q084 2024 • MEMORY-BASED • ref Q32 | Master 699

Iodoform can be used as:

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

CORRECT ANSWER D. Antiseptic

SOURCE EXPLANATION Iodoform is associated with methyl ketones and qualifying ethanol/secondary-alcohol precursors.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 085 • GLOBAL 0228 228 / CHEMISTRY Q085 2024 • MEMORY-BASED • ref Q35 | Master 699

Isocyanide test is given by

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

CORRECT ANSWER B. Primary amine

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Primary amine.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 086 • GLOBAL 0229 229 / CHEMISTRY Q086 2024 • MEMORY-BASED • ref Q36 | Master 699

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

CORRECT ANSWER D. High concentration of reactants, High pressure and low temperature

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

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 087 • GLOBAL 0230 230 / CHEMISTRY Q087 2024 • MEMORY-BASED • ref Q39 | Master 699

Which of the following is a neutral oxide?

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

CORRECT ANSWER A. CO

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: CO.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 088 • GLOBAL 0231 231 / CHEMISTRY Q088 2024 • MEMORY-BASED • ref Q40 | Master 699

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

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

CORRECT ANSWER C. PO_4^{---}

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: PO_4^{---}.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 089 • GLOBAL 0232 232 / CHEMISTRY Q089 2024 • ADAPTED • ref Q41 | Master 699

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

CORRECT ANSWER C. An ester

SOURCE EXPLANATION Acid-catalyzed condensation forms an ester and water.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 090 • GLOBAL 0233 233 / CHEMISTRY Q090 2024 • MEMORY-BASED • ref Q42 | Master 699

Oxidation means:

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

CORRECT ANSWER A. Increase in positive valency

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Increase in positive valency.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 091 • GLOBAL 0234 234 / CHEMISTRY Q091 2024 • MEMORY-BASED • ref Q44 | Master 699

Nuclear reactors work on the principle of:

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

CORRECT ANSWER B. Nuclear fission

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Nuclear fission.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 092 • GLOBAL 0235 235 / CHEMISTRY Q092 2024 • MEMORY-BASED • ref Q47 | Master 699

Galvanization is the process of coating:

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

CORRECT ANSWER A. Zinc on Iron

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Zinc on Iron.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 093 • GLOBAL 0236 236 / CHEMISTRY Q093 2024 • MEMORY-BASED • ref Q50 | Master 699

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

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

CORRECT ANSWER D. 80

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: 80.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 094 • GLOBAL 0237 237 / CHEMISTRY Q094 2023 • MEMORY-BASED • ref Q55 | Master 699

Out of the following, which acid is strongest?

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

CORRECT ANSWER A. p-nitro phenol

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: p-nitro phenol.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 095 • GLOBAL 0238 238 / CHEMISTRY Q095 2023 • MEMORY-BASED • ref Q57 | Master 699

Iron obtained from blast fumace 1s

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

CORRECT ANSWER B. Pig iron

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Pig iron.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 096 • GLOBAL 0239 239 / CHEMISTRY Q096 2023 • MEMORY-BASED • ref Q61 | Master 699

Removal of oxygen is known as

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

CORRECT ANSWER A. Reduction

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-

alike distractor: Reduction.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 097 • GLOBAL 0240 240 / CHEMISTRY Q097 2023 • MEMORY-BASED • ref Q64 | Master 699

CH;MgX + CH_3CN gives

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

CORRECT ANSWER A. Acetone

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Acetone.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 098 • GLOBAL 0241 241 / CHEMISTRY Q098 2023 • MEMORY-BASED • ref Q65 | Master 699

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

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

CORRECT ANSWER A. 2-propanone

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: 2-propanone.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 099 • GLOBAL 0242 242 / CHEMISTRY Q099 2023 • MEMORY-BASED • ref Q66 | Master 699

Which has lowest pKa value?

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

CORRECT ANSWER A. HCOOH

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: HCOOH.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 100 • GLOBAL 0243 243 / CHEMISTRY Q100 2023 • MEMORY-BASED • ref Q68 | Master 699

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

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

CORRECT ANSWER B. NH;

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-

alike distractor: NH;.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 101 • GLOBAL 0244 244 / CHEMISTRY Q101 EXPECTED • PRACTICE | Master 699

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

CORRECT ANSWER B. Acid catalyst and dehydrating agent

SOURCE EXPLANATION Concentrated sulfuric acid catalyzes ester formation and helps remove water.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 102 • GLOBAL 0245 245 / CHEMISTRY Q102 EXPECTED • PRACTICE | Master 699

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

CORRECT ANSWER B. An aldehyde other than formaldehyde

SOURCE EXPLANATION Addition to R–CHO gives R–CH(OH)–R′, a secondary alcohol. Ketones usually give tertiary alcohols.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 103 • GLOBAL 0246 246 / CHEMISTRY Q103 2023 • MEMORY-BASED • ref Q76 | Master 699

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

CORRECT ANSWER A. a cage like structure formed due to intermolecular H-bond

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

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 104 • GLOBAL 0247 247 / CHEMISTRY Q104 2023 • MEMORY-BASED • ref Q81 | Master 699

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

CORRECT ANSWER A. Law of definite proportion

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Law of definite proportion.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 105 • GLOBAL 0248 248 / CHEMISTRY Q105 EXPECTED • PRACTICE | Master 699

Which common metal is liquid at room temperature and has a high density?

- **A.** Aluminium
- **B.** Mercury
- **C.** Sodium
- **D.** Zinc

CORRECT ANSWER B. Mercury

SOURCE EXPLANATION Mercury is liquid at room temperature and has a density near 13.6 g/cm³.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 106 • GLOBAL 0249 249 / CHEMISTRY Q106 2023 • MEMORY-BASED • ref Q85 | Master 699

Which is used in reducing body temperature?

- **A.** Antipyretic
- **B.** Antiseptic
- **C.** Analgesic
- **D.** Disinfectant

CORRECT ANSWER A. Antipyretic

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Antipyretic.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 107 • GLOBAL 0250 250 / CHEMISTRY Q107 2023 • MEMORY-BASED • ref Q86 | Master 699

Which of the following reacts with Tollen's reagent depositing silver mirror?

- **A.** Acetaldehyde
- **B.** Acetone
- **C.** Ethanol
- **D.** Acetic acid

CORRECT ANSWER A. Acetaldehyde

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Acetaldehyde.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 108 • GLOBAL 0251 251 / CHEMISTRY Q108 2023 • MEMORY-BASED • ref Q88 | Master 699

Bohr's model failed to explain

- **A.** Stark & Zeeman effect
- **B.** Hydrogen spectrum
- **C.** Atomic spectrum
- **D.** Angular momentum is integral multiple of oh

CORRECT ANSWER A. Stark & Zeeman effect

SOURCE EXPLANATION Bohr theory accurately describes hydrogen-like one-electron systems.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 109 • GLOBAL 0252 252 / CHEMISTRY Q109 2023 • MEMORY-BASED • ref Q95 | Master 699

Which is important for flowering & seeding?

A. Phosphorus
B. Nitrogen
C. Potassium
D. Calcium

CORRECT ANSWER A. Phosphorus

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Phosphorus.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 110 • GLOBAL 0253 253 / CHEMISTRY Q110 2023 • MEMORY-BASED • ref Q99 | Master 699

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

CORRECT ANSWER B. Low temperature

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Low temperature.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 111 • GLOBAL 0254 254 / CHEMISTRY Q111 2023 • MEMORY-BASED • ref Q100 | Master 699

Oil of Mirbane is the common name for

A. Nitrobenzene
B. Methyl salicylate
C. Ethyl salicylate
D. Benzaldehyde

CORRECT ANSWER A. Nitrobenzene

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Nitrobenzene.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 112 • GLOBAL 0255 255 / CHEMISTRY Q112 2025 • MEMORY-BASED • ref Q1 | Master 699

Chloretone is formed when chloroform reacts with

A. Acetone
B. Acetaldehy
C. Formaldehyde
D. Benzaldeliyde

CORRECT ANSWER A. Acetone

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Acetone.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and

trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 113 • GLOBAL 0256 256 / CHEMISTRY Q113 2025 • MEMORY-BASED • ref Q2 | Master 699

Which of the following gives amino acids as end product after digestion?

A. Fats
B. Lipids
C. Proteins
D. Enzymes

CORRECT ANSWER C. Proteins

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Proteins.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 114 • GLOBAL 0257 257 / CHEMISTRY Q114 2025 • ADAPTED • ref Q4 | Master 699

Benzenediazonium chloride treated with CuCl (Sandmeyer reaction) gives:

A. Aniline
B. Phenol
C. Chlorobenzene
D. Benzaldehyde

CORRECT ANSWER C. Chlorobenzene

SOURCE EXPLANATION CuCl replaces the diazonium group with chlorine in a Sandmeyer reaction.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 115 • GLOBAL 0258 258 / CHEMISTRY Q115 2025 • MEMORY-BASED • ref Q14 | Master 699

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

CORRECT ANSWER B. Na* gets reduced

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Na* gets reduced.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 116 • GLOBAL 0259 259 / CHEMISTRY Q116 2025 • MEMORY-BASED • ref Q19 | Master 699

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

CORRECT ANSWER A. To remove CN- and S— --

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: To remove CN- and S— --.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 117 • GLOBAL 0260 260 / CHEMISTRY Q117 2025 • ADAPTED • ref Q25 | Master 699

Acetone on prolonged condensation with concentrated H_2SO_4 may form:

- **A.** Benzene
- **B.** Mesitylene (1,3,5-trimethylbenzene)
- **C.** Toluene
- **D.** Ethylbenzene

CORRECT ANSWER B. Mesitylene (1,3,5-trimethylbenzene)

SOURCE EXPLANATION Acid-catalyzed trimerization/dehydration of acetone can produce mesitylene.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 118 • GLOBAL 0261 261 / CHEMISTRY Q118 2025 • MEMORY-BASED • ref Q30 | Master 699

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

CORRECT ANSWER A. It violates octet rule

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: It violates octet rule.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 119 • GLOBAL 0262 262 / CHEMISTRY Q119 2025 • ADAPTED • ref Q31 | Master 699

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]

CORRECT ANSWER B. [B]=2[A]

SOURCE EXPLANATION For this specified reaction, Kc = [B]/[A] = 2 directly determines the ratio.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 120 • GLOBAL 0263 263 / CHEMISTRY Q120 2025 • ADAPTED • ref Q32 | Master 699

Which transition-metal compound is used with trialkylaluminium in a classical Ziegler–Natta polymerization catalyst?

- **A.** $CdCl_2$
- **B.** $TiCl_4$
- **C.** NaCl
- **D.** $CaCO_3$

CORRECT ANSWER B. $TiCl_4$

SOURCE EXPLANATION Classical catalysts use titanium chlorides with organoaluminium co-catalysts.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 121 • GLOBAL 0264 264 / CHEMISTRY Q121 EXPECTED • PRACTICE | Master 699

Which element in glycine can be detected using a properly performed Lassaigne sodium-

fusion test?

A. Nitrogen
B. Chlorine
C. Bromine
D. Iodine

CORRECT ANSWER A. Nitrogen

SOURCE EXPLANATION Glycine contains nitrogen; sodium fusion converts it to detectable cyanide under appropriate conditions.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 122 • GLOBAL 0265 265 / CHEMISTRY Q122 2025 • ADAPTED • ref Q40 | Master 699

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

CORRECT ANSWER A. Ethene

SOURCE EXPLANATION Concentrated sulfuric acid dehydrates ethanol to ethene at about 170°C.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 123 • GLOBAL 0266 266 / CHEMISTRY Q123 2025 • MEMORY-BASED • ref Q41 | Master 699

Heterolytic fission gives

A. Carbocation
B. Ions
C. Free-radical
D. Carbocation and carboanions

CORRECT ANSWER A. Carbocation

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Carbocation.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 124 • GLOBAL 0267 267 / CHEMISTRY Q124 2022 • MEMORY-BASED • ref Q6 | Master 699

Which are doesn't contain calcium?

A. Calcite
B. Dolomite
C. Limestone
D. Bauxite

CORRECT ANSWER D. Bauxite

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Bauxite.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 125 • GLOBAL 0268 268 / CHEMISTRY Q125 2022 • ADAPTED • ref Q9 | Master 699

The reaction $2NaOH + H_2SO_4 \rightarrow Na_2SO_4 + 2H_2O$ illustrates:

- **A.** Combustion
- **B.** Hydrolysis only
- **C.** Neutralization / double displacement
- **D.** Polymerization

CORRECT ANSWER C. Neutralization / double displacement

SOURCE EXPLANATION An acid and a base form salt and water through neutralization.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 126 • GLOBAL 0269 269 / CHEMISTRY Q126 2022 • MEMORY-BASED • ref Q10 | Master 699

Solution of Na in liquid ammonia is blue due to 2

- **A.** Solvated ions
- **B.** Ammoniated electrons
- **C.** Ammoniated atoms
- **D.** Ammoniated ions

CORRECT ANSWER B. Ammoniated electrons

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Ammoniated electrons.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 127 • GLOBAL 0270 270 / CHEMISTRY Q127 2022 • MEMORY-BASED • ref Q14 | Master 699

Which is not reduced by H_2?

- **A.** SnO;
- **B.** FesO;
- **C.** ALO;
- **D.** CuO

CORRECT ANSWER C. ALO;

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: ALO;.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 128 • GLOBAL 0271 271 / CHEMISTRY Q128 2022 • MEMORY-BASED • ref Q16 | Master 699

Yellow stain is developed while working with Nitric acid. It is due to presence of

- **A.** Protein
- **B.** Lipid
- **C.** Fat
- **D.** Carbohydrate

CORRECT ANSWER A. Protein

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Protein.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 129 • GLOBAL 0272 272 / CHEMISTRY Q129 2022 • MEMORY-BASED • ref Q21 | Master 699

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

CORRECT ANSWER A. Kipp's apparatus

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Kipp's apparatus.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 130 • GLOBAL 0273 273 / CHEMISTRY Q130 2022 • MEMORY-BASED • ref Q28 | Master 699

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

CORRECT ANSWER D. Self indicator

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Self indicator.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 131 • GLOBAL 0274 274 / CHEMISTRY Q131 2022 • MEMORY-BASED • ref Q31 | Master 699

Fractional crystallization is based on the difference of

A. Solubility
B. Density
C. Bpt
D. Vapour pressure

CORRECT ANSWER A. Solubility

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Solubility.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 132 • GLOBAL 0275 275 / CHEMISTRY Q132 2022 • MEMORY-BASED • ref Q35 | Master 699

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

CORRECT ANSWER C. For hydrogen like single electron species

SOURCE EXPLANATION Bohr theory accurately describes hydrogen-like one-electron systems.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 133 • GLOBAL 0276 276 / CHEMISTRY Q133 2022 • MEMORY-BASED • ref Q36 | Master 699

Adipic acid is the monomer of

A. Orlon
B. Nylon 6.6

C. PVC
D. Polyethene

CORRECT ANSWER B. Nylon 6.6

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Nylon 6.6.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 134 • GLOBAL 0277 277 / CHEMISTRY Q134 2022 • ADAPTED • ref Q42 | Master 699

Which of the following is a monosaccharide?

A. Glucose
B. Cellulose
C. Starch
D. Sucrose

CORRECT ANSWER A. Glucose

SOURCE EXPLANATION Glucose is a single sugar unit; sucrose is a disaccharide and the others are polysaccharides.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 135 • GLOBAL 0278 278 / CHEMISTRY Q135 2026 • MODEL SET | Master 699

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%

CORRECT ANSWER B. 46.7%

SOURCE EXPLANATION Nitrogen contributes 28 g to urea's 60 g molar mass: 46.7%.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 136 • GLOBAL 0279 279 / CHEMISTRY Q136 2026 • MODEL SET | Master 699

The 4p orbital begins to fill after which subshell in the ground-state Aufbau order?

A. 4d
B. 5s
C. 4f
D. 3d

CORRECT ANSWER D. 3d

SOURCE EXPLANATION The usual sequence is 4s → 3d → 4p.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 137 • GLOBAL 0280 280 / CHEMISTRY Q137 EXPECTED • PRACTICE | Master 699

Which species is the conjugate base of $H_2PO_4^-$?

A. H_3PO_4
B. HPO_4^{2-}
C. PO_4^{3-}
D. $H_2PO_4^{2+}$

CORRECT ANSWER B. HPO_4^{2-}

SOURCE EXPLANATION Loss of one proton from $H_2PO_4^-$ forms HPO_4^{2-}.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 138 • GLOBAL 0281 281 / CHEMISTRY Q138 ADVANCED MOCK 2026 • ref Q109 | Master 699

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

CORRECT ANSWER D. Strong oxidation under reflux

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Strong oxidation under reflux.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 139 • GLOBAL 0282 282 / CHEMISTRY Q139 ADVANCED MOCK 2026 • ref Q110 | Master 699

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

CORRECT ANSWER D. phenoxide ion is resonance stabilized

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: phenoxide ion is resonance stabilized.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 140 • GLOBAL 0283 283 / CHEMISTRY Q140 ADVANCED MOCK 2026 • ref Q111 | Master 699

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

CORRECT ANSWER D. are more readily oxidized under mild conditions

SOURCE EXPLANATION For thin lenses, use $1/f = 1/v - 1/u$ with the chosen sign convention.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 141 • GLOBAL 0284 284 / CHEMISTRY Q141 ADVANCED MOCK 2026 • ref Q112 | Master 699

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

CORRECT ANSWER D. forms a resonance-stabilized carboxylate salt

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: forms a resonance-stabilized carboxylate salt.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 142 • GLOBAL 0285 285 / CHEMISTRY Q142 ADVANCED MOCK 2026 • ref Q113 | Master 699

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

CORRECT ANSWER C. destroy aromatic stabilization

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: destroy aromatic stabilization.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 143 • GLOBAL 0286 286 / CHEMISTRY Q143 ADVANCED MOCK 2026 • ref Q118 | Master 699

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

CORRECT ANSWER A. more substituted, more stable alkene

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: more substituted, more stable alkene.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 144 • GLOBAL 0287 287 / CHEMISTRY Q144 ADVANCED MOCK 2026 • ref Q119 | Master 699

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

CORRECT ANSWER B. electron deficient due to C=O polarization

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: electron deficient due to C=O polarization.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 145 • GLOBAL 0288 288 / CHEMISTRY Q145 ADVANCED MOCK 2026 • ref Q120 | Master 699

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

CORRECT ANSWER C. delocalized into the benzene ring

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: delocalized into the benzene ring.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 146 • GLOBAL 0289 289 / CHEMISTRY Q146 ADVANCED MOCK 2026 • ref Q122 | Master 699

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

CORRECT ANSWER D. its ring can equilibrate with an open-chain aldehyde form

SOURCE EXPLANATION The open-chain aldehyde form remains in equilibrium with cyclic glucose, enabling its reducing-sugar reactions.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 147 • GLOBAL 0290 290 / CHEMISTRY Q147 ADVANCED MOCK 2026 • ref Q123 | Master 699

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

CORRECT ANSWER B. opening the π bond to form new σ bonds in a chain

SOURCE EXPLANATION 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.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 148 • GLOBAL 0291 291 / CHEMISTRY Q148 ADVANCED MOCK 2026 • ref Q124 | Master 699

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

CORRECT ANSWER D. propanal

SOURCE EXPLANATION For thin lenses, use $1/f = 1/v - 1/u$ with the chosen sign convention.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 149 • GLOBAL 0292 292 / CHEMISTRY Q149 2024 • MEMORY-BASED • ref Q16 | Master 699

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.** $K_2Cr_2O_7$

CORRECT ANSWER D. $K_2Cr_2O_7$

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: $K_2Cr_2O_7$.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 150 • GLOBAL 0293 293 / CHEMISTRY Q150 2024 • MEMORY-BASED • ref Q33 | Master 699

Benzene diazonium chloride on treatment with Aniline gives:

- **A.** p- Amino azobenzene
- **B.** p- Hydroxy azobenzene
- **C.** o- Amino azobenzene
- **D.** p- Amino phenol

CORRECT ANSWER A. p- Amino azobenzene

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: p- Amino azobenzene.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 151 • GLOBAL 0294 294 / CHEMISTRY Q151 2024 • MEMORY-BASED • ref Q34 | Master 699

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

CORRECT ANSWER C. Propan-1,2,3-triol

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Propan-1,2,3-triol.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 152 • GLOBAL 0295 295 / CHEMISTRY Q152 2024 • MEMORY-BASED • ref Q37 | Master 699

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

CORRECT ANSWER B. m-directing group

SOURCE EXPLANATION Electrophilic nitration of benzene proceeds through the nitronium ion NO_2^+.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 153 • GLOBAL 0296 296 / CHEMISTRY Q153 2024 • MEMORY-BASED • ref Q43 | Master 699

When phenol reacts with excess Bromine, the product obtained is:

- **A.** o- Bromophenol
- **B.** m- Bromophenol
- **C.** o, p- dibromophenol
- **D.** Tribromophenol

CORRECT ANSWER D. Tribromophenol

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Tribromophenol.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 154 • GLOBAL 0297 297 / CHEMISTRY Q154 2024 • ADAPTED • ref Q46 | Master 699

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

CORRECT ANSWER B. 2,2-Dimethylbutane

SOURCE EXPLANATION The longest chain has four carbons; two methyl substituents are both on carbon 2.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 155 • GLOBAL 0298 298 / CHEMISTRY Q155 2024 • MEMORY-BASED • ref Q49 | Master 699

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

CORRECT ANSWER B. 2-Methylbut-2-ene

SOURCE EXPLANATION Ozonolysis cleaves a carbon–carbon double bond to give carbonyl fragments.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 156 • GLOBAL 0299 299 / CHEMISTRY Q156 2023 • MEMORY-BASED • ref Q53 | Master 699

$(F2xC-CF_4)n$ is polymer of

- **A.** Teflon
- **B.** Nylon
- **C.** Orlon
- **D.** Polythene

CORRECT ANSWER A. Teflon

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Teflon.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 157 • GLOBAL 0300 300 / CHEMISTRY Q157 EXPECTED • PRACTICE | Master 699

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

CORRECT ANSWER C. Homogeneous acid catalysis

SOURCE EXPLANATION H^+ and the reacting solution occupy the same liquid phase; this is

homogeneous acid catalysis.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 158 • GLOBAL 0301 301 / CHEMISTRY Q158 2023 • MEMORY-BASED • ref Q78 | Master 699

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

CORRECT ANSWER A. Primary amine

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Primary amine.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 159 • GLOBAL 0302 302 / CHEMISTRY Q159 2023 • MEMORY-BASED • ref Q84 | Master 699

Phenol reacts with chloroform & NaOH to form

- **A.** Salicylic acid
- **B.** Salicaldehyde
- **C.** Benzoic acid
- **D.** Carbylamine

CORRECT ANSWER B. Salicaldehyde

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Salicaldehyde.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 160 • GLOBAL 0303 303 / CHEMISTRY Q160 2023 • MEMORY-BASED • ref Q98 | Master 699

Lindlar's catalyst helps in the conversion of alkyne to

- **A.** Trans alkene
- **B.** Cis alkene
- **C.** Alkane
- **D.** Cycloalkane

CORRECT ANSWER B. Cis alkene

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Cis alkene.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 161 • GLOBAL 0304 304 / CHEMISTRY Q161 2025 • ADAPTED • ref Q3 | Master 699

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

CORRECT ANSWER B. Pentan-2-one

SOURCE EXPLANATION The carbonyl carbon receives the lowest locant, 2.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 162 • GLOBAL 0305 305 / CHEMISTRY Q162 2025 • MEMORY-BASED • ref Q5 | Master 699

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

CORRECT ANSWER D. 1,6-diamino hexane and 1,6 hexanedioic acid

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: 1,6-diamino hexane and 1,6 hexanedioic acid.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 163 • GLOBAL 0306 306 / CHEMISTRY Q163 2025 • MEMORY-BASED • ref Q6 | Master 699

On ozonolysis, benzone gives

- **A.** only ethanol
- **B.** only methanol
- **C.** methanol and ethanol
- **D.** only ethanedial

CORRECT ANSWER D. only ethanedial

SOURCE EXPLANATION Ozonolysis cleaves a carbon–carbon double bond to give carbonyl fragments.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 164 • GLOBAL 0307 307 / CHEMISTRY Q164 2025 • MEMORY-BASED • ref Q13 | Master 699

Haloarene are less reactive than haloalkanes because of

- **A.** Resonance
- **B.** Mesomeric
- **C.** Inductive effect
- **D.** Hyperconjugation

CORRECT ANSWER A. Resonance

SOURCE EXPLANATION Resonance gives aryl C–halogen bonds partial double-bond character, reducing substitution reactivity.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 165 • GLOBAL 0308 308 / CHEMISTRY Q165 2025 • MEMORY-BASED • ref Q28 | Master 699

Preparation of aldehyde from acid chloride is known as;

- **A.** Rosenmund's reduction
- **B.** Cannizaro reaction
- **C.** Perkins's condensation
- **D.** Benzoin condensation

CORRECT ANSWER A. Rosenmund's reduction

SOURCE EXPLANATION Use the defining chemical property or reaction condition, rather than a look-alike distractor: Rosenmund's reduction.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 166 • GLOBAL 0309 309 / CHEMISTRY Q166 2022 • ADAPTED • ref Q8 | Master 699

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

CORRECT ANSWER D. To disinfect by oxidative destruction of microorganisms

SOURCE EXPLANATION Ozone is an oxidizing disinfectant; this is called ozonation, not ozonolysis.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 167 • GLOBAL 0310 310 / CHEMISTRY Q167 2026 • MODEL SET | Master 699

Which alcohol gives a red coloration first in the Victor Meyer test?

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

CORRECT ANSWER A. Primary alcohol

SOURCE EXPLANATION The primary nitroalkane-derived species gives red under alkaline Victor Meyer conditions.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 168 • GLOBAL 0311 311 / CHEMISTRY Q168 2026 • MODEL SET | Master 699

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

CORRECT ANSWER A. Ni or Pt

SOURCE EXPLANATION Finely divided Ni, Pt or Pd catalyzes addition of H_2 across C=C.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 169 • GLOBAL 0312 312 / CHEMISTRY Q169 EXPECTED • PRACTICE | Master 699

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

CORRECT ANSWER A. PCC

SOURCE EXPLANATION PCC is a selective mild oxidant for alcohol-to-carbonyl conversion.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 170 • GLOBAL 0313 313 / CHEMISTRY Q170 EXPECTED • PRACTICE | Master 699

The product of a typical aldol addition is:

- **A.** α-hydroxy ketone
- **B.** β-hydroxy carbonyl compound
- **C.** Carboxylic acid only
- **D.** Alkane

CORRECT ANSWER B. β-hydroxy carbonyl compound

SOURCE EXPLANATION Enolate attack on a carbonyl forms a β-hydroxy aldehyde or ketone.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 171 • GLOBAL 0314 314 / CHEMISTRY Q171 EXPECTED • PRACTICE | Master 699

Aromatic nitration of benzene principally involves which electrophile?

- **A.** NO_2^+
- **B.** NO_3^-
- **C.** NH_4^+
- **D.** OH^-

CORRECT ANSWER A. NO_2^+

SOURCE EXPLANATION Nitronium ion attacks the aromatic π-electron system.

SOLUTION / REVISION METHOD WORKED-ANSWER ROUTE: Write the balanced relation or defining formula, convert mass/volume/concentration to consistent units, use stoichiometric coefficients where relevant, then check whether the answer magnitude is chemically reasonable.

CHEMISTRY 172 • GLOBAL 0315 315 / CHEMISTRY Q172 EXPECTED • PRACTICE | Master 699

Oxidation always occurs at the:

- **A.** Cathode
- **B.** Anode
- **C.** Salt bridge
- **D.** Voltmeter

CORRECT ANSWER B. Anode

SOURCE EXPLANATION Anode is the oxidation electrode in galvanic and electrolytic cells.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 173 • GLOBAL 0316 316 / CHEMISTRY Q173 EXPECTED • PRACTICE | Master 699

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

CORRECT ANSWER B. Independent of initial concentration

SOURCE EXPLANATION $t_{1/2} = 0.693/k$ for first-order kinetics.

SOLUTION / REVISION METHOD REACTION CHECK: Identify the functional group or oxidation state before and after the transformation; examine reaction conditions and the stability of intermediates. Do not select an option solely by familiar reagent names.

CHEMISTRY 174 • GLOBAL 0317 317 / CHEMISTRY Q174 EXPECTED • PRACTICE | Master 699

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

CORRECT ANSWER C. No change

SOURCE EXPLANATION A catalyst accelerates both directions equally and does not shift equilibrium.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 175 • GLOBAL 0318 318 / CHEMISTRY Q175 EXPECTED • PRACTICE | Master 699

The hybridization of carbon in ethyne (C_2H_2) is:

A. sp^3
B. sp^2
C. sp
D. dsp^2

CORRECT ANSWER C. sp

SOURCE EXPLANATION Each carbon makes two sigma-bond directions and retains two p orbitals for π bonding.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 176 • GLOBAL 0319 319 / CHEMISTRY Q176 EXPECTED • PRACTICE | Master 699

The linkage joining two amino acids in a peptide is a/an:

A. Ether
B. Ester
C. Amide
D. Acetal

CORRECT ANSWER C. Amide

SOURCE EXPLANATION A peptide bond is an amide bond formed with loss of water.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

CHEMISTRY 177 • GLOBAL 0320 320 / CHEMISTRY Q177 EXPECTED • PRACTICE | Master 699

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

CORRECT ANSWER B. Stoichiometric reaction completion

SOURCE EXPLANATION Equivalence depends on the reaction stoichiometry, not a universal pH value.

SOLUTION / REVISION METHOD CONCEPT CHECK: Distinguish closely related chemical properties and trends; consider valence electronic structure, bonding, electronegativity, equilibria, or reaction conditions as appropriate.

BOTANY | 151 EXPLAINED MCQs

Source labels are preserved from the original compilations. Questions retain their original alternatives; answer choices and explanations are shown directly after each question.

BOTANY 001 • GLOBAL 0321 321 / BOTANY Q001 ADVANCED MOCK 2026 • ref Q41 | Master 699

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

CORRECT ANSWER B. active-site conformation is disrupted beyond an optimum

SOURCE EXPLANATION 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.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 002 • GLOBAL 0322 322 / BOTANY Q002 ADVANCED MOCK 2026 • ref Q44 | Master 699

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

CORRECT ANSWER A. Absorptive heterotrophy with chitinous wall

SOURCE EXPLANATION A parasite gains nutrients from a host, which suffers the cost; this is not a discussion of antibiotic resistance.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 003 • GLOBAL 0323 323 / BOTANY Q003 ADVANCED MOCK 2026 • ref Q49 | Master 699

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

CORRECT ANSWER A. fungal mineral/water retention with photosynthetic carbon gain

SOURCE EXPLANATION In a lichen, fungus provides protection and mineral absorption while its photosynthetic partner supplies sugars.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 004 • GLOBAL 0324 324 / BOTANY Q004 ADVANCED MOCK 2026 • ref Q52 | Master 699

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

CORRECT ANSWER C. resource partitioning

SOURCE EXPLANATION Resource partitioning reduces competition by separating resource use in space or time.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 005 • GLOBAL 0325 325 / BOTANY Q005 ADVANCED MOCK 2026 • ref Q53 | Master 699

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

CORRECT ANSWER B. consume some fixed carbon in respiration

SOURCE EXPLANATION NPP = GPP − autotrophic respiration; plants use part of fixed carbon themselves.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 006 • GLOBAL 0326 326 / BOTANY Q006 ADVANCED MOCK 2026 • ref Q54 | Master 699

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

CORRECT ANSWER A. forming soil and modifying microclimate

SOURCE EXPLANATION Pioneer communities create organic matter and soil, making the environment suitable for later colonists.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 007 • GLOBAL 0327 327 / BOTANY Q007 ADVANCED MOCK 2026 • ref Q55 | Master 699

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

CORRECT ANSWER B. top consumers feeding through several trophic levels

SOURCE EXPLANATION Persistent pollutants increase in concentration along successive trophic levels, peaking in top consumers.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 008 • GLOBAL 0328 328 / BOTANY Q008 ADVANCED MOCK 2026 • ref Q62 | Master 699

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

CORRECT ANSWER A. the two loci are completely linked in that cross

SOURCE EXPLANATION Complete linkage keeps alleles on the same homolog inherited together, yielding only parental combinations.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 009 • GLOBAL 0329 329 / BOTANY Q009 ADVANCED MOCK 2026 • ref Q64 | Master 699

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

CORRECT ANSWER C. Any son: 50% affected

SOURCE EXPLANATION A carrier mother transmits the mutant X to half her sons; normal father gives sons a Y.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 010 • GLOBAL 0330 330 / BOTANY Q010 ADVANCED MOCK 2026 • ref Q67 | Master 699

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

CORRECT ANSWER A. phloem translocates organic solutes while xylem still carries water

SOURCE EXPLANATION Girdling interrupts phloem sugar transport without immediately interrupting xylem water flow.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 011 • GLOBAL 0331 331 / BOTANY Q011 ADVANCED MOCK 2026 • ref Q73 | Master 699

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

CORRECT ANSWER C. the chlorophyll molecule and enzyme function

SOURCE EXPLANATION Magnesium is the central metal in chlorophyll and participates in numerous enzyme processes.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 012 • GLOBAL 0332 332 / BOTANY Q012 ADVANCED MOCK 2026 • ref Q76 | Master 699

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

CORRECT ANSWER D. one sperm plus two polar nuclei

SOURCE EXPLANATION One sperm fuses with the egg; the second joins two polar nuclei to form typically triploid endosperm.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 013 • GLOBAL 0333 333 / BOTANY Q013 ADVANCED MOCK 2026 • ref Q79 | Master 699

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

CORRECT ANSWER D. symbiotic biological nitrogen fixation

SOURCE EXPLANATION Rhizobium in legume root nodules fixes atmospheric nitrogen, enriching the crop system.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 014 • GLOBAL 0334 334 / BOTANY Q014 2024 • MEMORY-BASED • ref Q1 | Master 699

Which of the following is not a cause of variation?

A. Crossing over
B. Mutation
C. Linkage
D. Independent assortment

CORRECT ANSWER C. Linkage

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Linkage; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 015 • GLOBAL 0335 335 / BOTANY Q015 2024 • MEMORY-BASED • ref Q6 | Master 699

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

CORRECT ANSWER C. Population

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Population; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 016 • GLOBAL 0336 336 / BOTANY Q016 2024 • MEMORY-BASED • ref Q9 | Master 699

Zygospore of Spirogyra is:

A. Haploid
B. Diploid

C. Diplohaploid
D. Polyploid

CORRECT ANSWER B. Diploid

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Diploid; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 017 • GLOBAL 0337 337 / BOTANY Q017 2024 • MEMORY-BASED • ref Q10 | Master 699

Sporophyte of Marchantia is:

A. Autotrophic
B. Independent
C. Parasitic
D. Saprophytic

CORRECT ANSWER C. Parasitic

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Parasitic; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 018 • GLOBAL 0338 338 / BOTANY Q018 2024 • MEMORY-BASED • ref Q11 | Master 699

Prothallus of Fern is:

A. Haploid
B. Diploid
C. Haplodiploid
D. Diplohaploid

CORRECT ANSWER A. Haploid

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Haploid; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 019 • GLOBAL 0339 339 / BOTANY Q019 2024 • MEMORY-BASED • ref Q20 | Master 699

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

CORRECT ANSWER C. Non-sister chromatids of homologous chromosomes

SOURCE EXPLANATION 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.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 020 • GLOBAL 0340 340 / BOTANY Q020 2024 • MEMORY-BASED • ref Q21 | Master 699

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

CORRECT ANSWER B. Physical barrier for self-pollination

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Physical barrier for self-pollination; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 021 • GLOBAL 0341 341 / BOTANY Q021 2024 • MEMORY-BASED • ref Q26 | Master 699

The innermost layer of anther wall responsible for providing nutrition is termed as:

A. Endothecium
B. Tapetum
C. Exine
D. Intine

CORRECT ANSWER B. Tapetum

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Tapetum; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 022 • GLOBAL 0342 342 / BOTANY Q022 2024 • MEMORY-BASED • ref Q27 | Master 699

Turpentine oil is extracted from:

A. Pinus
B. Cycas
C. Cedrus
D. Fern

CORRECT ANSWER A. Pinus

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Pinus; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 023 • GLOBAL 0343 343 / BOTANY Q023 2024 • MEMORY-BASED • ref Q28 | Master 699

Which of the following is wrong for Solanaceae?

A. Obliquely placed ovary
B. Unilocular ovary
C. Epipetalous stamens
D. Persistent sepal

CORRECT ANSWER B. Unilocular ovary

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Unilocular ovary; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 024 • GLOBAL 0344 344 / BOTANY Q024 2024 • MEMORY-BASED • ref Q30 | Master 699

The dominant pigment in Rhodophyceae is:

A. Chlorophyll b
B. Chlorophyll c
C. Phycocyanin
D. Phycoerythrin

CORRECT ANSWER D. Phycoerythrin

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Phycoerythrin; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 025 • GLOBAL 0345 345 / BOTANY Q025 2024 • MEMORY-BASED • ref Q31 | Master 699

The end product of oxidative phosphorylation is:

- **A.** ATP and H_2O
- **B.** ATP
- **C.** NADH2
- **D.** ATP and NADH2

CORRECT ANSWER A. ATP and H_2O

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is ATP and H_2O; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 026 • GLOBAL 0346 346 / BOTANY Q026 2024 • MEMORY-BASED • ref Q32 | Master 699

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%

CORRECT ANSWER B. 50%

SOURCE EXPLANATION Draw a family tree and follow each relationship one link at a time.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 027 • GLOBAL 0347 347 / BOTANY Q027 2024 • MEMORY-BASED • ref Q33 | Master 699

The plant part used for tissue culture is called:

- **A.** Stock
- **B.** Explant
- **C.** Callus
- **D.** Scion

CORRECT ANSWER B. Explant

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Explant; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 028 • GLOBAL 0348 348 / BOTANY Q028 2024 • MEMORY-BASED • ref Q34 | Master 699

The end product of Glycolysis is:

- **A.** 2 molecules of Pyruvic acid
- **B.** Acetyl Co-A
- **C.** CO_2 and H_2O
- **D.** NADH2

CORRECT ANSWER A. 2 molecules of Pyruvic acid

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is 2 molecules of Pyruvic acid; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 029 • GLOBAL 0349 349 / BOTANY Q029 2024 • MEMORY-BASED • ref Q35 | Master 699

Which is the process of converting atmospheric nitrogen into usable form?

- **A.** Ammonification
- **B.** Nitrification
- **C.** Nitrogen fixation
- **D.** Nitrogen assimilation

CORRECT ANSWER C. Nitrogen fixation

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Nitrogen fixation; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 030 • GLOBAL 0350 350 / BOTANY Q030 2024 • MEMORY-BASED • ref Q36 | Master 699

The transgenic plant which was developed to overcome Vitamin A deficiency is:

- **A.** Triticale
- **B.** Pomato
- **C.** Golden rice
- **D.** Bt cotton

CORRECT ANSWER C. Golden rice

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Golden rice; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 031 • GLOBAL 0351 351 / BOTANY Q031 2024 • MEMORY-BASED • ref Q37 | Master 699

All carbohydrates are:

- **A.** Pentose and Hexose
- **B.** Ribose and Deoxyribose
- **C.** Aldose and ketose
- **D.** Triose and tetrose

CORRECT ANSWER C. Aldose and ketose

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Aldose and ketose; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 032 • GLOBAL 0352 352 / BOTANY Q032 2023 • MEMORY-BASED • ref Q102 | Master 699

Tracheophyta includes:

- **A.** Angiosperms and Gymnospenms
- **B.** Angiosperms only
- **C.** Angiosperms, Gymnosperms and Pteridophyta
- **D.** Angiosperms, Gymnosperms, Pteridophyta and Bryophyta

CORRECT ANSWER C. Angiosperms, Gymnosperms and Pteridophyta

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Angiosperms, Gymnosperms and Pteridophyta; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 033 • GLOBAL 0353 353 / BOTANY Q033 2023 • MEMORY-BASED • ref Q103 | Master 699

Which one of the following has the least similar characters?

- **A.** Family
- **B.** Order
- **C.** Genus
- **D.** Class

CORRECT ANSWER D. Class

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Class; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 034 • GLOBAL 0354 354 / BOTANY Q034 2023 • MEMORY-BASED • ref Q104 | Master 699

Which of these is mismatched?

- **A.** Phaneros — Visible
- **B.** Gymno — Naked
- **C.** Bryon- Liverworts
- **D.** Kryptos — Concealed

CORRECT ANSWER C. Bryon- Liverworts

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Bryon-Liverworts; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 035 • GLOBAL 0355 355 / BOTANY Q035 2023 • MEMORY-BASED • ref Q105 | Master 699

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

CORRECT ANSWER D. Endangered

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Endangered; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 036 • GLOBAL 0356 356 / BOTANY Q036 2023 • MEMORY-BASED • ref Q106 | Master 699

Siliqua develops from:

- **A.** Monocarpellary gynoecium
- **B.** Bicarpellary gynoecium
- **C.** Tricarpellary gynoecium
- **D.** Multicarpellary gynoecium

CORRECT ANSWER B. Bicarpellary gynoecium

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Bicarpellary gynoecium; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 037 • GLOBAL 0357 357 / BOTANY Q037 2023 • MEMORY-BASED • ref Q108 | Master 699

Protoplasm was first observed by:

- **A.** Dujardin
- **B.** Purkinje
- **C.** Van Mohl
- **D.** Corti

CORRECT ANSWER D. Corti

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Corti; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 038 • GLOBAL 0358 358 / BOTANY Q038 2023 • MEMORY-BASED • ref Q115 | Master 699

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

CORRECT ANSWER B. RNA

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is RNA; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 039 • GLOBAL 0359 359 / BOTANY Q039 2023 • MEMORY-BASED • ref Q118 | Master 699

Opening of flower and drooping of bud is an example of

- **A.** Epinasty
- **B.** Hyponasty
- **C.** Spontaneous Movement
- **D.** Movement of Curvature

CORRECT ANSWER A. Epinasty

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Epinasty; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 040 • GLOBAL 0360 360 / BOTANY Q040 2023 • MEMORY-BASED • ref Q119 | Master 699

Bolting in plants is caused by-

- **A.** Auxin
- **B.** Ethylene
- **C.** Gibberellins
- **D.** Abscisic acid

CORRECT ANSWER C. Gibberellins

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Gibberellins; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 041 • GLOBAL 0361 361 / BOTANY Q041 2023 • MEMORY-BASED • ref Q122 | Master 699

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

CORRECT ANSWER A. Outside the vascular cambium and is phloem fibres

SOURCE EXPLANATION 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.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 042 • GLOBAL 0362 362 / BOTANY Q042 2023 • MEMORY-BASED • ref Q123 | Master 699

Endosperm in angiosperm is:

- **A.** Haploid
- **B.** Diploid
- **C.** Triploid
- **D.** Polyploid

CORRECT ANSWER C. Triploid

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Triploid; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 043 • GLOBAL 0363 363 / BOTANY Q043 2023 • MEMORY-BASED • ref Q128 | Master 699

The ecological interaction between two organisms which has a negative impact on both the organisms is:

- **A.** Predation
- **B.** Parasitism
- **C.** Competition
- **D.** Amensalism

CORRECT ANSWER C. Competition

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Competition; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 044 • GLOBAL 0364 364 / BOTANY Q044 2023 • MEMORY-BASED • ref Q131 | Master 699

PCR technique was discovered by:

- **A.** Kary Mullis
- **B.** Sanger
- **C.** Wilmut
- **D.** Cohn

CORRECT ANSWER A. Kary Mullis

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Kary Mullis; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 045 • GLOBAL 0365 365 / BOTANY Q045 2023 • MEMORY-BASED • ref Q132 | Master 699

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

CORRECT ANSWER B. It can be used to obtain desired genetic traits

SOURCE EXPLANATION 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.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 046 • GLOBAL 0366 366 / BOTANY Q046 2023 • MEMORY-BASED • ref Q134 | Master 699

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

CORRECT ANSWER D. Sodium hypochlorite solution

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Sodium hypochlorite solution; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 047 • GLOBAL 0367 367 / BOTANY Q047 2023 • MEMORY-BASED • ref Q136 | Master 699

An interconnected food chain is:

- **A.** Food web
- **B.** Trophic level
- **C.** Ecological Pyramid
- **D.** Food Cycle

CORRECT ANSWER A. Food web

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Food web; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 048 • GLOBAL 0368 368 / BOTANY Q048 2023 • MEMORY-BASED • ref Q138 | Master 699

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

CORRECT ANSWER C. Cryopreservation

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Cryopreservation; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 049 • GLOBAL 0369 369 / BOTANY Q049 2023 • MEMORY-BASED • ref Q140 | Master 699

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

CORRECT ANSWER C. Beer is prepared from fermented malt and wine is prepared from fermented fruits

SOURCE EXPLANATION 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.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 050 • GLOBAL 0370 370 / BOTANY Q050 2025 • MEMORY-BASED • ref Q56 | Master 699

Cystic fibrosis is

A. Autoimmune disorder
B. Genetic disorder
C. Physiological disorder
D. Nutritional disorder

CORRECT ANSWER B. Genetic disorder

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Genetic disorder; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 051 • GLOBAL 0371 371 / BOTANY Q051 2025 • MEMORY-BASED • ref Q57 | Master 699

Digestion of protein gives

A. Amino acid
B. Ester
C. Fat
D. Carbohydrate

CORRECT ANSWER A. Amino acid

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Amino acid; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 052 • GLOBAL 0372 372 / BOTANY Q052 2025 • MEMORY-BASED • ref Q58 | Master 699

Which of the following has narrow lumen:

A. Sclerenchymatous fibres
B. Stone cell

C. Scleids
D. Sclrenchyme

CORRECT ANSWER A. Sclerenchymatous fibres

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Sclerenchymatous fibres; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 053 • GLOBAL 0373 373 / BOTANY Q053 2025 • MEMORY-BASED • ref Q62 | Master 699

Which of the following is not anecploidy?

A. Downs syndrome
B. Turner's syndrome
C. Phenylketonuria
D. Khnfellers syndrome

CORRECT ANSWER C. Phenylketonuria

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Phenylketonuria; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 054 • GLOBAL 0374 374 / BOTANY Q054 2025 • MEMORY-BASED • ref Q63 | Master 699

Phenotypic and genotypic ratio is game in?

A. Codominance
B. Intermediate inheritance
C. Epistaxis
D. Linkage

CORRECT ANSWER B. Intermediate inheritance

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Intermediate inheritance; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 055 • GLOBAL 0375 375 / BOTANY Q055 2025 • MEMORY-BASED • ref Q64 | Master 699

Obligate relationship is found in?

A. Mutualism
B. Commensalin
C. Protocooperation
D. Ammensalin

CORRECT ANSWER A. Mutualism

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Mutualism; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 056 • GLOBAL 0376 376 / BOTANY Q056 2025 • MEMORY-BASED • ref Q66 | Master 699

Organisms found the bottom of sea are:

A. Nertons
B. Benthos
C. Phytons

D. Plalctons

CORRECT ANSWER B. Benthos

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Benthos; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 057 • GLOBAL 0377 377 / BOTANY Q057 2025 • ADAPTED • ref Q67 | Master 699

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

CORRECT ANSWER B. Obligate mutualism

SOURCE EXPLANATION Both partners benefit and the obligate relationship is required for survival.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 058 • GLOBAL 0378 378 / BOTANY Q058 2025 • MEMORY-BASED • ref Q69 | Master 699

Pyramid of energy is:

A. Spindle shape
B. Always erect
C. Sometimes erect
D. Inverted

CORRECT ANSWER B. Always erect

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Always erect; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 059 • GLOBAL 0379 379 / BOTANY Q059 2025 • MEMORY-BASED • ref Q71 | Master 699

Phosphorylation means synthesis of

A. PGA
B. ADP and ATP
C. ATP from ADP
D. NADP

CORRECT ANSWER C. ATP from ADP

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is ATP from ADP; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 060 • GLOBAL 0380 380 / BOTANY Q060 2025 • MEMORY-BASED • ref Q72 | Master 699

In the conversion of pyruvic acid to acetyl COA pyruvic acid is:

A. Denatured
B. Oxidized
C. Reduced
D. Isomerized

CORRECT ANSWER B. Oxidized

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Oxidized; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 061 • GLOBAL 0381 381 / BOTANY Q061 2025 • MEMORY-BASED • ref Q73 | Master 699

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

CORRECT ANSWER A. Callose

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Callose; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 062 • GLOBAL 0382 382 / BOTANY Q062 2025 • MEMORY-BASED • ref Q74 | Master 699

Grafting is not possible in monocots because

- **A.** Lack of vascular tissue
- **B.** Having smaller stem
- **C.** Scattered vascular bundle
- **D.** Absence of cambium

CORRECT ANSWER D. Absence of cambium

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Absence of cambium; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 063 • GLOBAL 0383 383 / BOTANY Q063 2025 • MEMORY-BASED • ref Q78 | Master 699

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

CORRECT ANSWER A. Maltose

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Maltose; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 064 • GLOBAL 0384 384 / BOTANY Q064 2025 • MEMORY-BASED • ref Q80 | Master 699

Dissolved oxygen in decreared in pond due to?

- **A.** Biomagnification
- **B.** Eutrophication
- **C.** Nitrification
- **D.** Denitrification

CORRECT ANSWER B. Eutrophication

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Eutrophication; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 065 • GLOBAL 0385 385 / BOTANY Q065 2025 • MEMORY-BASED • ref Q81 | Master 699

Gemma cup are found in

- **A.** Marchantia
- **B.** Funaria
- **C.** Fem
- **D.** Pinus

CORRECT ANSWER A. Marchantia

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Marchantia; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 066 • GLOBAL 0386 386 / BOTANY Q066 2025 • ADAPTED • ref Q82 | Master 699

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

CORRECT ANSWER B. Heterozygote red cells can inhibit parasite survival

SOURCE EXPLANATION Heterozygous sickle-cell trait provides partial protection, unlike a guarantee of immunity.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 067 • GLOBAL 0387 387 / BOTANY Q067 2022 • ADAPTED • ref Q10 | Master 699

Hemp bast fibres are especially rich in which cell-wall polymer?

- **A.** Cellulose
- **B.** Protein
- **C.** Starch
- **D.** Sucrose

CORRECT ANSWER A. Cellulose

SOURCE EXPLANATION Bast sclerenchyma fibres contain cellulose-rich secondary cell walls.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 068 • GLOBAL 0388 388 / BOTANY Q068 2022 • MEMORY-BASED • ref Q11 | Master 699

Botanical name of sunflower is

- **A.** Allium cepa
- **B.** Tagetes patula
- **C.** Helianthus annus
- **D.** Brassica rapa

CORRECT ANSWER C. Helianthus annus

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Helianthus annus; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 069 • GLOBAL 0389 389 / BOTANY Q069 2022 • MEMORY-BASED • ref Q12 | Master 699

Plants living in salty soil are called

- **A.** Oxylophytes
- **B.** Lithophytes
- **C.** Halophytes
- **D.** Psammophytes

CORRECT ANSWER C. Halophytes

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Halophytes; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 070 • GLOBAL 0390 390 / BOTANY Q070 2022 • MEMORY-BASED • ref Q18 | Master 699

Which is correct in reference to cytokinin?

- **A.** Internodal growth
- **B.** Cell division
- **C.** Root initiation
- **D.** Cell elongation in shoot

CORRECT ANSWER B. Cell division

SOURCE EXPLANATION Cytokinins promote cell division and can influence shoot formation.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 071 • GLOBAL 0391 391 / BOTANY Q071 2022 • MEMORY-BASED • ref Q19 | Master 699

Opening of flower is

- **A.** Cleistogamy
- **B.** Anthesis
- **C.** Hyponasty
- **D.** Acstivgfion

CORRECT ANSWER B. Anthesis

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Anthesis; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 072 • GLOBAL 0392 392 / BOTANY Q072 2022 • MEMORY-BASED • ref Q29 | Master 699

Edible part of coconut is

- **A.** Endosperm
- **B.** Pericarp
- **C.** Mesocarp
- **D.** Endocarp

CORRECT ANSWER A. Endosperm

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is Endosperm; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 073 • GLOBAL 0393 393 / BOTANY Q073 2022 • ADAPTED • ref Q31 | Master 699

Agar is obtained primarily from members of which algal group?

- **A.** Chlorophyta
- **B.** Rhodophyta
- **C.** Cyanobacteria
- **D.** Euglenophyta

CORRECT ANSWER B. Rhodophyta

SOURCE EXPLANATION Red algae such as Gelidium and Gracilaria are major agar sources.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 074 • GLOBAL 0394 394 / BOTANY Q074 2022 • MEMORY-BASED • ref Q38 | Master 699

Xerophytic plants lack:

- **A.** well developed roots
- **B.** well developed conducting tissue NAN
- **C.** aerenchyma
- **D.** spiny leaves

CORRECT ANSWER C. aerenchyma

SOURCE EXPLANATION The distinguishing feature in diversity, ecology and applied botany is aerenchyma; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 075 • GLOBAL 0395 395 / BOTANY Q075 2026 • MODEL SET | Master 699

Which plastid pigment strongly contributes to the red color of Rhodophyceae?

- **A.** Phycoerythrin
- **B.** Carotene alone
- **C.** Chlorophyll b
- **D.** Xanthophyll only

CORRECT ANSWER A. Phycoerythrin

SOURCE EXPLANATION Phycoerythrin is a red phycobiliprotein absorbing green-blue light.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 076 • GLOBAL 0396 396 / BOTANY Q076 ADVANCED MOCK 2026 • ref Q42 | Master 699

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

CORRECT ANSWER C. amphipathic, with opposing interactions of heads and tails

SOURCE EXPLANATION Amphipathic phospholipids put hydrophobic tails inward and hydrophilic heads toward water.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 077 • GLOBAL 0397 397 / BOTANY Q077 ADVANCED MOCK 2026 • ref Q43 | Master 699

A photosynthetic prokaryote releases oxygen but has no membrane-bound organelles. It is most consistent with:

A. cyanobacteria
B. fungi
C. protozoa
D. bryophytes

CORRECT ANSWER A. cyanobacteria

SOURCE EXPLANATION Photosynthesis converts light energy into chemical energy in chloroplasts.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 078 • GLOBAL 0398 398 / BOTANY Q078 ADVANCED MOCK 2026 • ref Q45 | Master 699

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

CORRECT ANSWER B. vascular tissues and a dominant sporophyte

SOURCE EXPLANATION The distinguishing feature in plant physiology and anatomy is vascular tissues and a dominant sporophyte; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 079 • GLOBAL 0399 399 / BOTANY Q079 ADVANCED MOCK 2026 • ref Q47 | Master 699

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

CORRECT ANSWER B. not enclosed within an ovary

SOURCE EXPLANATION Gymnosperm ovules are not enclosed in a carpel; angiosperm seeds mature within a fruit.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 080 • GLOBAL 0400 400 / BOTANY Q080 ADVANCED MOCK 2026 • ref Q48 | Master 699

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

CORRECT ANSWER B. a typical monocot

SOURCE EXPLANATION Parallel venation and fibrous roots are classic monocot characters, usually paired with trimerous flowers.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 081 • GLOBAL 0401 401 / BOTANY Q081 ADVANCED MOCK 2026 • ref Q51 | Master 699

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

CORRECT ANSWER B. bryophytes or pteridophytes

SOURCE EXPLANATION Bryophytes and many pteridophytes form archegonia but do not make seeds.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 082 • GLOBAL 0402 402 / BOTANY Q082 ADVANCED MOCK 2026 • ref Q68 | Master 699

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

CORRECT ANSWER B. secondary xylem inward and secondary phloem outward

SOURCE EXPLANATION Vascular cambium adds secondary xylem inward and secondary phloem outward.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 083 • GLOBAL 0403 403 / BOTANY Q083 ADVANCED MOCK 2026 • ref Q69 | Master 699

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

CORRECT ANSWER A. water-vapour diffusion from moist internal surfaces

SOURCE EXPLANATION A thick cuticle and protected stomata limit water loss by reducing diffusion and exposure.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 084 • GLOBAL 0404 404 / BOTANY Q084 ADVANCED MOCK 2026 • ref Q71 | Master 699

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

CORRECT ANSWER D. the water-vapour gradient and boundary-layer removal increase

SOURCE EXPLANATION Dry, moving air increases the water-vapor gradient and removes moist

boundary-layer air.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 085 • GLOBAL 0405 405 / BOTANY Q085 ADVANCED MOCK 2026 • ref Q72 | Master 699

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

CORRECT ANSWER C. approach a plateau

SOURCE EXPLANATION Photosynthesis converts light energy into chemical energy in chloroplasts.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 086 • GLOBAL 0406 406 / BOTANY Q086 ADVANCED MOCK 2026 • ref Q74 | Master 699

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

CORRECT ANSWER C. promotes greater cell elongation there

SOURCE EXPLANATION Auxin stimulates cell elongation and, at suitable concentrations, root initiation.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 087 • GLOBAL 0407 407 / BOTANY Q087 ADVANCED MOCK 2026 • ref Q75 | Master 699

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

CORRECT ANSWER A. cohesion among water molecules and tension from transpiration

SOURCE EXPLANATION 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.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 088 • GLOBAL 0408 408 / BOTANY Q088 ADVANCED MOCK 2026 • ref Q77 | Master 699

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

CORRECT ANSWER C. prevents unwanted self-pollination while permitting controlled

crossing

SOURCE EXPLANATION Emasculation prevents self-pollination and permits intentional introduction of selected pollen.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 089 • GLOBAL 0409 409 / BOTANY Q089 2024 • MEMORY-BASED • ref Q2 | Master 699

Which hormone is responsible for rooting?

- **A.** Auxin
- **B.** Cytokinin
- **C.** Gibberellin
- **D.** Ethylene

CORRECT ANSWER A. Auxin

SOURCE EXPLANATION The distinguishing feature in plant physiology and anatomy is Auxin; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 090 • GLOBAL 0410 410 / BOTANY Q090 2024 • MEMORY-BASED • ref Q8 | Master 699

Which linkage is present between the glucose units in Amylose of starch?

- **A.** Peptide bond
- **B.** Ester linkage
- **C.** Glycosidic bond
- **D.** Phosphodiester bond

CORRECT ANSWER C. Glycosidic bond

SOURCE EXPLANATION The distinguishing feature in plant physiology and anatomy is Glycosidic bond; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 091 • GLOBAL 0411 411 / BOTANY Q091 2024 • MEMORY-BASED • ref Q24 | Master 699

The rate of transpiration increases when:

- **A.** Increase in humidity
- **B.** Increase in light intensity
- **C.** Decrease in wind velocity
- **D.** Decrease in temperature

CORRECT ANSWER B. Increase in light intensity

SOURCE EXPLANATION The distinguishing feature in plant physiology and anatomy is Increase in light intensity; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 092 • GLOBAL 0412 412 / BOTANY Q092 2024 • MEMORY-BASED • ref Q29 | Master 699

Bicollateral vascular bundles are present in:

- **A.** Cucurbitaceae
- **B.** Compositae
- **C.** Graminae
- **D.** Cruciferae

CORRECT ANSWER A. Cucurbitaceae

SOURCE EXPLANATION The distinguishing feature in plant physiology and anatomy is Cucurbitaceae; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 093 • GLOBAL 0413 413 / BOTANY Q093 2023 • MEMORY-BASED • ref Q124 | Master 699

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

CORRECT ANSWER C. Cleistogamous

SOURCE EXPLANATION The distinguishing feature in plant physiology and anatomy is Cleistogamous; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 094 • GLOBAL 0414 414 / BOTANY Q094 2023 • MEMORY-BASED • ref Q137 | Master 699

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

CORRECT ANSWER B. Lower nodes of stem

SOURCE EXPLANATION The distinguishing feature in plant physiology and anatomy is Lower nodes of stem; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 095 • GLOBAL 0415 415 / BOTANY Q095 2025 • MEMORY-BASED • ref Q70 | Master 699

In photosynthesis. O_2 is evolved from water during:

- **A.** Oxidative photophosrylation
- **B.** Photolysis of water
- **C.** Photo-excitatiouof chat
- **D.** Exitation of electron

CORRECT ANSWER B. Photolysis of water

SOURCE EXPLANATION Photosynthesis converts light energy into chemical energy in chloroplasts.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 096 • GLOBAL 0416 416 / BOTANY Q096 2025 • MEMORY-BASED • ref Q75 | Master 699

Cucurbits have____ vascular bundle

- **A.** Conjoint collateral
- **B.** Conjoint bicollateral
- **C.** Radial
- **D.** Concentric

CORRECT ANSWER B. Conjoint bicollateral

SOURCE EXPLANATION The distinguishing feature in plant physiology and anatomy is Conjoint bicollateral; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 097 • GLOBAL 0417 417 / BOTANY Q097 2022 • MEMORY-BASED • ref Q5 | Master 699

Bicoilateral vascular bundle is present in:

- **A.** Cruciferae
- **B.** Cucurbita
- **C.** Malvaceae
- **D.** Leguminosae

CORRECT ANSWER B. Cucurbita

SOURCE EXPLANATION The distinguishing feature in plant physiology and anatomy is Cucurbita; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 098 • GLOBAL 0418 418 / BOTANY Q098 2022 • ADAPTED • ref Q6 | Master 699

How are xylem and phloem typically arranged in a primary dicot root?

- **A.** Conjoint
- **B.** Radial
- **C.** Bicollateral
- **D.** Collateral

CORRECT ANSWER B. Radial

SOURCE EXPLANATION In roots xylem and phloem occupy alternate radii (radial vascular bundles).

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 099 • GLOBAL 0419 419 / BOTANY Q099 2022 • ADAPTED • ref Q8 | Master 699

Which type of mature xylem cell is living?

- **A.** Tracheid
- **B.** Vessel element
- **C.** Xylem parenchyma
- **D.** Xylem fiber

CORRECT ANSWER C. Xylem parenchyma

SOURCE EXPLANATION Most mature tracheids and vessel elements are dead; xylem parenchyma remains living.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 100 • GLOBAL 0420 420 / BOTANY Q100 2022 • MEMORY-BASED • ref Q24 | Master 699

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

CORRECT ANSWER A. Auxin to cytokinin

SOURCE EXPLANATION The distinguishing feature in plant physiology and anatomy is Auxin to cytokinin; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 101 • GLOBAL 0421 421 / BOTANY Q101 2022 • MEMORY-BASED • ref Q26 | Master 699

Winged pollen of pinus develops from

- **A.** intine
- **B.** exine
- **C.** ex-intine
- **D.** germ layer

CORRECT ANSWER B. exine

SOURCE EXPLANATION The distinguishing feature in plant physiology and anatomy is exine; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 102 • GLOBAL 0422 422 / BOTANY Q102 2022 • ADAPTED • ref Q39 | Master 699

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

CORRECT ANSWER A. Osmosis

SOURCE EXPLANATION Water follows a water-potential gradient across the selectively permeable plasma membrane.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 103 • GLOBAL 0423 423 / BOTANY Q103 2026 • MODEL SET | Master 699

The first stable carbon-fixation product in C_4 photosynthesis is:

- **A.** 3-phosphoglycerate
- **B.** Oxaloacetate
- **C.** Ribulose-1,5-bisphosphate
- **D.** Glucose

CORRECT ANSWER B. Oxaloacetate

SOURCE EXPLANATION PEP carboxylase initially produces the four-carbon compound oxaloacetate.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 104 • GLOBAL 0424 424 / BOTANY Q104 ADVANCED MOCK 2026 • ref Q46 | Master 699

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

CORRECT ANSWER C. Pollen formation in seed plants

SOURCE EXPLANATION Pollen tubes allow sperm delivery without the external swimming water

required in non-seed plants.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 105 • GLOBAL 0425 425 / BOTANY Q105 ADVANCED MOCK 2026 • ref Q50 | Master 699

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

CORRECT ANSWER C. haploid spores from diploid sporophyte cells

SOURCE EXPLANATION The distinguishing feature in genetics and cell biology is haploid spores from diploid sporophyte cells; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 106 • GLOBAL 0426 426 / BOTANY Q106 ADVANCED MOCK 2026 • ref Q56 | Master 699

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

CORRECT ANSWER C. exosmosis and plasmolysis

SOURCE EXPLANATION Water exits a cell by osmosis in hypertonic solution, so the protoplast pulls away from the wall.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 107 • GLOBAL 0427 427 / BOTANY Q107 ADVANCED MOCK 2026 • ref Q57 | Master 699

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

CORRECT ANSWER B. chromosome segregation to daughter nuclei

SOURCE EXPLANATION The spindle separates chromosomes during division; without it, normal segregation cannot occur.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 108 • GLOBAL 0428 428 / BOTANY Q108 ADVANCED MOCK 2026 • ref Q58 | Master 699

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

CORRECT ANSWER A. Rough ER to Golgi to vesicles

SOURCE EXPLANATION Rough ER synthesizes secreted proteins, which are processed in the Golgi and carried in vesicles.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 109 • GLOBAL 0429 429 / BOTANY Q109 ADVANCED MOCK 2026 • ref Q59 | Master 699

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

CORRECT ANSWER B. ATP synthesis by oxidative phosphorylation

SOURCE EXPLANATION The distinguishing feature in genetics and cell biology is ATP synthesis by oxidative phosphorylation; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 110 • GLOBAL 0430 430 / BOTANY Q110 ADVANCED MOCK 2026 • ref Q60 | Master 699

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

CORRECT ANSWER B. post-S or G2 phase

SOURCE EXPLANATION DNA replication doubles DNA content in S phase; the G_2 cell retains it before mitosis.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 111 • GLOBAL 0431 431 / BOTANY Q111 ADVANCED MOCK 2026 • ref Q63 | Master 699

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

CORRECT ANSWER A. degeneracy of the genetic code

SOURCE EXPLANATION The genetic code is degenerate, so some base substitutions leave the encoded amino acid unchanged.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 112 • GLOBAL 0432 432 / BOTANY Q112 ADVANCED MOCK 2026 • ref Q66 | Master 699

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

CORRECT ANSWER C. homologous chromosomes

SOURCE EXPLANATION Meiosis I normally separates homologous chromosomes; nondisjunction leaves them together.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 113 • GLOBAL 0433 433 / BOTANY Q113 ADVANCED MOCK 2026 • ref Q70 | Master 699

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

CORRECT ANSWER A. Solute accumulation followed by water entry

SOURCE EXPLANATION Guard-cell ion accumulation lowers water potential so water enters by osmosis and pores open.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 114 • GLOBAL 0434 434 / BOTANY Q114 ADVANCED MOCK 2026 • ref Q78 | Master 699

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

CORRECT ANSWER B. totipotency

SOURCE EXPLANATION Plant cells retain developmental potential, allowing clonal propagation under sterile culture.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 115 • GLOBAL 0435 435 / BOTANY Q115 ADVANCED MOCK 2026 • ref Q80 | Master 699

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

CORRECT ANSWER D. selection can increase resistant insect genotypes

SOURCE EXPLANATION Natural selection favors pre-existing heritable resistance alleles when insects encounter a pest-control agent.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 116 • GLOBAL 0436 436 / BOTANY Q116 2024 • MEMORY-BASED • ref Q3 | Master 699

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

CORRECT ANSWER B. Golgi bodies – Protein synthesis

SOURCE EXPLANATION The distinguishing feature in genetics and cell biology is Golgi bodies – Protein synthesis; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 117 • GLOBAL 0437 437 / BOTANY Q117 2024 • MEMORY-BASED • ref Q4 | Master 699

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

CORRECT ANSWER B. 2.4×10^{-12} gm

SOURCE EXPLANATION The distinguishing feature in genetics and cell biology is 2.4×10^{-12} gm; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 118 • GLOBAL 0438 438 / BOTANY Q118 2024 • MEMORY-BASED • ref Q7 | Master 699

Histone protein found in DNA is:

- **A.** Basic
- **B.** Acidic
- **C.** Amphoteric
- **D.** Neutral

CORRECT ANSWER A. Basic

SOURCE EXPLANATION Histones are positively charged basic proteins that bind negatively charged DNA.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 119 • GLOBAL 0439 439 / BOTANY Q119 2024 • MEMORY-BASED • ref Q19 | Master 699

For a codon GUA in mRNA, the corresponding anticodon in tRNA will be:

- **A.** GUC
- **B.** CTU
- **C.** CUA
- **D.** CAU

CORRECT ANSWER D. CAU

SOURCE EXPLANATION The distinguishing feature in genetics and cell biology is CAU; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 120 • GLOBAL 0440 440 / BOTANY Q120 2024 • MEMORY-BASED • ref Q22 | Master 699

Which of the following is a common cell organelle between prokaryotes and eukaryotes?

- **A.** Nucleus
- **B.** Mitochondria
- **C.** Ribosomes
- **D.** Nucleolus

CORRECT ANSWER C. Ribosomes

SOURCE EXPLANATION The distinguishing feature in genetics and cell biology is Ribosomes; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 121 • GLOBAL 0441 441 / BOTANY Q121 2024 • ADAPTED • ref Q23 | Master 699

An organism with identical alleles of a gene at a locus is termed:

- **A.** Hemizygous
- **B.** Homozygous
- **C.** Heterozygous
- **D.** Polyploid

CORRECT ANSWER B. Homozygous

SOURCE EXPLANATION Homozygous means the two alleles at a diploid locus are the same.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 122 • GLOBAL 0442 442 / BOTANY Q122 2024 • MEMORY-BASED • ref Q39 | Master 699

If one chromosome is absent from a diploid set, the condition is termed as:

- **A.** Trisomy
- **B.** Monosomy
- **C.** Nullisomy
- **D.** Tetrasomy

CORRECT ANSWER B. Monosomy

SOURCE EXPLANATION The distinguishing feature in genetics and cell biology is Monosomy; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 123 • GLOBAL 0443 443 / BOTANY Q123 2024 • MEMORY-BASED • ref Q40 | Master 699

Maximum effect of genetic drift is seen in:

- **A.** Slowly reproducing population
- **B.** Small population
- **C.** Large population
- **D.** Rapidly growing population

CORRECT ANSWER B. Small population

SOURCE EXPLANATION Random allele-frequency changes are strongest in small populations.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 124 • GLOBAL 0444 444 / BOTANY Q124 2023 • MEMORY-BASED • ref Q107 | Master 699

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

CORRECT ANSWER C. Edward's Syndrome

SOURCE EXPLANATION The distinguishing feature in genetics and cell biology is Edward's Syndrome; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 125 • GLOBAL 0445 445 / BOTANY Q125 2023 • MEMORY-BASED • ref Q109 | Master 699

The part of the chromosome after the secondary constriction is known as:

- **A.** Telomere
- **B.** Chromomere
- **C.** Nuclear Organizer
- **D.** Satellite

CORRECT ANSWER D. Satellite

SOURCE EXPLANATION The distinguishing feature in genetics and cell biology is Satellite; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 126 • GLOBAL 0446 446 / BOTANY Q126 2023 • MEMORY-BASED • ref Q111 | Master 699

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

CORRECT ANSWER B. Genetic dnift

SOURCE EXPLANATION The distinguishing feature in genetics and cell biology is Genetic dnift; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 127 • GLOBAL 0447 447 / BOTANY Q127 2023 • MEMORY-BASED • ref Q112 | Master 699

Study of DNA and RNA is:

- **A.** Genetics
- **B.** Cytology
- **C.** Molecular Biology
- **D.** Physiology

CORRECT ANSWER C. Molecular Biology

SOURCE EXPLANATION The distinguishing feature in genetics and cell biology is Molecular Biology; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 128 • GLOBAL 0448 448 / BOTANY Q128 2023 • MEMORY-BASED • ref Q117 | Master 699

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

CORRECT ANSWER D. Multiple Allelism

SOURCE EXPLANATION The distinguishing feature in genetics and cell biology is Multiple Allelism; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 129 • GLOBAL 0449 449 / BOTANY Q129 2023 • MEMORY-BASED • ref Q126 | Master 699

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

CORRECT ANSWER B. Presence of naked DNA

SOURCE EXPLANATION The distinguishing feature in genetics and cell biology is Presence of naked DNA; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 130 • GLOBAL 0450 450 / BOTANY Q130 2023 • ADAPTED • ref Q133 | Master 699

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

CORRECT ANSWER C. Agrobacterium tumefaciens

SOURCE EXPLANATION Agrobacterium transfers DNA through its modified Ti plasmid in many transformation protocols.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 131 • GLOBAL 0451 451 / BOTANY Q131 2023 • MEMORY-BASED • ref Q135 | Master 699

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

CORRECT ANSWER A. Genetic Engineering

SOURCE EXPLANATION The distinguishing feature in genetics and cell biology is Genetic Engineering; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 132 • GLOBAL 0452 452 / BOTANY Q132 2025 • MEMORY-BASED • ref Q55 | Master 699

An enzyme that can cut DNA molecules at specific site is:

- **A.** Lipose
- **B.** Nuclease
- **C.** Restriction Endonuclease
- **D.** Ligose

CORRECT ANSWER C. Restriction Endonuclease

SOURCE EXPLANATION The distinguishing feature in genetics and cell biology is Restriction Endonuclease; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 133 • GLOBAL 0453 453 / BOTANY Q133 2025 • MEMORY-BASED • ref Q76 | Master 699

Which chromosome has centromere at center?

- **A.** Metacentric
- **B.** Sub-metacentric
- **C.** Telocentric
- **D.** Acrocentric

CORRECT ANSWER A. Metacentric

SOURCE EXPLANATION The distinguishing feature in genetics and cell biology is Metacentric; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 134 • GLOBAL 0454 454 / BOTANY Q134 2025 • MEMORY-BASED • ref Q83 | Master 699

Which of the following unwinds DNA molecule?

- **A.** Helicase
- **B.** Ligase
- **C.** Polymerase
- **D.** Topoisomerase

CORRECT ANSWER A. Helicase

SOURCE EXPLANATION The distinguishing feature in genetics and cell biology is Helicase; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 135 • GLOBAL 0455 455 / BOTANY Q135 2022 • ADAPTED • ref Q1 | Master 699

Where are ribosomal RNA and ribosomal subunits chiefly assembled in eukaryotic cells?

- **A.** Nucleolus
- **B.** Plasma membrane
- **C.** Lysosome
- **D.** Peroxisome

CORRECT ANSWER A. Nucleolus

SOURCE EXPLANATION The nucleolus is the major site of rRNA transcription and ribosomal assembly.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 136 • GLOBAL 0456 456 / BOTANY Q136 2022 • MEMORY-BASED • ref Q2 | Master 699

Nucleus has maximum size during

- **A.** Prophase
- **B.** Interphase
- **C.** Metaphase
- **D.** Anaphase

CORRECT ANSWER B. Interphase

SOURCE EXPLANATION The distinguishing feature in genetics and cell biology is Interphase; contrast

it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 137 • GLOBAL 0457 457 / BOTANY Q137 2022 • MEMORY-BASED • ref Q4 | Master 699

Plant cells are connected with each other by means of

- **A.** Tight junction
- **B.** Gap junction
- **C.** Plasmodesmata
- **D.** Desmoneme

CORRECT ANSWER C. Plasmodesmata

SOURCE EXPLANATION The distinguishing feature in genetics and cell biology is Plasmodesmata; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 138 • GLOBAL 0458 458 / BOTANY Q138 2022 • MEMORY-BASED • ref Q28 | Master 699

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 ,

CORRECT ANSWER B. Reciprocal cross

SOURCE EXPLANATION The distinguishing feature in genetics and cell biology is Reciprocal cross; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 139 • GLOBAL 0459 459 / BOTANY Q139 2022 • MEMORY-BASED • ref Q30 | Master 699

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

CORRECT ANSWER B. less prone to malaria

SOURCE EXPLANATION The distinguishing feature in genetics and cell biology is less prone to malaria; contrast it with the related processes in the alternatives.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 140 • GLOBAL 0460 460 / BOTANY Q140 2022 • MEMORY-BASED • ref Q37 | Master 699

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

CORRECT ANSWER B. change in frequency of allel in generation of generation ¢

SOURCE EXPLANATION Random allele-frequency changes are strongest in small populations.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 141 • GLOBAL 0461 461 / BOTANY Q141 EXPECTED • PRACTICE | Master 699

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

CORRECT ANSWER C. Exocytosis

SOURCE EXPLANATION Exocytosis expels vesicle contents by membrane fusion.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 142 • GLOBAL 0462 462 / BOTANY Q142 EXPECTED • PRACTICE | Master 699

At the end of S phase, a cell's DNA amount relative to G1 is:

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

CORRECT ANSWER C. Double

SOURCE EXPLANATION DNA replication doubles the genetic material before division.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 143 • GLOBAL 0463 463 / BOTANY Q143 EXPECTED • PRACTICE | Master 699

In AaBb × AaBb, assuming independent assortment, the double-recessive phenotype has probability:

A. 1/4
B. 1/8
C. 1/16
D. 3/16

CORRECT ANSWER C. 1/16

SOURCE EXPLANATION Each recessive phenotype has 1/4 probability; multiply to get 1/16.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 144 • GLOBAL 0464 464 / BOTANY Q144 EXPECTED • PRACTICE | Master 699

Crossing over between homologues occurs mainly during:

A. Leptotene
B. Pachytene
C. Diplotene
D. Diakinesis

CORRECT ANSWER B. Pachytene

SOURCE EXPLANATION Exchange between nonsister chromatids occurs at pachytene of prophase I.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 145 • GLOBAL 0465 465 / BOTANY Q145 EXPECTED • PRACTICE | Master 699

Opening of stomata in light is directly linked with increased turgor in:

A. Guard cells
B. Root hairs
C. Companion cells
D. Tracheids

CORRECT ANSWER A. Guard cells

SOURCE EXPLANATION Ion-driven water uptake makes guard cells turgid.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 146 • GLOBAL 0466 466 / BOTANY Q146 EXPECTED • PRACTICE | Master 699

The oxygen released during oxygenic photosynthesis originates from:

A. CO_2
B. Water
C. Glucose
D. Chlorophyll

CORRECT ANSWER B. Water

SOURCE EXPLANATION Photolysis of H_2O at PSII releases molecular oxygen.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 147 • GLOBAL 0467 467 / BOTANY Q147 EXPECTED • PRACTICE | Master 699

The hormone most strongly associated with stem elongation and bolting is:

A. Abscisic acid
B. Ethylene
C. Gibberellin
D. Cytokinin only

CORRECT ANSWER C. Gibberellin

SOURCE EXPLANATION Gibberellins stimulate internodal growth and bolting.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 148 • GLOBAL 0468 468 / BOTANY Q148 EXPECTED • PRACTICE | Master 699

The dominant life-cycle generation in moss is:

A. Sporophyte
B. Gametophyte
C. Zygote
D. Embryo

CORRECT ANSWER B. Gametophyte

SOURCE EXPLANATION The green independent moss plant is the gametophyte.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 149 • GLOBAL 0469 469 / BOTANY Q149 EXPECTED • PRACTICE | Master 699

In dicot stems, vascular bundles are usually arranged:

A. Scattered randomly

B. In a ring
C. Only at the center
D. Absent

CORRECT ANSWER B. In a ring

SOURCE EXPLANATION A ring of open collateral bundles characterizes the typical dicot stem.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 150 • GLOBAL 0470 470 / BOTANY Q150 EXPECTED • PRACTICE | Master 699

In an ecosystem, energy transfer between trophic levels is generally:

A. 100%
B. 90%
C. Around 10%
D. Always 50%

CORRECT ANSWER C. Around 10%

SOURCE EXPLANATION Only a small fraction of production typically becomes biomass at the next trophic level.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

BOTANY 151 • GLOBAL 0471 471 / BOTANY Q151 EXPECTED • PRACTICE | Master 699

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

CORRECT ANSWER B. Restriction endonuclease

SOURCE EXPLANATION Restriction endonucleases recognize and cut defined DNA sequences.

SOLUTION / REVISION METHOD BIOLOGY CHECK: Locate the named process in its organelle, plant tissue, life-cycle stage, or inheritance pattern. Match the definition to the question and eliminate alternatives that belong to a different stage or mechanism.

ZOOLOGY | 182 EXPLAINED MCQs

Source labels are preserved from the original compilations. Questions retain their original alternatives; answer choices and explanations are shown directly after each question.

ZOOLOGY 001 • GLOBAL 0472 472 / ZOOLOGY Q001 ADVANCED MOCK 2026 • ref Q1 | Master 699

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

CORRECT ANSWER B. 0.32

SOURCE EXPLANATION Potential energy mg(h−h′) is lost to friction μmgL, so h′ = h − μL.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 002 • GLOBAL 0473 473 / ZOOLOGY Q002 ADVANCED MOCK 2026 • ref Q2 | Master 699

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

CORRECT ANSWER D. self-replication and heredity in protocells

SOURCE EXPLANATION Momentum gives final speed (2×6)/(2+1)=4 m/s. Initial KE 36 J, final KE 24 J, so 1/3 is lost.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 003 • GLOBAL 0474 474 / ZOOLOGY Q003 ADVANCED MOCK 2026 • ref Q6 | Master 699

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

CORRECT ANSWER D. A dorsal hollow nerve cord associated with a notochord

SOURCE EXPLANATION 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.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 004 • GLOBAL 0475 475 / ZOOLOGY Q004 ADVANCED MOCK 2026 • ref Q12 | Master 699

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

CORRECT ANSWER D. nitrogenous waste removal and water balance

SOURCE EXPLANATION Nephridia remove nitrogenous wastes and regulate fluid composition through

their external openings.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 005 • GLOBAL 0476 476 / ZOOLOGY Q005 ADVANCED MOCK 2026 • ref Q14 | Master 699

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

CORRECT ANSWER C. Moist vascular skin with reduced metabolic demand

SOURCE EXPLANATION Thin, moist, well-perfused skin enables cutaneous gas exchange while submerged.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 006 • GLOBAL 0477 477 / ZOOLOGY Q006 ADVANCED MOCK 2026 • ref Q15 | Master 699

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

CORRECT ANSWER B. maintain depth in water

SOURCE EXPLANATION The swim bladder controls buoyancy; without it, a fish must swim harder to maintain depth.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 007 • GLOBAL 0478 478 / ZOOLOGY Q007 ADVANCED MOCK 2026 • ref Q17 | Master 699

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

CORRECT ANSWER B. separates pulmonary and systemic blood more completely

SOURCE EXPLANATION The mammalian four-chambered heart completely separates oxygenated and deoxygenated blood.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 008 • GLOBAL 0479 479 / ZOOLOGY Q008 2024 • ADAPTED • ref Q7 | Master 699

The rasping feeding organ of most molluscs is called the:

- **A.** Osphradium
- **B.** Radula
- **C.** Ctenidium
- **D.** Nephridium

CORRECT ANSWER B. Radula

SOURCE EXPLANATION A radula is a toothed chitinous ribbon used for scraping food.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 009 • GLOBAL 0480 480 / ZOOLOGY Q009 2024 • ADAPTED • ref Q9 | Master 699

Which vertebra of a frog primarily articulates with the skull?

- **A.** Atlas
- **B.** Axis
- **C.** Sacral vertebra
- **D.** Urostyle

CORRECT ANSWER A. Atlas

SOURCE EXPLANATION The atlas is the first vertebra and supports the skull; frogs do not have six cervical vertebrae.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 010 • GLOBAL 0481 481 / ZOOLOGY Q010 2024 • ADAPTED • ref Q16 | Master 699

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

CORRECT ANSWER D. Jointed appendages and a chitinous exoskeleton

SOURCE EXPLANATION Arthropods share segmented bodies, jointed appendages and chitinous cuticle.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 011 • GLOBAL 0482 482 / ZOOLOGY Q011 2024 • ADAPTED • ref Q20 | Master 699

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

CORRECT ANSWER A. Free heme from haemoglobin

SOURCE EXPLANATION Haemoglobin digestion releases free heme, which the parasite converts to haemozoin.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 012 • GLOBAL 0483 483 / ZOOLOGY Q012 2024 • MEMORY-BASED • ref Q25 | Master 699

Evolution of enterocoelom first occurred in:

- **A.** Mollusca
- **B.** Chordata
- **C.** Hemichordate
- **D.** Echinodermata

CORRECT ANSWER D. Echinodermata

SOURCE EXPLANATION The relevant feature of animal diversity and evolution is Echinodermata; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 013 • GLOBAL 0484 484 / ZOOLOGY Q013 2024 • ADAPTED • ref Q26 | Master 699

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

CORRECT ANSWER D. A persistent vertebral column

SOURCE EXPLANATION All chordates show core characters during development, but not all are vertebrates.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 014 • GLOBAL 0485 485 / ZOOLOGY Q014 2024 • MEMORY-BASED • ref Q27 | Master 699

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

CORRECT ANSWER D. Fossa on upper jaw and elevations on lower jaw

SOURCE EXPLANATION 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.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 015 • GLOBAL 0486 486 / ZOOLOGY Q015 2024 • MEMORY-BASED • ref Q31 | Master 699

Which of the following is not a bony fish?

- **A.** Elasmobranchii
- **B.** Teleostomi
- **C.** Lung fishes
- **D.** Coelocanths

CORRECT ANSWER A. Elasmobranchii

SOURCE EXPLANATION The relevant feature of animal diversity and evolution is Elasmobranchii; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 016 • GLOBAL 0487 487 / ZOOLOGY Q016 2024 • MEMORY-BASED • ref Q32 | Master 699

Classification of Protozoa is based on:

- **A.** Shape
- **B.** Number of nuclei
- **C.** Locomotary organelles
- **D.** Size

CORRECT ANSWER C. Locomotary organelles

SOURCE EXPLANATION The relevant feature of animal diversity and evolution is Locomotary

organelles; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 017 • GLOBAL 0488 488 / ZOOLOGY Q017 2024 • MEMORY-BASED • ref Q33 | Master 699

Which segment of Earthworm contains the male genital aperture?

- **A.** 10th
- **B.** 17th
- **C.** 18th
- **D.** 19th

CORRECT ANSWER C. 18th

SOURCE EXPLANATION The relevant feature of animal diversity and evolution is 18th; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 018 • GLOBAL 0489 489 / ZOOLOGY Q018 2024 • MEMORY-BASED • ref Q35 | Master 699

Which segments of earthworm lack setae?

- **A.** First and Last
- **B.** First three
- **C.** Clitellar
- **D.** First, last and clitellar

CORRECT ANSWER D. First, last and clitellar

SOURCE EXPLANATION The relevant feature of animal diversity and evolution is First, last and clitellar; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 019 • GLOBAL 0490 490 / ZOOLOGY Q019 2023 • MEMORY-BASED • ref Q144 | Master 699

Which of the following is true for protozoa?

- **A.** One nuclei
- **B.** One celled
- **C.** One vacuole
- **D.** Cell walled

CORRECT ANSWER B. One celled

SOURCE EXPLANATION The relevant feature of animal diversity and evolution is One celled; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 020 • GLOBAL 0491 491 / ZOOLOGY Q020 2023 • MEMORY-BASED • ref Q146 | Master 699

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

CORRECT ANSWER B. Septal excretory duct

SOURCE EXPLANATION The relevant feature of animal diversity and evolution is Septal excretory

duct; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 021 • GLOBAL 0492 492 / ZOOLOGY Q021 2023 • MEMORY-BASED • ref Q148 | Master 699

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

CORRECT ANSWER B. 2 arytenoid & 1 cricoid

SOURCE EXPLANATION The relevant feature of animal diversity and evolution is 2 arytenoid & 1 cricoid; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 022 • GLOBAL 0493 493 / ZOOLOGY Q022 2023 • MEMORY-BASED • ref Q150 | Master 699

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

CORRECT ANSWER A. In between two lobes of liver & invisible

SOURCE EXPLANATION 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.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 023 • GLOBAL 0494 494 / ZOOLOGY Q023 2023 • MEMORY-BASED • ref Q152 | Master 699

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

CORRECT ANSWER B. Vocal sacs with air resonating

SOURCE EXPLANATION The relevant feature of animal diversity and evolution is Vocal sacs with air resonating; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 024 • GLOBAL 0495 495 / ZOOLOGY Q024 2025 • MEMORY-BASED • ref Q98 | Master 699

In stomach of frog there is a mesentery. It is called

- **A.** Mesogaster
- **B.** Cardiac gaster
- **C.** Pylonicgaster
- **D.** Endogaster

CORRECT ANSWER A. Mesogaster

SOURCE EXPLANATION The relevant feature of animal diversity and evolution is Mesogaster; the

other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 025 • GLOBAL 0496 496 / ZOOLOGY Q025 2025 • ADAPTED • ref Q101 | Master 699

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

CORRECT ANSWER C. Outpocketings of the archenteron

SOURCE EXPLANATION Enterocoely occurs when archenteron pouches form mesoderm-lined cavities.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 026 • GLOBAL 0497 497 / ZOOLOGY Q026 2025 • MEMORY-BASED • ref Q107 | Master 699

What is the grinding organ in earthworm?

- **A.** Gizzard
- **B.** Pharynx
- **C.** Stomach
- **D.** Intestine

CORRECT ANSWER A. Gizzard

SOURCE EXPLANATION The relevant feature of animal diversity and evolution is Gizzard; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 027 • GLOBAL 0498 498 / ZOOLOGY Q027 2025 • MEMORY-BASED • ref Q109 | Master 699

Which one is vertebrate?

- **A.** Cuttle fish
- **B.** Globe fish
- **C.** Cray fish
- **D.** Devil fish

CORRECT ANSWER B. Globe fish

SOURCE EXPLANATION The relevant feature of animal diversity and evolution is Globe fish; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 028 • GLOBAL 0499 499 / ZOOLOGY Q028 2022 • ADAPTED • ref Q3 | Master 699

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

CORRECT ANSWER C. Female Anopheles mosquito

SOURCE EXPLANATION Gametes fuse in the mosquito gut; human stages are asexual.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical

locations, and similar-sounding biological terms.

ZOOLOGY 029 • GLOBAL 0500 500 / ZOOLOGY Q029 2026 • MODEL SET | Master 699

In older zoological classification, tetraneurous organization is associated with:

A. Annelida
B. Mollusca
C. Arthropoda
D. Echinodermata

CORRECT ANSWER B. Mollusca

SOURCE EXPLANATION Several molluscs display paired longitudinal nerve cords in textbook descriptions.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 030 • GLOBAL 0501 501 / ZOOLOGY Q030 2026 • MODEL SET | Master 699

Pectoral fins of fish and forelimbs of horses illustrate:

A. Analogous organs
B. Homologous structures
C. Vestigial structures
D. Convergent mimicry

CORRECT ANSWER B. Homologous structures

SOURCE EXPLANATION They share a common evolutionary origin despite functional differences.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 031 • GLOBAL 0502 502 / ZOOLOGY Q031 2026 • MODEL SET | Master 699

Which electric fish is a classical example of a strongly bioelectric ray?

A. Torpedo
B. Rohu
C. Labeo
D. Hippocampus

CORRECT ANSWER A. Torpedo

SOURCE EXPLANATION Electric rays such as Torpedo possess modified muscle-derived electric organs.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 032 • GLOBAL 0503 503 / ZOOLOGY Q032 2026 • MODEL SET | Master 699

An adult sea star belongs to which phylum?

A. Echinodermata
B. Annelida
C. Porifera
D. Mollusca

CORRECT ANSWER A. Echinodermata

SOURCE EXPLANATION Adult echinoderms have pentaradial organization and a water-vascular system.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 033 • GLOBAL 0504 504 / ZOOLOGY Q033 2026 • MODEL SET | Master 699

A frog's vocal sacs principally function as:

- **A.** Air resonators
- **B.** External ears
- **C.** Digestive sacs
- **D.** Excretory reservoirs

CORRECT ANSWER A. Air resonators

SOURCE EXPLANATION Vocal sacs amplify and resonate croaks during communication.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 034 • GLOBAL 0505 505 / ZOOLOGY Q034 ADVANCED MOCK 2026 • ref Q3 | Master 699

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

CORRECT ANSWER A. its early reproductive gain exceeds its later cost

SOURCE EXPLANATION For a circular orbit $v = \sqrt{(GM/r)}$ decreases with radius, while $E = -GMm/(2r)$ becomes less negative.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 035 • GLOBAL 0506 506 / ZOOLOGY Q035 ADVANCED MOCK 2026 • ref Q4 | Master 699

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

CORRECT ANSWER A. It is more consistent with Aschelminthes than Platyhelminthes

SOURCE EXPLANATION Nematodes have a fluid-filled pseudocoelom not fully lined with mesoderm, unlike true coelomates.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 036 • GLOBAL 0507 507 / ZOOLOGY Q036 ADVANCED MOCK 2026 • ref Q5 | Master 699

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

CORRECT ANSWER B. secondary radial symmetry in the adult lineage

SOURCE EXPLANATION Echinoderms develop bilateral larvae and secondary radial adult symmetry, showing their deuterostome heritage.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 037 • GLOBAL 0508 508 / ZOOLOGY Q037 ADVANCED MOCK 2026 • ref Q9 | Master 699

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

CORRECT ANSWER D. Dense regular collagen has limited vascularity and few cells

SOURCE EXPLANATION Dense regular collagen is sparsely cellular and poorly vascularized, limiting repair speed.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 038 • GLOBAL 0509 509 / ZOOLOGY Q038 ADVANCED MOCK 2026 • ref Q10 | Master 699

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

CORRECT ANSWER C. loss of some cytoplasm during secretion

SOURCE EXPLANATION Apocrine release sheds apical cytoplasm; merocrine secretion releases material by exocytosis.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 039 • GLOBAL 0510 510 / ZOOLOGY Q039 ADVANCED MOCK 2026 • ref Q11 | Master 699

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

CORRECT ANSWER C. saltatory propagation between nodes is impaired

SOURCE EXPLANATION Demyelination disrupts rapid saltatory conduction at nodes of Ranvier.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 040 • GLOBAL 0511 511 / ZOOLOGY Q040 ADVANCED MOCK 2026 • ref Q16 | Master 699

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

CORRECT ANSWER A. airflow through parabronchi is largely unidirectional

SOURCE EXPLANATION Unidirectional air flow through parabronchi sustains oxygen transfer during both breathing phases.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 041 • GLOBAL 0512 512 / ZOOLOGY Q041 ADVANCED MOCK 2026 • ref Q18 | Master 699

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

CORRECT ANSWER D. arterial carbon dioxide and hydrogen ion drive

SOURCE EXPLANATION Hyperventilation reduces arterial CO_2 and delays activation of central respiratory chemoreceptors.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 042 • GLOBAL 0513 513 / ZOOLOGY Q042 ADVANCED MOCK 2026 • ref Q20 | Master 699

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

CORRECT ANSWER A. reduces reabsorption of tissue fluid at the venous end

SOURCE EXPLANATION Lower plasma protein reduces colloid osmotic pressure, promoting net filtration into interstitial tissue.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 043 • GLOBAL 0514 514 / ZOOLOGY Q043 ADVANCED MOCK 2026 • ref Q21 | Master 699

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

CORRECT ANSWER D. a right shift and reduced haemoglobin affinity

SOURCE EXPLANATION High CO_2, temperature and low pH shift haemoglobin's O_2-dissociation curve right (Bohr effect).

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 044 • GLOBAL 0515 515 / ZOOLOGY Q044 ADVANCED MOCK 2026 • ref Q22 | Master 699

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

CORRECT ANSWER A. A slower but coordinated rhythm

SOURCE EXPLANATION The SA node normally initiates the heartbeat by spontaneous depolarization.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological

mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 045 • GLOBAL 0516 516 / ZOOLOGY Q045 ADVANCED MOCK 2026 • ref Q23 | Master 699

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

CORRECT ANSWER A. Bile delivery plus pancreatic enzyme secretion

SOURCE EXPLANATION Fat stimulates bile delivery and pancreatic lipase secretion to emulsify and digest triglycerides.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 046 • GLOBAL 0517 517 / ZOOLOGY Q046 ADVANCED MOCK 2026 • ref Q24 | Master 699

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

CORRECT ANSWER D. reduced insulin and impaired cellular glucose uptake

SOURCE EXPLANATION Pancreatic β-cells make insulin; damage decreases insulin and impairs glucose uptake.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 047 • GLOBAL 0518 518 / ZOOLOGY Q047 ADVANCED MOCK 2026 • ref Q25 | Master 699

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

CORRECT ANSWER C. increased collecting-duct water permeability and concentrated urine

SOURCE EXPLANATION ADH increases aquaporin insertion in collecting ducts, increasing water reabsorption.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 048 • GLOBAL 0519 519 / ZOOLOGY Q048 ADVANCED MOCK 2026 • ref Q26 | Master 699

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

CORRECT ANSWER C. synaptic vesicle fusion and transmitter release

SOURCE EXPLANATION Calcium entry triggers synaptic vesicle fusion; without extracellular Ca^{2+} transmitter release fails.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical

locations, and similar-sounding biological terms.

ZOOLOGY 049 • GLOBAL 0520 520 / ZOOLOGY Q049 ADVANCED MOCK 2026 • ref Q28 | Master 699

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

CORRECT ANSWER B. circular iris muscle contraction and pupil constriction

SOURCE EXPLANATION Bright light contracts circular sphincter-pupillae muscle, constricting the pupil.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 050 • GLOBAL 0521 521 / ZOOLOGY Q050 ADVANCED MOCK 2026 • ref Q30 | Master 699

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

CORRECT ANSWER D. TSH secretion from the pituitary

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is TSH secretion from the pituitary; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 051 • GLOBAL 0522 522 / ZOOLOGY Q051 ADVANCED MOCK 2026 • ref Q32 | Master 699

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

CORRECT ANSWER A. meiosis I but not meiosis II

SOURCE EXPLANATION 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.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 052 • GLOBAL 0523 523 / ZOOLOGY Q052 ADVANCED MOCK 2026 • ref Q33 | Master 699

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

CORRECT ANSWER A. induces host adaptive immune memory

SOURCE EXPLANATION Target alteration or absence can prevent penicillin from binding its normal bacterial enzyme target.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical

locations, and similar-sounding biological terms.

ZOOLOGY 053 • GLOBAL 0524 524 / ZOOLOGY Q053 ADVANCED MOCK 2026 • ref Q34 | Master 699

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

CORRECT ANSWER D. memory lymphocytes formed after the first exposure

SOURCE EXPLANATION 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.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 054 • GLOBAL 0525 525 / ZOOLOGY Q054 ADVANCED MOCK 2026 • ref Q35 | Master 699

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

CORRECT ANSWER B. uses host-cell machinery and lacks bacterial targets

SOURCE EXPLANATION 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.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 055 • GLOBAL 0526 526 / ZOOLOGY Q055 ADVANCED MOCK 2026 • ref Q36 | Master 699

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

CORRECT ANSWER B. coordinate activation of multiple immune cell types

SOURCE EXPLANATION 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.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 056 • GLOBAL 0527 527 / ZOOLOGY Q056 ADVANCED MOCK 2026 • ref Q37 | Master 699

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

CORRECT ANSWER D. a specific nucleic-acid sequence

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is a specific nucleic-acid sequence; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological

mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 057 • GLOBAL 0528 528 / ZOOLOGY Q057 ADVANCED MOCK 2026 • ref Q38 | Master 699

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

CORRECT ANSWER C. each additional independent match reduces chance coincidence

SOURCE EXPLANATION 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.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 058 • GLOBAL 0529 529 / ZOOLOGY Q058 ADVANCED MOCK 2026 • ref Q39 | Master 699

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

CORRECT ANSWER A. a trophic cascade

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is a trophic cascade; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 059 • GLOBAL 0530 530 / ZOOLOGY Q059 ADVANCED MOCK 2026 • ref Q40 | Master 699

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

CORRECT ANSWER D. genetic drift through a bottleneck

SOURCE EXPLANATION A sudden severe population reduction changes allele frequencies by chance, known as the bottleneck form of genetic drift.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 060 • GLOBAL 0531 531 / ZOOLOGY Q060 2024 • MEMORY-BASED • ref Q1 | Master 699

Water vascular system is found in:

- **A.** Mollusca
- **B.** Cnidaria (Coelenterata)
- **C.** Echinodermata
- **D.** Chordata

CORRECT ANSWER C. Echinodermata

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is

Echinodermata; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 061 • GLOBAL 0532 532 / ZOOLOGY Q061 2024 • ADAPTED • ref Q3 | Master 699

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

CORRECT ANSWER A. It did not explain the origin and inheritance of genetic variation

SOURCE EXPLANATION Mendelian genetics and mutation supplied mechanisms of variation and inheritance that Darwin did not know.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 062 • GLOBAL 0533 533 / ZOOLOGY Q062 2024 • ADAPTED • ref Q6 | Master 699

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

CORRECT ANSWER B. Homo erectus

SOURCE EXPLANATION Homo erectus is commonly associated with early controlled fire use, though dating remains debated.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 063 • GLOBAL 0534 534 / ZOOLOGY Q063 2024 • ADAPTED • ref Q8 | Master 699

Nocturnal itching around the anus in children most characteristically suggests infection by:

- **A.** Taenia solium
- **B.** Enterobius vermicularis
- **C.** Ascaris lumbricoides
- **D.** Wuchereria bancrofti

CORRECT ANSWER B. Enterobius vermicularis

SOURCE EXPLANATION Female pinworms deposit eggs around the anus at night, causing itching.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 064 • GLOBAL 0535 535 / ZOOLOGY Q064 2024 • ADAPTED • ref Q11 | Master 699

Which tissue stores triglycerides and reduces heat loss by insulation?

- **A.** Nervous tissue
- **B.** Adipose tissue
- **C.** Skeletal muscle
- **D.** Hyaline cartilage

CORRECT ANSWER B. Adipose tissue

SOURCE EXPLANATION Adipocytes store fat and provide thermal insulation.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical

locations, and similar-sounding biological terms.

ZOOLOGY 065 • GLOBAL 0536 536 / ZOOLOGY Q065 2024 • MEMORY-BASED • ref Q13 | Master 699

Pseudostratified epithelium is found in?

- **A.** Trachea
- **B.** Stomach
- **C.** Larynx
- **D.** Blood vessels

CORRECT ANSWER A. Trachea

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Trachea; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 066 • GLOBAL 0537 537 / ZOOLOGY Q066 2024 • ADAPTED • ref Q14 | Master 699

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

CORRECT ANSWER B. Maintain secretory endometrium

SOURCE EXPLANATION Progesterone prepares and maintains the uterine lining for possible implantation.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 067 • GLOBAL 0538 538 / ZOOLOGY Q067 2024 • ADAPTED • ref Q15 | Master 699

Which specialized epithelium lines the urinary bladder?

- **A.** Simple cuboidal
- **B.** Transitional (urothelium)
- **C.** Stratified squamous keratinized
- **D.** Ciliated columnar

CORRECT ANSWER B. Transitional (urothelium)

SOURCE EXPLANATION Urothelium stretches while protecting underlying tissue from urine.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 068 • GLOBAL 0539 539 / ZOOLOGY Q068 2024 • MEMORY-BASED • ref Q18 | Master 699

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

CORRECT ANSWER B. Signet ring stage

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Signet ring stage; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 069 • GLOBAL 0540 540 / ZOOLOGY Q069 2024 • ADAPTED • ref Q19 | Master 699

Which glandular secretion involves complete breakdown of the secretory cell?

- **A.** Merocrine
- **B.** Apocrine
- **C.** Holocrine
- **D.** Endocrine

CORRECT ANSWER C. Holocrine

SOURCE EXPLANATION Holocrine secretion releases product when secretory cells disintegrate; sebaceous glands are examples.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 070 • GLOBAL 0541 541 / ZOOLOGY Q070 2024 • MEMORY-BASED • ref Q21 | Master 699

Response to touch is called:

- **A.** Rheotaxis
- **B.** Phototaxis
- **C.** Thermotaxis
- **D.** Thigmotaxis

CORRECT ANSWER D. Thigmotaxis

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Thigmotaxis; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 071 • GLOBAL 0542 542 / ZOOLOGY Q071 2024 • MEMORY-BASED • ref Q23 | Master 699

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

CORRECT ANSWER A. Bile pigments secreted by liver

SOURCE EXPLANATION Draw a family tree and follow each relationship one link at a time.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 072 • GLOBAL 0543 543 / ZOOLOGY Q072 2024 • MEMORY-BASED • ref Q24 | Master 699

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

CORRECT ANSWER B. IVF

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is IVF; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 073 • GLOBAL 0544 544 / ZOOLOGY Q073 2024 • MEMORY-BASED • ref Q28 | Master 699

Which of the following drug is correctly matched with its category?

A. Amphetamine - Stimulant
B. Benzodiazepam – Analgesic
C. LSD – Narcotic
D. Morphine – Psychidelic drug

CORRECT ANSWER A. Amphetamine - Stimulant

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Amphetamine - Stimulant; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 074 • GLOBAL 0545 545 / ZOOLOGY Q074 2024 • MEMORY-BASED • ref Q29 | Master 699

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

CORRECT ANSWER A. Pacinian corpuscles – Fast vibration

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Pacinian corpuscles – Fast vibration; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 075 • GLOBAL 0546 546 / ZOOLOGY Q075 2024 • MEMORY-BASED • ref Q30 | Master 699

What is the primary function of smooth muscle?

A. Voluntary movement
B. Pumping of blood
C. Involuntary movement of hollow organs
D. Locomotion

CORRECT ANSWER C. Involuntary movement of hollow organs

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Involuntary movement of hollow organs; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 076 • GLOBAL 0547 547 / ZOOLOGY Q076 2024 • MEMORY-BASED • ref Q37 | Master 699

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

CORRECT ANSWER A. Acts as Antioxidant

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Acts as Antioxidant; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 077 • GLOBAL 0548 548 / ZOOLOGY Q077 2024 • MEMORY-BASED • ref Q39 | Master 699

Which of the following protein helps in transportation?

- **A.** Keratin
- **B.** Albumin
- **C.** Ricin
- **D.** Actin

CORRECT ANSWER B. Albumin

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Albumin; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 078 • GLOBAL 0549 549 / ZOOLOGY Q078 2024 • ADAPTED • ref Q40 | Master 699

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

CORRECT ANSWER B. Reduced risk of severe falciparum malaria

SOURCE EXPLANATION Heterozygosity can reduce severe malaria risk, helping maintain the allele by balancing selection.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 079 • GLOBAL 0550 550 / ZOOLOGY Q079 2023 • ADAPTED • ref Q141 | Master 699

Ascaris is correctly described as:

- **A.** Truly coelomate and metameric
- **B.** Truly coelomate and unsegmented
- **C.** Acoelomate and metameric
- **D.** Pseudocoelomate and unsegmented

CORRECT ANSWER D. Pseudocoelomate and unsegmented

SOURCE EXPLANATION Ascaris is a nematode with a pseudocoelom and no metameric segmentation.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 080 • GLOBAL 0551 551 / ZOOLOGY Q080 2023 • ADAPTED • ref Q143 | Master 699

Which mammalian group generally lacks external ear pinnae?

- **A.** Primates
- **B.** Monotremes
- **C.** Marsupials
- **D.** Placental mammals

CORRECT ANSWER B. Monotremes

SOURCE EXPLANATION Monotremes such as platypuses lack prominent external pinnae.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 081 • GLOBAL 0552 552 / ZOOLOGY Q081 2023 • MEMORY-BASED • ref Q145 | Master 699

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

CORRECT ANSWER A. Ancylostoma

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Ancylostoma; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 082 • GLOBAL 0553 553 / ZOOLOGY Q082 2023 • MEMORY-BASED • ref Q147 | Master 699

Chloragogen cells is analogous to?

- **A.** Kidney of vertebrates
- **B.** Liver of vertebrates
- **C.** Gut of vertebrates
- **D.** Lungs of vertebrates

CORRECT ANSWER B. Liver of vertebrates

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Liver of vertebrates; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 083 • GLOBAL 0554 554 / ZOOLOGY Q083 EXPECTED • PRACTICE | Master 699

Which animal normally walks on its toes rather than on the whole sole?

- **A.** Human
- **B.** Bear
- **C.** Cat
- **D.** Elephant

CORRECT ANSWER C. Cat

SOURCE EXPLANATION Cats are digitigrade; humans and bears are plantigrade.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 084 • GLOBAL 0555 555 / ZOOLOGY Q084 2023 • MEMORY-BASED • ref Q153 | Master 699

During starvation, which of the following of hydra is highly vacuolated?

- **A.** Musculo-epithelial
- **B.** Musculo-nutritive
- **C.** Secretive cell
- **D.** Gland cell

CORRECT ANSWER B. Musculo-nutritive

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Musculo-nutritive; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 085 • GLOBAL 0556 556 / ZOOLOGY Q085 2023 • MEMORY-BASED • ref Q156 | Master 699

Which of the following is first form of life?

- **A.** Cyanobacteria
- **B.** Chemoheterotroph
- **C.** Photoautotrophs
- **D.** Autotrophs

CORRECT ANSWER B. Chemoheterotroph

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Chemoheterotroph; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 086 • GLOBAL 0557 557 / ZOOLOGY Q086 2023 • MEMORY-BASED • ref Q159 | Master 699

Eustachian valve found in?

- **A.** Superior Vena Cava
- **B.** Interior Vena Cava
- **C.** Pulmonary vein
- **D.** aorta

CORRECT ANSWER B. Interior Vena Cava

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Interior Vena Cava; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 087 • GLOBAL 0558 558 / ZOOLOGY Q087 2023 • MEMORY-BASED • ref Q160 | Master 699

High altitude sickness is due to:

- **A.** Partial pressure of oxygen
- **B.** Carbon dioxide
- **C.** Dehydration
- **D.** Decrease efficiency of hemoglobin

CORRECT ANSWER A. Partial pressure of oxygen

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Partial pressure of oxygen; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 088 • GLOBAL 0559 559 / ZOOLOGY Q088 2023 • MEMORY-BASED • ref Q163 | Master 699

Areolar tissue is present in between:

- **A.** Bone & fat body
- **B.** Bone & muscle
- **C.** Integument & muscle
- **D.** Muscle & fat body

CORRECT ANSWER C. Integument & muscle

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Integument & muscle; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 089 • GLOBAL 0560 560 / ZOOLOGY Q089 2023 • MEMORY-BASED • ref Q165 | Master 699

Thermoregulatory center is:

- **A.** Hypothalamus
- **B.** Diencephalon
- **C.** Cerebellum
- **D.** cerebrum

CORRECT ANSWER A. Hypothalamus

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Hypothalamus; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 090 • GLOBAL 0561 561 / ZOOLOGY Q090 2023 • MEMORY-BASED • ref Q166 | Master 699

Which of the following protects body?

- **A.** Epithelial tissue
- **B.** Connective tissue
- **C.** Nervous tissue
- **D.** Muscular tissue

CORRECT ANSWER A. Epithelial tissue

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Epithelial tissue; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 091 • GLOBAL 0562 562 / ZOOLOGY Q091 2023 • MEMORY-BASED • ref Q167 | Master 699

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

CORRECT ANSWER A. Glomerular hydrostatic pressure exceeding colloidal osmotic & capsular hydrostatic pressure

SOURCE EXPLANATION 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.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 092 • GLOBAL 0563 563 / ZOOLOGY Q092 2023 • MEMORY-BASED • ref Q171 | Master 699

Which of the following is stretchable tissue?

- **A.** Columnar
- **B.** Squamous
- **C.** Cuboidal
- **D.** Transitional

CORRECT ANSWER D. Transitional

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Transitional; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical

locations, and similar-sounding biological terms.

ZOOLOGY 093 • GLOBAL 0564 564 / ZOOLOGY Q093 2023 • MEMORY-BASED • ref Q173 | Master 699

Wharton's duct present in:

- **A.** Submandibular gland
- **B.** Parotid gland
- **C.** Sub lingual gland
- **D.** Infraorbital gland

CORRECT ANSWER A. Submandibular gland

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Submandibular gland; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 094 • GLOBAL 0565 565 / ZOOLOGY Q094 2023 • MEMORY-BASED • ref Q174 | Master 699

Sudden reappearance of ancestral character is:

- **A.** Vestigial organ
- **B.** Atavism
- **C.** Homologous organ
- **D.** Analogous organ

CORRECT ANSWER B. Atavism

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Atavism; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 095 • GLOBAL 0566 566 / ZOOLOGY Q095 2023 • ADAPTED • ref Q177 | Master 699

Amphetamine is classified pharmacologically as a:

- **A.** Depressant
- **B.** Stimulant
- **C.** Opioid analgesic
- **D.** General anesthetic

CORRECT ANSWER B. Stimulant

SOURCE EXPLANATION Amphetamine is a central nervous system stimulant.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 096 • GLOBAL 0567 567 / ZOOLOGY Q096 2023 • MEMORY-BASED • ref Q179 | Master 699

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

CORRECT ANSWER B. Radial symmetry

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Radial symmetry; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 097 • GLOBAL 0568 568 / ZOOLOGY Q097 2023 • MEMORY-BASED • ref Q180 | Master 699

The metal present in vitamin B12 is

- **A.** Ferrous
- **B.** Zinc
- **C.** Copper
- **D.** Cobalt

CORRECT ANSWER D. Cobalt

SOURCE EXPLANATION Vitamin B12 supports normal DNA synthesis during red-cell maturation.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 098 • GLOBAL 0569 569 / ZOOLOGY Q098 2025 • MEMORY-BASED • ref Q96 | Master 699

Areolar tissue connects?

- **A.** Muscles to bone
- **B.** Bone to bone
- **C.** Integuments with muscle
- **D.** Fat with bone

CORRECT ANSWER C. Integuments with muscle

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Integuments with muscle; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 099 • GLOBAL 0570 570 / ZOOLOGY Q099 2025 • MEMORY-BASED • ref Q97 | Master 699

Intestinal caeca is present in which segment?

- **A.** 224 sesinent
- **B.** 26" segment
- **C.** 20" segment
- **D.** 21th segment

CORRECT ANSWER B. 26" segment

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is 26" segment; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 100 • GLOBAL 0571 571 / ZOOLOGY Q100 2025 • MEMORY-BASED • ref Q99 | Master 699

Iodine deficiency in tadpole causes?

- **A.** Increase in metamorphosis
- **B.** Delay in metamorphosis
- **C.** Stop in metamorphosis
- **D.** Death of the tadpole

CORRECT ANSWER B. Delay in metamorphosis

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Delay in metamorphosis; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 101 • GLOBAL 0572 572 / ZOOLOGY Q101 2025 • MEMORY-BASED • ref Q102 | Master 699

Voluntary control and balancing is done by?

- **A.** Cerebrum
- **B.** Cerebellum
- **C.** Pons varolli
- **D.** Medulla oblongata

CORRECT ANSWER B. Cerebellum

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Cerebellum; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 102 • GLOBAL 0573 573 / ZOOLOGY Q102 2025 • MEMORY-BASED • ref Q105 | Master 699

Intraocular pressure is measure by?

- **A.** Tonometer
- **B.** Barometer
- **C.** Sphygmomanoter
- **D.** Spirometer

CORRECT ANSWER A. Tonometer

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Tonometer; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 103 • GLOBAL 0574 574 / ZOOLOGY Q103 2025 • MEMORY-BASED • ref Q106 | Master 699

Which of the following gland is '4s' gland?

- **A.** Adrenal
- **B.** Pituitary
- **C.** Hypothalamus
- **D.** Thymus

CORRECT ANSWER A. Adrenal

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Adrenal; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 104 • GLOBAL 0575 575 / ZOOLOGY Q104 2025 • MEMORY-BASED • ref Q108 | Master 699

Recapitulation theory is proposed by

- **A.** E.P odwn
- **B.** Ernst Haeckel
- **C.** AG. Tansigy
- **D.** Linnaeous

CORRECT ANSWER B. Ernst Haeckel

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Ernst Haeckel; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 105 • GLOBAL 0576 576 / ZOOLOGY Q105 2025 • ADAPTED • ref Q110 | Master 699

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

CORRECT ANSWER B. Activate trypsinogen to trypsin

SOURCE EXPLANATION Enteropeptidase activates trypsinogen; it is not principally a nutrient-digesting hydrolase.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 106 • GLOBAL 0577 577 / ZOOLOGY Q106 2025 • MEMORY-BASED • ref Q111 | Master 699

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

CORRECT ANSWER A. Ascon, Sycon, Leucon

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Ascon, Sycon, Leucon; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 107 • GLOBAL 0578 578 / ZOOLOGY Q107 2022 • ADAPTED • ref Q5 | Master 699

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

CORRECT ANSWER B. P. malariae

SOURCE EXPLANATION P. malariae has a 72-hour erythrocytic cycle, often giving quartan fever; incubation intervals overlap among species.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 108 • GLOBAL 0579 579 / ZOOLOGY Q108 2022 • ADAPTED • ref Q7 | Master 699

Marked deficiency of plasma albumin primarily increases risk of:

- **A.** Oedema
- **B.** Persistent hypertension
- **C.** Polycythaemia
- **D.** Hypercalcaemia

CORRECT ANSWER A. Oedema

SOURCE EXPLANATION Loss of plasma oncotic pressure allows more fluid to remain in interstitial tissues.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 109 • GLOBAL 0580 580 / ZOOLOGY Q109 2022 • MEMORY-BASED • ref Q11 | Master 699

Pump)Wfg of Na & K involves

- **A.** Active transport
- **B.** Facilitated diffusion
- **C.** Passive transport
- **D.** Simple diffusion

CORRECT ANSWER A. Active transport

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Active transport; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 110 • GLOBAL 0581 581 / ZOOLOGY Q110 2022 • MEMORY-BASED • ref Q12 | Master 699

Which is homologous to penis in female?

- **A.** Labia majora
- **B.** Labia minora 23
- **C.** Clitoris
- **D.** Vulva

CORRECT ANSWER C. Clitoris

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Clitoris; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 111 • GLOBAL 0582 582 / ZOOLOGY Q111 2022 • ADAPTED • ref Q13 | Master 699

Aldosterone is secreted from which layer of the adrenal cortex?

- **A.** Zona glomerulosa
- **B.** Zona fasciculata
- **C.** Zona reticularis
- **D.** Adrenal medulla

CORRECT ANSWER A. Zona glomerulosa

SOURCE EXPLANATION Mineralocorticoid aldosterone is secreted chiefly by the zona glomerulosa.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 112 • GLOBAL 0583 583 / ZOOLOGY Q112 2022 • MEMORY-BASED • ref Q14 | Master 699

Horns of Rhinoceros are modified form of

- **A.** Epidermis
- **B.** Mesodermal tissues
- **C.** Odontoblast
- **D.** Matted hairs

CORRECT ANSWER D. Matted hairs

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Matted hairs; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 113 • GLOBAL 0584 584 / ZOOLOGY Q113 2022 • MEMORY-BASED • ref Q21 | Master 699

Signet ring stage is present in

- **A.** erythrocytic
- **B.** pre-erythrocytic
- **C.** exo-erythrocytic
- **D.** sporogony

CORRECT ANSWER A. erythrocytic

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is erythrocytic; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 114 • GLOBAL 0585 585 / ZOOLOGY Q114 2022 • ADAPTED • ref Q25 | Master 699

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

CORRECT ANSWER B. Placental mammals (Eutheria)

SOURCE EXPLANATION Eutherians have a well-developed chorioallantoic placenta.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 115 • GLOBAL 0586 586 / ZOOLOGY Q115 2022 • ADAPTED • ref Q26 | Master 699

The main central regulator of mammalian body temperature is the:

- **A.** Cerebellum
- **B.** Medulla only
- **C.** Hypothalamus
- **D.** Spinal cord

CORRECT ANSWER C. Hypothalamus

SOURCE EXPLANATION The hypothalamus integrates thermal afferents and effector responses.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 116 • GLOBAL 0587 587 / ZOOLOGY Q116 2022 • MEMORY-BASED • ref Q29 | Master 699

Haversian canals are inter connected by

- **A.** Lamellae
- **B.** Canaliculi ,
- **C.** Volkmann's canal
- **D.** Lacunae

CORRECT ANSWER C. Volkmann's canal

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is Volkmann's canal; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 117 • GLOBAL 0588 588 / ZOOLOGY Q117 2022 • MEMORY-BASED • ref Q33 | Master 699

In viral infection the substance secreted in body Is

- **A.** serotonin
- **B.** histamine
- **C.** interferon
- **D.** heparin 5

CORRECT ANSWER C. interferon

SOURCE EXPLANATION The relevant feature of tissues, ecology and applied zoology is interferon; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 118 • GLOBAL 0589 589 / ZOOLOGY Q118 2022 • ADAPTED • ref Q34 | Master 699

Branched striated muscle fibers with intercalated discs are characteristic of:

- **A.** Smooth muscle
- **B.** Cardiac muscle
- **C.** Skeletal muscle
- **D.** Cartilage

CORRECT ANSWER B. Cardiac muscle

SOURCE EXPLANATION Intercalated discs connect cardiomyocytes electrically and mechanically.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 119 • GLOBAL 0590 590 / ZOOLOGY Q119 2022 • ADAPTED • ref Q35 | Master 699

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

CORRECT ANSWER B. Bicarbonate ions in plasma

SOURCE EXPLANATION Most blood CO_2 is converted to bicarbonate by carbonic anhydrase, then carried in plasma.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 120 • GLOBAL 0591 591 / ZOOLOGY Q120 2022 • MEMORY-BASED • ref Q36 | Master 699

Graafian follicle is present in

- **A.** ovary of frog
- **B.** _ testes of frog
- **C.** testes of man
- **D.** ovary of human

CORRECT ANSWER D. ovary of human

SOURCE EXPLANATION A mature Graafian follicle develops in the ovarian cortex.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 121 • GLOBAL 0592 592 / ZOOLOGY Q121 2026 • MODEL SET | Master 699

The pluripotent regenerative stem-like cells of planarians are called:

- **A.** Choanocytes

B. Cnidocytes
C. Neoblasts
D. Amoebocytes

CORRECT ANSWER C. Neoblasts

SOURCE EXPLANATION Planarian neoblasts enable extensive regeneration.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 122 • GLOBAL 0593 593 / ZOOLOGY Q122 2026 • MODEL SET | Master 699

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

CORRECT ANSWER D. Parietal cell

SOURCE EXPLANATION Intrinsic factor permits vitamin B12 absorption, which supports erythropoiesis.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 123 • GLOBAL 0594 594 / ZOOLOGY Q123 2026 • MODEL SET | Master 699

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

CORRECT ANSWER B. Neurogenic shock

SOURCE EXPLANATION Loss of sympathetic tone produces vasodilation and hypotension.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 124 • GLOBAL 0595 595 / ZOOLOGY Q124 2026 • MODEL SET | Master 699

Which ABO/Rh group is the conventional universal red-cell donor?

A. O positive
B. O negative
C. AB positive
D. AB negative

CORRECT ANSWER B. O negative

SOURCE EXPLANATION O-negative RBCs lack A, B and Rh D antigens, though compatibility testing remains essential.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 125 • GLOBAL 0596 596 / ZOOLOGY Q125 2026 • MODEL SET | Master 699

Which central nervous-system glial cell forms myelin?

A. Oligodendrocyte
B. Schwann cell
C. Astrocyte

D. Microglial cell

CORRECT ANSWER A. Oligodendrocyte

SOURCE EXPLANATION Oligodendrocytes myelinate CNS axons; Schwann cells serve peripheral axons.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 126 • GLOBAL 0597 597 / ZOOLOGY Q126 2026 • MODEL SET | Master 699

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

CORRECT ANSWER D. Competitive exclusion principle

SOURCE EXPLANATION Strong competition eliminates one species unless niches differentiate.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 127 • GLOBAL 0598 598 / ZOOLOGY Q127 2026 • MODEL SET | Master 699

Cristae and maculae of the vestibular apparatus help maintain:

A. Hearing only
B. Vision
C. Equilibrium
D. Smell

CORRECT ANSWER C. Equilibrium

SOURCE EXPLANATION Cristae sense angular acceleration; maculae sense linear acceleration and head position.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 128 • GLOBAL 0599 599 / ZOOLOGY Q128 2026 • MODEL SET | Master 699

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

CORRECT ANSWER C. Olfactory bulb

SOURCE EXPLANATION Olfactory sensory information projects first to olfactory bulbs.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 129 • GLOBAL 0600 600 / ZOOLOGY Q129 2026 • MODEL SET | Master 699

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

CORRECT ANSWER D. 3 Na+ out and 2 K+ in

SOURCE EXPLANATION Na+/K+-ATPase uses ATP to move three Na+ out for two K+ in.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 130 • GLOBAL 0601 601 / ZOOLOGY Q130 2026 • MODEL SET | Master 699

A water-vascular system is characteristic of:

A. Echinodermata
B. Cnidaria
C. Annelida
D. Mollusca

CORRECT ANSWER A. Echinodermata

SOURCE EXPLANATION Tube feet and the hydraulic water-vascular network are defining echinoderm traits.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 131 • GLOBAL 0602 602 / ZOOLOGY Q131 2026 • MODEL SET | Master 699

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

CORRECT ANSWER D. Tissue factor–triggered coagulation cascade

SOURCE EXPLANATION The extrinsic pathway initiated by tissue factor helps activate factor X and thrombin formation.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 132 • GLOBAL 0603 603 / ZOOLOGY Q132 2026 • MODEL SET | Master 699

The principal catecholamine associated with the immediate fight-or-flight response is:

A. Thyroxine
B. Calcitonin
C. Aldosterone
D. Adrenaline

CORRECT ANSWER D. Adrenaline

SOURCE EXPLANATION The adrenal medulla releases adrenaline during acute sympathetic activation.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 133 • GLOBAL 0604 604 / ZOOLOGY Q133 2026 • MODEL SET | Master 699

Regenerative cells in sponges are called:

A. Archaeocytes
B. Osteocytes
C. Cnidocytes
D. Erythrocytes

CORRECT ANSWER A. Archaeocytes

SOURCE EXPLANATION Archaeocytes are mobile, often totipotent sponge cells.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 134 • GLOBAL 0605 605 / ZOOLOGY Q134 2026 • MODEL SET | Master 699

Mitochondrial inheritance is typically categorized as:

- **A.** Autosomal dominant
- **B.** Cytoplasmic inheritance
- **C.** Sex-linked nuclear inheritance
- **D.** Polygenic inheritance

CORRECT ANSWER B. Cytoplasmic inheritance

SOURCE EXPLANATION Most mitochondrial genes are inherited through the egg cytoplasm.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 135 • GLOBAL 0606 606 / ZOOLOGY Q135 ADVANCED MOCK 2026 • ref Q7 | Master 699

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

CORRECT ANSWER B. Arachnida

SOURCE EXPLANATION Book lungs are characteristic respiratory structures of various arachnids.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 136 • GLOBAL 0607 607 / ZOOLOGY Q136 ADVANCED MOCK 2026 • ref Q8 | Master 699

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

CORRECT ANSWER D. transitional epithelium with shape-changing superficial cells

SOURCE EXPLANATION Transitional epithelium changes superficial cell shape during bladder distension while remaining sealed.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 137 • GLOBAL 0608 608 / ZOOLOGY Q137 ADVANCED MOCK 2026 • ref Q13 | Master 699

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

CORRECT ANSWER A. tracheal delivery, not blood transport, supplies most tissues

SOURCE EXPLANATION Insects deliver gases mainly through a tracheal system rather than using

haemolymph for oxygen transport.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 138 • GLOBAL 0609 609 / ZOOLOGY Q138 ADVANCED MOCK 2026 • ref Q19 | Master 699

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

CORRECT ANSWER A. lower glomerular pressure and lower filtration

SOURCE EXPLANATION Constriction of an afferent arteriole decreases glomerular capillary hydrostatic pressure, usually lowering GFR.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 139 • GLOBAL 0610 610 / ZOOLOGY Q139 ADVANCED MOCK 2026 • ref Q27 | Master 699

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

CORRECT ANSWER A. Loss of sensory input with motor output relatively preserved

SOURCE EXPLANATION Dorsal roots carry sensory afferents; ventral roots carry motor efferents.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 140 • GLOBAL 0611 611 / ZOOLOGY Q140 ADVANCED MOCK 2026 • ref Q29 | Master 699

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

CORRECT ANSWER B. Blood Ca^{2+} falls and neuromuscular excitability may rise

SOURCE EXPLANATION Loss of PTH lowers extracellular calcium and can increase neuromuscular irritability.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 141 • GLOBAL 0612 612 / ZOOLOGY Q141 ADVANCED MOCK 2026 • ref Q31 | Master 699

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

CORRECT ANSWER A. Androgen production and sperm maturation are distinct functions

SOURCE EXPLANATION 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.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 142 • GLOBAL 0613 613 / ZOOLOGY Q142 2024 • ADAPTED • ref Q2 | Master 699

Which nitrogenous waste is the principal nitrogen excretory product in adult humans?

- **A.** Ammonia
- **B.** Urea
- **C.** Uric acid
- **D.** Guanine

CORRECT ANSWER B. Urea

SOURCE EXPLANATION Humans are predominantly ureotelic; the liver converts ammonia to urea.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 143 • GLOBAL 0614 614 / ZOOLOGY Q143 2024 • ADAPTED • ref Q4 | Master 699

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

CORRECT ANSWER B. Controlled use of fire

SOURCE EXPLANATION Controlled fire improved warmth, protection, and food preparation during human evolution.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 144 • GLOBAL 0615 615 / ZOOLOGY Q144 2024 • ADAPTED • ref Q5 | Master 699

Which cranial nerve is classically divided into ophthalmic, maxillary and mandibular branches?

- **A.** Facial (VII)
- **B.** Glossopharyngeal (IX)
- **C.** Trigeminal (V)
- **D.** Hypoglossal (XII)

CORRECT ANSWER C. Trigeminal (V)

SOURCE EXPLANATION The trigeminal nerve has three main divisions: V_1, V_2 and V_3.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 145 • GLOBAL 0616 616 / ZOOLOGY Q145 2024 • ADAPTED • ref Q10 | Master 699

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

CORRECT ANSWER C. Blood

SOURCE EXPLANATION Earthworms circulate blood in vessels; haemolymph is typical of many open circulatory systems.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 146 • GLOBAL 0617 617 / ZOOLOGY Q146 2024 • MEMORY-BASED • ref Q12 | Master 699

Which of the following is a sexually transmitted disease?

- **A.** Hepatitis A
- **B.** Hepatitis B
- **C.** Hepatitis C
- **D.** Hepatitis D

CORRECT ANSWER B. Hepatitis B

SOURCE EXPLANATION The relevant feature of human physiology and disease is Hepatitis B; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 147 • GLOBAL 0618 618 / ZOOLOGY Q147 2024 • ADAPTED • ref Q17 | Master 699

T lymphocyte precursors originate in marrow but mature principally in the:

- **A.** Tonsils
- **B.** Spleen
- **C.** Thymus
- **D.** Pancreas

CORRECT ANSWER C. Thymus

SOURCE EXPLANATION The thymus is the primary lymphoid organ for T-cell maturation.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 148 • GLOBAL 0619 619 / ZOOLOGY Q148 2024 • MEMORY-BASED • ref Q22 | Master 699

Which vitamin is responsible for maturation of erythrocytes?

- **A.** Vitamin C
- **B.** Vitamin B12
- **C.** Vitamin K
- **D.** Vitamin D

CORRECT ANSWER B. Vitamin B12

SOURCE EXPLANATION Vitamin B12 supports normal DNA synthesis during red-cell maturation.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 149 • GLOBAL 0620 620 / ZOOLOGY Q149 2024 • MEMORY-BASED • ref Q34 | Master 699

Which of the following is an autoimmune disease that causes joint pain?

- **A.** Rheumatoid arthritis
- **B.** Osteoporosis
- **C.** Rickets
- **D.** Exophthalmic goiter

CORRECT ANSWER A. Rheumatoid arthritis

SOURCE EXPLANATION Rheumatoid arthritis is a chronic autoimmune inflammatory joint disease.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 150 • GLOBAL 0621 621 / ZOOLOGY Q150 2024 • MEMORY-BASED • ref Q36 | Master 699

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

CORRECT ANSWER B. Increases in number

SOURCE EXPLANATION The relevant feature of human physiology and disease is Increases in number; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 151 • GLOBAL 0622 622 / ZOOLOGY Q151 2024 • MEMORY-BASED • ref Q38 | Master 699

Which of the following sets of diseases is caused by virus?

- **A.** Typhoid, Cholera
- **B.** AIDS, Tuberculosis
- **C.** Mumps, AIDS
- **D.** Measles, Tetanus

CORRECT ANSWER C. Mumps, AIDS

SOURCE EXPLANATION The relevant feature of human physiology and disease is Mumps, AIDS; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 152 • GLOBAL 0623 623 / ZOOLOGY Q152 2023 • MEMORY-BASED • ref Q149 | Master 699

Heart of frog differs from mammals by presence of

- **A.** Tricuspid valve
- **B.** Mitral valve
- **C.** Two auricle
- **D.** Smus venosus

CORRECT ANSWER D. Smus venosus

SOURCE EXPLANATION The relevant feature of human physiology and disease is Smus venosus; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 153 • GLOBAL 0624 624 / ZOOLOGY Q153 2023 • ADAPTED • ref Q155 | Master 699

Which lymphoid organ filters blood and removes senescent erythrocytes?

- **A.** Liver
- **B.** Spleen
- **C.** Jejunum
- **D.** Kidney

CORRECT ANSWER B. Spleen

SOURCE EXPLANATION The spleen filters blood and removes ageing erythrocytes.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical

locations, and similar-sounding biological terms.

ZOOLOGY 154 • GLOBAL 0625 625 / ZOOLOGY Q154 2023 • MEMORY-BASED • ref Q158 | Master 699

Which of the following is the mode of transmission of HIV?

- **A.** Inhaling cocaine
- **B.** Breast feeding
- **C.** Touching
- **D.** Sharing utensils

CORRECT ANSWER B. Breast feeding

SOURCE EXPLANATION The relevant feature of human physiology and disease is Breast feeding; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 155 • GLOBAL 0626 626 / ZOOLOGY Q155 2023 • ADAPTED • ref Q162 | Master 699

Which human tongue papillae are mechanical and generally lack taste buds?

- **A.** Foliate
- **B.** Circumvallate
- **C.** Fungiform
- **D.** Filiform

CORRECT ANSWER D. Filiform

SOURCE EXPLANATION Filiform papillae have a mechanical role; foliate papillae may be reduced in adults.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 156 • GLOBAL 0627 627 / ZOOLOGY Q156 2023 • MEMORY-BASED • ref Q168 | Master 699

In babies an enzyme is found for milk digestion

- **A.** Chymotrypsin
- **B.** Pepsin
- **C.** Lactase
- **D.** Rennin

CORRECT ANSWER D. Rennin

SOURCE EXPLANATION The relevant feature of human physiology and disease is Rennin; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 157 • GLOBAL 0628 628 / ZOOLOGY Q157 2023 • MEMORY-BASED • ref Q169 | Master 699

Which of the following hormone helps in embryo attachment?

- **A.** Estrogen
- **B.** Progesterone
- **C.** FSH
- **D.** Prolactin

CORRECT ANSWER B. Progesterone

SOURCE EXPLANATION The relevant feature of human physiology and disease is Progesterone; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 158 • GLOBAL 0629 629 / ZOOLOGY Q158 2023 • ADAPTED • ref Q172 | Master 699

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

CORRECT ANSWER B. Raises Ca^{2+} by supporting renal retention and bone resorption

SOURCE EXPLANATION PTH raises blood Ca^{2+} through bone, kidney and vitamin-D-dependent intestinal effects.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 159 • GLOBAL 0630 630 / ZOOLOGY Q159 2023 • ADAPTED • ref Q176 | Master 699

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

CORRECT ANSWER C. Unprotected sexual contact with an infected person

SOURCE EXPLANATION HIV spreads via specific body fluids including blood, semen, vaginal and rectal fluids; casual contact is not a route.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 160 • GLOBAL 0631 631 / ZOOLOGY Q160 2025 • MEMORY-BASED • ref Q103 | Master 699

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

CORRECT ANSWER C. Sporogony in the gut wall

SOURCE EXPLANATION The relevant feature of human physiology and disease is Sporogony in the gut wall; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 161 • GLOBAL 0632 632 / ZOOLOGY Q161 2025 • MEMORY-BASED • ref Q112 | Master 699

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

CORRECT ANSWER D. More number of juxtaglomenilar nephrons

SOURCE EXPLANATION The relevant feature of human physiology and disease is More number of juxtaglomenilar nephrons; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 162 • GLOBAL 0633 633 / ZOOLOGY Q162 2022 • ADAPTED • ref Q1 | Master 699

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

CORRECT ANSWER A. O Rh-negative

SOURCE EXPLANATION O-negative RBCs lack A, B and Rh(D) antigens; blood compatibility testing remains essential.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 163 • GLOBAL 0634 634 / ZOOLOGY Q163 2022 • MEMORY-BASED • ref Q15 | Master 699

Heart of crocodile is

A. 3 chambered
B. Incompletely 3 chambered
C. Incompletely 4 chambered
D. 4 chambered

CORRECT ANSWER D. 4 chambered

SOURCE EXPLANATION The relevant feature of human physiology and disease is 4 chambered; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 164 • GLOBAL 0635 635 / ZOOLOGY Q164 2022 • MEMORY-BASED • ref Q23 | Master 699

Organ of mechanical digestion in earthworm is

A. Gizzard
B. Pharynx
C. Stomach
D. Intestine

CORRECT ANSWER A. Gizzard

SOURCE EXPLANATION The relevant feature of human physiology and disease is Gizzard; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 165 • GLOBAL 0636 636 / ZOOLOGY Q165 2022 • MEMORY-BASED • ref Q27 | Master 699

Which part of sperm produce hyaluronidase?

A. Acrosome
B. Mitochondria
C. Centrosome
D. Tail

CORRECT ANSWER A. Acrosome

SOURCE EXPLANATION The relevant feature of human physiology and disease is Acrosome; the other choices refer to different structures or mechanisms.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 166 • GLOBAL 0637 637 / ZOOLOGY Q166 2026 • MODEL SET | Master 699

Occlusion of a coronary artery most directly risks which condition?

- **A.** Stroke
- **B.** Myocardial infarction
- **C.** Rheumatoid arthritis
- **D.** Hemophilia

CORRECT ANSWER B. Myocardial infarction

SOURCE EXPLANATION Reduced coronary perfusion can cause ischemic death of heart muscle.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 167 • GLOBAL 0638 638 / ZOOLOGY Q167 2026 • MODEL SET | Master 699

The most relevant specimen for a microbiological investigation of active pulmonary tuberculosis is:

- **A.** Sputum
- **B.** Urine
- **C.** Sweat
- **D.** Saliva only

CORRECT ANSWER A. Sputum

SOURCE EXPLANATION Sputum testing can detect Mycobacterium tuberculosis in pulmonary disease.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 168 • GLOBAL 0639 639 / ZOOLOGY Q168 2026 • MODEL SET | Master 699

The scrotum helps support sperm formation principally by:

- **A.** Increasing pressure
- **B.** Maintaining lower testicular temperature
- **C.** Producing testosterone
- **D.** Eliminating semen

CORRECT ANSWER B. Maintaining lower testicular temperature

SOURCE EXPLANATION Spermatogenesis needs a temperature a few degrees below core body temperature.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 169 • GLOBAL 0640 640 / ZOOLOGY Q169 2026 • MODEL SET | Master 699

The covering at the ends of long bones in synovial joints is generally:

- **A.** Hyaline cartilage
- **B.** Elastic cartilage
- **C.** Fibrocartilage
- **D.** Compact bone

CORRECT ANSWER A. Hyaline cartilage

SOURCE EXPLANATION Articular hyaline cartilage provides a smooth, load-bearing surface.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 170 • GLOBAL 0641 641 / ZOOLOGY Q170 2026 • MODEL SET | Master 699

A distinctive vascular comb-like structure in the avian eye is the:

A. Tapetum
B. Iris
C. Ciliary body
D. Pecten

CORRECT ANSWER D. Pecten

SOURCE EXPLANATION The pecten oculi is characteristic of birds and supports ocular nutrition.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 171 • GLOBAL 0642 642 / ZOOLOGY Q171 2026 • MODEL SET | Master 699

Which stage of Plasmodium multiplies inside human red cells to produce further invasive forms?

A. Ookinete
B. Schizont
C. Sporozoite in mosquito
D. Oocyst

CORRECT ANSWER B. Schizont

SOURCE EXPLANATION Erythrocytic schizogony produces merozoites after schizont division.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 172 • GLOBAL 0643 643 / ZOOLOGY Q172 2026 • MODEL SET | Master 699

The infective blood-stage forms of Plasmodium ingested by a mosquito are:

A. Gametocytes
B. Merozoites only
C. Sporozoites
D. Ookinetes

CORRECT ANSWER A. Gametocytes

SOURCE EXPLANATION Mosquitoes take up circulating sexual-stage gametocytes from an infected person.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 173 • GLOBAL 0644 644 / ZOOLOGY Q173 2026 • MODEL SET | Master 699

In an earthworm, chloragogen cells are often compared with which human organ?

A. Kidney
B. Liver
C. Lung
D. Heart

CORRECT ANSWER B. Liver

SOURCE EXPLANATION They participate in storage and metabolism, including nitrogen handling.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 174 • GLOBAL 0645 645 / ZOOLOGY Q174 2026 • MODEL SET | Master 699

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

CORRECT ANSWER **A. Innate chemical barrier**
SOURCE EXPLANATION Lysozyme breaks bonds in bacterial peptidoglycan as an innate defense.
SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 175 • GLOBAL 0646 646 / ZOOLOGY Q175 EXPECTED • PRACTICE | Master 699

An increase in arterial CO_2 typically causes the oxyhemoglobin dissociation curve to shift:

A. Left
B. Right
C. Remain unchanged
D. Become vertical

CORRECT ANSWER **B. Right**
SOURCE EXPLANATION The Bohr effect promotes oxygen unloading in metabolically active tissues.
SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 176 • GLOBAL 0647 647 / ZOOLOGY Q176 EXPECTED • PRACTICE | Master 699

The chief site of gas exchange in the human lung is the:

A. Trachea
B. Bronchus
C. Alveolus
D. Pleura

CORRECT ANSWER **C. Alveolus**
SOURCE EXPLANATION Alveolar walls are thin and closely associated with capillary networks.
SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 177 • GLOBAL 0648 648 / ZOOLOGY Q177 EXPECTED • PRACTICE | Master 699

ADH acts chiefly to increase water permeability in which nephron segments?

A. Collecting ducts
B. Bowman's capsule
C. Descending aorta
D. Glomerular capillaries

CORRECT ANSWER **A. Collecting ducts**
SOURCE EXPLANATION ADH promotes aquaporin insertion in collecting-duct principal cells.
SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 178 • GLOBAL 0649 649 / ZOOLOGY Q178 EXPECTED • PRACTICE | Master 699

The pacemaker that normally initiates each heartbeat is the:

A. AV bundle
B. SA node
C. Purkinje fiber
D. Mitral valve

CORRECT ANSWER **B. SA node**
SOURCE EXPLANATION The sinoatrial node depolarizes spontaneously faster than other pacemaker

tissue.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 179 • GLOBAL 0650 650 / ZOOLOGY Q179 EXPECTED • PRACTICE | Master 699

Which cell secretes insulin?

- **A.** Pancreatic alpha cell
- **B.** Pancreatic beta cell
- **C.** Thyroid follicular cell
- **D.** Adrenal medullary cell

CORRECT ANSWER B. Pancreatic beta cell

SOURCE EXPLANATION Beta cells in islets of Langerhans secrete insulin.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 180 • GLOBAL 0651 651 / ZOOLOGY Q180 EXPECTED • PRACTICE | Master 699

Antibodies are secreted mainly by:

- **A.** Plasma cells
- **B.** Neutrophils
- **C.** Erythrocytes
- **D.** Platelets

CORRECT ANSWER A. Plasma cells

SOURCE EXPLANATION Antigen-stimulated B cells differentiate into antibody-secreting plasma cells.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 181 • GLOBAL 0652 652 / ZOOLOGY Q181 EXPECTED • PRACTICE | Master 699

Excretion in insects is commonly associated with:

- **A.** Nephridia
- **B.** Malpighian tubules
- **C.** Flame cells
- **D.** Green glands

CORRECT ANSWER B. Malpighian tubules

SOURCE EXPLANATION Malpighian tubules transfer nitrogenous wastes into the gut.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

ZOOLOGY 182 • GLOBAL 0653 653 / ZOOLOGY Q182 EXPECTED • PRACTICE | Master 699

Males are typically hemizygous for most genes on the human:

- **A.** Chromosome 1
- **B.** X chromosome
- **C.** Chromosome 22
- **D.** Mitochondrial chromosome only

CORRECT ANSWER B. X chromosome

SOURCE EXPLANATION A typical XY male has one copy of most X-linked loci.

SOLUTION / REVISION METHOD BIOLOGY CHECK: First identify the system, organism, or physiological mechanism. Trace cause → mechanism → effect; separate normal functions from diseases, anatomical locations, and similar-sounding biological terms.

MAT | 76 EXPLAINED MCQs

Source labels are preserved from the original compilations. Questions retain their original alternatives; answer choices and explanations are shown directly after each question.

MAT 001 • GLOBAL 0654 654 / MAT Q001 2023 • MEMORY-BASED • ref Q181 | Master 699

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

CORRECT ANSWER A. 100/V2m

SOURCE EXPLANATION Test the pattern or stated constraints systematically. The valid choice is 100/V2m; the other options violate at least one condition.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 002 • GLOBAL 0655 655 / MAT Q002 EXPECTED • PRACTICE | Master 699

Find the missing number in the sequence 2, 6, 12, 20, 30, ?

- **A.** 36
- **B.** 40
- **C.** 42
- **D.** 48

CORRECT ANSWER C. 42

SOURCE EXPLANATION Successive differences are +4, +6, +8, +10, so the next is +12 → 42.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 003 • GLOBAL 0656 656 / MAT Q003 2023 • MEMORY-BASED • ref Q183 | Master 699

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%

CORRECT ANSWER B. 40%

SOURCE EXPLANATION Test the pattern or stated constraints systematically. The valid choice is 40%; the other options violate at least one condition.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 004 • GLOBAL 0657 657 / MAT Q004 2023 • MEMORY-BASED • ref Q185 | Master 699

If KIDNEY = 54/14 then BRAIN = ?

- **A.** 34/10
- **B.** 32/22
- **C.** 54/22
- **D.** 61/10

CORRECT ANSWER A. 34/10

SOURCE EXPLANATION Test the pattern or stated constraints systematically. The valid choice is 34/10; the other options violate at least one condition.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 005 • GLOBAL 0658 658 / MAT Q005 EXPECTED • PRACTICE | Master 699

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

CORRECT ANSWER B. Vegetable

SOURCE EXPLANATION Ordering vegetable > fruit > salad > snack places vegetables at the top.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 006 • GLOBAL 0659 659 / MAT Q006 EXPECTED • PRACTICE | Master 699

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

CORRECT ANSWER A. Rs. 16, Rs. 15

SOURCE EXPLANATION Solve 2a + 3c = 77 and 3a + 2c = 78 to obtain adult Rs. 16 and child Rs. 15.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 007 • GLOBAL 0660 660 / MAT Q007 2023 • MEMORY-BASED • ref Q197 | Master 699

2, 12, 30, 56, ?, 132

A. 49
B. 90
C. 86
D. 102

CORRECT ANSWER B. 90

SOURCE EXPLANATION Test the pattern or stated constraints systematically. The valid choice is 90; the other options violate at least one condition.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 008 • GLOBAL 0661 661 / MAT Q008 2026 • MODEL SET | Master 699

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

CORRECT ANSWER B. 3 minutes

SOURCE EXPLANATION Each machine completes one task in three minutes; nine machines work simultaneously.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 009 • GLOBAL 0662 662 / MAT Q009 2023 • MEMORY-BASED • ref Q188 | Master 699

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

CORRECT ANSWER A. Sister

SOURCE EXPLANATION Draw a family tree and follow each relationship one link at a time.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 010 • GLOBAL 0663 663 / MAT Q010 EXPECTED • PRACTICE | Master 699

The average of 8, 10, 12 and 14 is:

A. 10
B. 11
C. 12
D. 13

CORRECT ANSWER B. 11

SOURCE EXPLANATION Their sum is 44; divide by four to obtain 11.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 011 • GLOBAL 0664 664 / MAT Q011 EXPECTED • PRACTICE | Master 699

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

CORRECT ANSWER B. 4% decrease

SOURCE EXPLANATION $1.20 \times 0.80 = 0.96$ of the starting quantity.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 012 • GLOBAL 0665 665 / MAT Q012 EXPECTED • PRACTICE | Master 699

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%

CORRECT ANSWER C. 75%

SOURCE EXPLANATION $75/100 \times 100 = 75\%$.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 013 • GLOBAL 0666 666 / MAT Q013 EXPECTED • PRACTICE | Master 699

A shopkeeper buys for Rs 800 and sells for Rs 920. Find the profit percentage.

A. 12%
B. 15%
C. 20%
D. 25%

CORRECT ANSWER B. 15%

SOURCE EXPLANATION Profit is 120; 120/800 × 100 = 15%.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 014 • GLOBAL 0667 667 / MAT Q014 EXPECTED • PRACTICE | Master 699

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

CORRECT ANSWER C. 25

SOURCE EXPLANATION Girls form five of eight equal parts; 40 × 5/8 = 25.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 015 • GLOBAL 0668 668 / MAT Q015 EXPECTED • PRACTICE | Master 699

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

CORRECT ANSWER C. Rs 800

SOURCE EXPLANATION SI = PRT/100 = 5000 × 8 × 2/100 = 800.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 016 • GLOBAL 0669 669 / MAT Q016 EXPECTED • PRACTICE | Master 699

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

CORRECT ANSWER D. 300 m

SOURCE EXPLANATION 72 km/h = 20 m/s; distance = 20 × 15 = 300 m.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 017 • GLOBAL 0670 670 / MAT Q017 EXPECTED • PRACTICE | Master 699

If the average of five numbers is 18, their sum equals:

A. 72

B. 80
C. 90
D. 108

CORRECT ANSWER C. 90

SOURCE EXPLANATION Sum = average × count = 18 × 5 = 90.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 018 • GLOBAL 0671 671 / MAT Q018 EXPECTED • PRACTICE | Master 699

A number is 25% greater than 80. The number is:

A. 90
B. 95
C. 100
D. 105

CORRECT ANSWER C. 100

SOURCE EXPLANATION 25% of 80 is 20; 80 + 20 = 100.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 019 • GLOBAL 0672 672 / MAT Q019 EXPECTED • PRACTICE | Master 699

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

CORRECT ANSWER B. 2 h

SOURCE EXPLANATION Combined rate = 1/6 + 1/3 = 1/2 tank per hour.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 020 • GLOBAL 0673 673 / MAT Q020 EXPECTED • PRACTICE | Master 699

If 40% of a number is 60, find the number.

A. 120
B. 140
C. 150
D. 180

CORRECT ANSWER C. 150

SOURCE EXPLANATION Number = 60/0.40 = 150.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 021 • GLOBAL 0674 674 / MAT Q021 EXPECTED • PRACTICE | Master 699

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

CORRECT ANSWER C. Rs 2,160

SOURCE EXPLANATION Discount = 240, so price becomes 2400 − 240 = 2160.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 022 • GLOBAL 0675 675 / MAT Q022 EXPECTED • PRACTICE | Master 699

The sum of interior angles of a hexagon is:

A. 540°
B. 600°
C. 720°
D. 900°

CORRECT ANSWER C. 720°

SOURCE EXPLANATION Interior-angle sum = (n−2) × 180° = 4 × 180°.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 023 • GLOBAL 0676 676 / MAT Q023 EXPECTED • PRACTICE | Master 699

What comes next: 2, 6, 12, 20, 30, ?

A. 36
B. 40
C. 42
D. 48

CORRECT ANSWER C. 42

SOURCE EXPLANATION The successive increments are 4, 6, 8, 10, so the next increment is 12.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 024 • GLOBAL 0677 677 / MAT Q024 EXPECTED • PRACTICE | Master 699

Identify the next term: 3, 9, 27, 81, ?

A. 162
B. 243
C. 324
D. 729

CORRECT ANSWER B. 243

SOURCE EXPLANATION Each term is multiplied by three.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 025 • GLOBAL 0678 678 / MAT Q025 EXPECTED • PRACTICE | Master 699

Which number continues 1, 4, 9, 16, 25, ?

A. 30
B. 35
C. 36
D. 49

CORRECT ANSWER C. 36

SOURCE EXPLANATION These are consecutive squares 1^2 through 6^2.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 026 • GLOBAL 0679 679 / MAT Q026 EXPECTED • PRACTICE | Master 699

What comes next: 5, 10, 17, 26, 37, ?

A. 46
B. 48
C. 50
D. 52

CORRECT ANSWER C. 50

SOURCE EXPLANATION Successive differences increase by two: 5, 7, 9, 11, 13.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 027 • GLOBAL 0680 680 / MAT Q027 EXPECTED • PRACTICE | Master 699

Complete: AZ, BY, CX, DW, ?

A. EV
B. FU
C. EW
D. FV

CORRECT ANSWER A. EV

SOURCE EXPLANATION The first letters advance and the second letters descend alphabetically.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 028 • GLOBAL 0681 681 / MAT Q028 EXPECTED • PRACTICE | Master 699

Find the next number: 2, 3, 5, 8, 12, 17, ?

A. 21
B. 22
C. 23
D. 24

CORRECT ANSWER C. 23

SOURCE EXPLANATION Consecutive differences are 1, 2, 3, 4, 5, then 6.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 029 • GLOBAL 0682 682 / MAT Q029 EXPECTED • PRACTICE | Master 699

Complete the sequence: 100, 90, 81, 73, 66, ?

A. 58
B. 59
C. 60
D. 61

CORRECT ANSWER C. 60

SOURCE EXPLANATION Subtract 10, 9, 8, 7, then 6.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 030 • GLOBAL 0683 683 / MAT Q030 EXPECTED • PRACTICE | Master 699

Choose the analogy: HEART : CARDIOLOGY :: KIDNEY : ?

A. Neurology

B. Nephrology
C. Dermatology
D. Oncology

CORRECT ANSWER B. Nephrology

SOURCE EXPLANATION Nephrology is the medical specialty dealing with kidneys.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 031 • GLOBAL 0684 684 / MAT Q031 EXPECTED • PRACTICE | Master 699

Choose the odd one out:

A. Heart
B. Liver
C. Kidney
D. Femur

CORRECT ANSWER D. Femur

SOURCE EXPLANATION Femur is a bone; the others are organs.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 032 • GLOBAL 0685 685 / MAT Q032 EXPECTED • PRACTICE | Master 699

Choose the relationship: SCALPEL : SURGERY :: STETHOSCOPE : ?

A. Auscultation
B. Injection
C. Suturing
D. Casting

CORRECT ANSWER A. Auscultation

SOURCE EXPLANATION A stethoscope is used for auscultation as a scalpel is used in surgery.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 033 • GLOBAL 0686 686 / MAT Q033 EXPECTED • PRACTICE | Master 699

Select the nearest meaning of “benign” in a medical report:

A. Always fatal
B. Non-malignant
C. Highly infectious
D. Acute inflammation

CORRECT ANSWER B. Non-malignant

SOURCE EXPLANATION Benign generally means not malignant, although harm is still possible.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 034 • GLOBAL 0687 687 / MAT Q034 EXPECTED • PRACTICE | Master 699

Select the opposite of “scarce”:

A. Rare
B. Insufficient
C. Abundant
D. Restricted

CORRECT ANSWER C. Abundant

SOURCE EXPLANATION Abundant means plentiful, the opposite of scarce.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 035 • GLOBAL 0688 688 / MAT Q035 EXPECTED • PRACTICE | Master 699

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

CORRECT ANSWER C. All surgeons are doctors

SOURCE EXPLANATION Only the original universal statement is guaranteed; the sets may not overlap elsewhere.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 036 • GLOBAL 0689 689 / MAT Q036 EXPECTED • PRACTICE | Master 699

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

CORRECT ANSWER C. All roses are flowers

SOURCE EXPLANATION Only the universal premise about roses is logically necessary.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 037 • GLOBAL 0690 690 / MAT Q037 EXPECTED • PRACTICE | Master 699

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

CORRECT ANSWER B. No snakes are mammals

SOURCE EXPLANATION Every snake falls inside the reptile class, disjoint from mammals.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 038 • GLOBAL 0691 691 / MAT Q038 EXPECTED • PRACTICE | Master 699

A is north of B, and B is east of C. Relative to C, A is:

- **A.** Northwest
- **B.** Northeast
- **C.** Southwest
- **D.** Southeast

CORRECT ANSWER B. Northeast

SOURCE EXPLANATION Move east from C to B and then north to A.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then

choose the option.

MAT 039 • GLOBAL 0692 692 / MAT Q039 EXPECTED • PRACTICE | Master 699

Facing north, a person turns right, then right again. Which direction do they face?

A. East
B. West
C. North
D. South

CORRECT ANSWER D. South

SOURCE EXPLANATION Two right-angle clockwise turns from north give south.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 040 • GLOBAL 0693 693 / MAT Q040 EXPECTED • PRACTICE | Master 699

A woman says, “He is my mother's only son.” The man is her:

A. Father
B. Brother
C. Uncle
D. Son

CORRECT ANSWER B. Brother

SOURCE EXPLANATION Her mother's only son is her brother.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 041 • GLOBAL 0694 694 / MAT Q041 EXPECTED • PRACTICE | Master 699

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

CORRECT ANSWER B. 18

SOURCE EXPLANATION Total = 7 + 12 − 1 = 18.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 042 • GLOBAL 0695 695 / MAT Q042 EXPECTED • PRACTICE | Master 699

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

CORRECT ANSWER B. No, not necessarily

SOURCE EXPLANATION The two subsets might or might not overlap.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 043 • GLOBAL 0696 696 / MAT Q043 EXPECTED • PRACTICE | Master 699

If TABLE is coded as UBCMF (each letter shifted +1), CHAIR is coded as:

A. DIBJS
B. DIBIR
C. BGBHQ
D. EJCKT

CORRECT ANSWER A. DIBJS

SOURCE EXPLANATION Shift every letter one place forward in the alphabet.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 044 • GLOBAL 0697 697 / MAT Q044 EXPECTED • PRACTICE | Master 699

If yesterday was Wednesday, the day after tomorrow will be:

A. Friday
B. Saturday
C. Sunday
D. Monday

CORRECT ANSWER B. Saturday

SOURCE EXPLANATION Today is Thursday; two days later is Saturday.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 045 • GLOBAL 0698 698 / MAT Q045 EXPECTED • PRACTICE | Master 699

A square is folded along one diagonal. The two resulting regions are:

A. Rectangles
B. Congruent triangles
C. Trapezia
D. Pentagons

CORRECT ANSWER B. Congruent triangles

SOURCE EXPLANATION A diagonal divides the square into two equal right triangles.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 046 • GLOBAL 0699 699 / MAT Q046 EXPECTED • PRACTICE | Master 699

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

CORRECT ANSWER C. 13 cm

SOURCE EXPLANATION Pythagoras gives $\sqrt{(12^2+5^2)}=13$ cm.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 047 • GLOBAL 0700 095 / Q095 2024 • MEMORY-BASED • reformulated Q1 | PYQ Intensive 500

In the word CLEARING, how many letter pairs have the same number of letters between them as in the alphabet, counting either alphabetic direction?

A. 0
B. 1

C. 2
D. 3

CORRECT ANSWER C. 2

SOURCE EXPLANATION C–E and I–G each have one letter between in both the word and alphabet.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 048 • GLOBAL 0701 096 / Q096 2024 • MEMORY-BASED • reformulated Q15 | PYQ Intensive 500

One typist prints 50 pages in 8 hours and another 50 pages in 6 hours. Together, how long to print 100 pages?

A. 6 h
B. 6 6/7 h
C. 7 1/2 h
D. 8 h

CORRECT ANSWER B. 6 6/7 h

SOURCE EXPLANATION Combined speed = 50/8 + 50/6 = 175/12 pages/h; time =100÷(175/12)=48/7 h.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 049 • GLOBAL 0702 097 / Q097 PYQ-DERIVED • CEE-STYLE PRACTICE | PYQ Intensive 500

A can complete a task in 8 days and B can do it in 12 days. They work together for 2 days. What fraction remains?

A. 7/12
B. 5/12
C. 1/3
D. 3/4

CORRECT ANSWER A. 7/12

SOURCE EXPLANATION Together their 2-day work =2(1/8+1/12)=5/12; remaining 7/12.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 050 • GLOBAL 0703 098 / Q098 PYQ-DERIVED • CEE-STYLE PRACTICE | PYQ Intensive 500

Complete the series: 2, 5, 10, 17, 26, 37, ?

A. 48
B. 49
C. 50
D. 52

CORRECT ANSWER C. 50

SOURCE EXPLANATION Successive odd increments 3,5,7,9,11,13 give 50.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 051 • GLOBAL 0704 099 / Q099 PYQ-DERIVED • CEE-STYLE PRACTICE | PYQ Intensive 500

A walks 6 km east then 8 km north. What is the shortest distance from the starting point?

A. 10 km
B. 12 km
C. 14 km
D. 16 km

CORRECT ANSWER A. 10 km

SOURCE EXPLANATION Perpendicular displacement $=\sqrt{(6^2+8^2)}=10$ km.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 052 • GLOBAL 0705 100 / Q100 PYQ-DERIVED • CEE-STYLE PRACTICE | PYQ Intensive 500

A clock shows 3:30. What is the smaller angle between the hour and minute hands?

A. 60°
B. 75°
C. 90°
D. 105°

CORRECT ANSWER B. 75°

SOURCE EXPLANATION Minute hand=180°, hour hand=3×30+30×0.5=105°; difference 75°.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 053 • GLOBAL 0706 195 / Q095 2024 • MEMORY-BASED • reformulated Q2 | PYQ Intensive 500

If 100 cats catch 100 mice in 100 days at a constant rate, how many days would 4 cats take to catch 4 mice?

A. 4
B. 25
C. 100
D. 400

CORRECT ANSWER C. 100

SOURCE EXPLANATION One cat catches one mouse in 100 days; the number of cats and mice scales equally.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 054 • GLOBAL 0707 196 / Q096 PYQ-DERIVED • CEE-STYLE PRACTICE | PYQ Intensive 500

Six nurses can prepare 90 patient files in 5 hours at equal rates. How many files can four nurses prepare in 3 hours?

A. 24
B. 30
C. 36
D. 45

CORRECT ANSWER C. 36

SOURCE EXPLANATION A nurse handles 90/(6×5)=3 files per hour; 4×3×3=36.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 055 • GLOBAL 0708 197 / Q097 PYQ-DERIVED • CEE-STYLE PRACTICE | PYQ Intensive 500

A medicine price rises by 25% and is then discounted by 20%. Compared with the initial price it is:

A. 5% higher
B. 5% lower
C. unchanged
D. 10% lower

CORRECT ANSWER C. unchanged

SOURCE EXPLANATION Successive factors 1.25×0.80=1; net change 0%.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 056 • GLOBAL 0709 198 / Q098 PYQ-DERIVED • CEE-STYLE PRACTICE | PYQ Intensive 500

If NURSE is written as OVSTF (each letter shifted forward one place), DOCTOR becomes:

A. EPDUPS
B. EPDUTS
C. EPEUPS
D. DPCUPS

CORRECT ANSWER A. EPDUPS

SOURCE EXPLANATION D→E, O→P, C→D, T→U, O→P, R→S, giving EPDUPS.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 057 • GLOBAL 0710 199 / Q099 PYQ-DERIVED • CEE-STYLE PRACTICE | PYQ Intensive 500

In a code, MED=22 and CAT=24 when the code equals the sum of alphabet positions. What is BED?

A. 10
B. 11
C. 12
D. 13

CORRECT ANSWER B. 11

SOURCE EXPLANATION B+E+D =2+5+4=11.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 058 • GLOBAL 0711 200 / Q100 PYQ-DERIVED • CEE-STYLE PRACTICE | PYQ Intensive 500

Two fair dice are rolled. What is the probability of getting a total of 7?

A. 1/12
B. 1/9
C. 1/6
D. 1/3

CORRECT ANSWER C. 1/6

SOURCE EXPLANATION There are six ordered favorable outcomes among 36 equally likely outcomes: 6/36=1/6.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 059 • GLOBAL 0712 295 / Q095 2024 • MEMORY-BASED • reformulated Q3 | PYQ Intensive 500

Two trains of lengths 80 m and 100 m move in the same direction at 51 m/s and 42 m/s. How long does the faster train take to completely overtake the slower one?

A. 9 s
B. 18 s
C. 20 s
D. 36 s

CORRECT ANSWER C. 20 s

SOURCE EXPLANATION Total relative distance = 180 m; relative speed = 9 m/s; time = 20 s.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 060 • GLOBAL 0713 296 / Q096 PYQ-DERIVED • CEE-STYLE PRACTICE | PYQ Intensive 500

Two workers finish a job in 12 and 18 days separately. Working together, they finish it in:

A. 6 days
B. 7 1/5 days
C. 8 days
D. 15 days

CORRECT ANSWER B. 7 1/5 days

SOURCE EXPLANATION Rates add: 1/12+1/18=5/36, so time =36/5=7.2 days.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 061 • GLOBAL 0714 297 / Q097 PYQ-DERIVED • CEE-STYLE PRACTICE | PYQ Intensive 500

A sample is diluted in the ratio 2:3 of concentrate to water. In 250 mL of mixture, how much concentrate is present?

A. 75 mL
B. 100 mL
C. 125 mL
D. 150 mL

CORRECT ANSWER B. 100 mL

SOURCE EXPLANATION The concentrate fraction is 2/(2+3)=2/5; 2/5×250=100 mL.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 062 • GLOBAL 0715 298 / Q098 PYQ-DERIVED • CEE-STYLE PRACTICE | PYQ Intensive 500

In an alphabet code A=1, B=2, ..., Z=26, what is the sum of letters in CEE?

A. 11
B. 12
C. 13
D. 14

CORRECT ANSWER C. 13

SOURCE EXPLANATION C=3 and E=5, so 3+5+5=13.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 063 • GLOBAL 0716 299 / Q099 PYQ-DERIVED • CEE-STYLE PRACTICE | PYQ Intensive 500

A is older than B. C is younger than B. D is older than A. Who is certainly the oldest?

A. A
B. B
C. C
D. D

CORRECT ANSWER D. D

SOURCE EXPLANATION The ordering is D>A>B>C.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then

choose the option.

MAT 064 • GLOBAL 0717 300 / Q100 PYQ-DERIVED • CEE-STYLE PRACTICE | PYQ Intensive 500

A test has 20 items. Correct answers earn +1 and wrong answers −0.25. If 16 are correct and 4 wrong, the net score is:

A. 14
B. 15
C. 15.5
D. 16

CORRECT ANSWER B. 15

SOURCE EXPLANATION Score =16−4×0.25=15.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 065 • GLOBAL 0718 395 / Q095 2024 • MEMORY-BASED • reformulated Q5 | PYQ Intensive 500

If 11 (170) 16 and 11 (203) 19 follow the same rule, what fills 17 (?) 18?

A. 296
B. 300
C. 306
D. 318

CORRECT ANSWER B. 300

SOURCE EXPLANATION The middle number is product of outer numbers minus six: 17×18−6=300.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 066 • GLOBAL 0719 396 / Q096 PYQ-DERIVED • CEE-STYLE PRACTICE | PYQ Intensive 500

A student is 15th from the left and 18th from the right in a row. How many students are in that row?

A. 31
B. 32
C. 33
D. 34

CORRECT ANSWER B. 32

SOURCE EXPLANATION Total =15+18−1=32 because the student was counted twice.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 067 • GLOBAL 0720 397 / Q097 PYQ-DERIVED • CEE-STYLE PRACTICE | PYQ Intensive 500

Find the next term: 4, 9, 19, 39, 79, ?

A. 118
B. 139
C. 159
D. 169

CORRECT ANSWER C. 159

SOURCE EXPLANATION Each term is twice the previous term plus one.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 068 • GLOBAL 0721 398 / Q098 PYQ-DERIVED • CEE-STYLE PRACTICE | PYQ Intensive 500

Choose the odd term in the group: 16, 25, 36, 49, 63, 81.

A. 25
B. 49
C. 63
D. 81

CORRECT ANSWER C. 63

SOURCE EXPLANATION All except 63 are perfect squares.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 069 • GLOBAL 0722 399 / Q099 PYQ-DERIVED • CEE-STYLE PRACTICE | PYQ Intensive 500

If every surgeon is a doctor and no doctor is an engineer, which conclusion must hold?

A. Some surgeons are engineers
B. No surgeons are engineers
C. All engineers are doctors
D. No doctors are surgeons

CORRECT ANSWER B. No surgeons are engineers

SOURCE EXPLANATION A surgeon is a doctor, and the doctor and engineer sets are disjoint.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 070 • GLOBAL 0723 400 / Q100 PYQ-DERIVED • CEE-STYLE PRACTICE | PYQ Intensive 500

A class has 30 students with an average score of 68. Another class has 20 students averaging 78. The combined average is:

A. 70
B. 71
C. 72
D. 73

CORRECT ANSWER C. 72

SOURCE EXPLANATION Weighted mean = (30×68+20×78)/50=72.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 071 • GLOBAL 0724 495 / Q095 2024 • MEMORY-BASED • reformulated Q8 | PYQ Intensive 500

Ten years ago a mother was four times her daughter's age. Ten years from now she will be twice her daughter's age. What is the daughter's present age?

A. 16
B. 18
C. 20
D. 24

CORRECT ANSWER C. 20

SOURCE EXPLANATION Let daughter D and mother M. M−10=4(D−10), M+10=2(D+10) gives D=20.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 072 • GLOBAL 0725 496 / Q096 PYQ-DERIVED • CEE-STYLE PRACTICE | PYQ Intensive 500

A hospital has 80 patients; 46 received test A, 39 received test B, and 15 received both. How

many received neither test?

A. 10
B. 15
C. 20
D. 25

CORRECT ANSWER A. 10

SOURCE EXPLANATION n(A∪B)=46+39−15=70; neither =80−70=10.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 073 • GLOBAL 0726 497 / Q097 PYQ-DERIVED • CEE-STYLE PRACTICE | PYQ Intensive 500

Find the missing term: 3, 8, 15, 24, 35, ?

A. 44
B. 46
C. 48
D. 50

CORRECT ANSWER C. 48

SOURCE EXPLANATION Successive differences are 5,7,9,11; next difference 13 gives 48.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 074 • GLOBAL 0727 498 / Q098 PYQ-DERIVED • CEE-STYLE PRACTICE | PYQ Intensive 500

A person faces east, rotates 270° clockwise, then 90° anticlockwise. Which direction does the person face?

A. North
B. South
C. East
D. West

CORRECT ANSWER D. West

SOURCE EXPLANATION East→North after 270° clockwise; a 90° anticlockwise turn gives West.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 075 • GLOBAL 0728 499 / Q099 PYQ-DERIVED • CEE-STYLE PRACTICE | PYQ Intensive 500

Some medical students are volunteers and all volunteers are trained. Which statement necessarily follows?

A. All students are trained
B. Some medical students are trained
C. No students are volunteers
D. All trained people are students

CORRECT ANSWER B. Some medical students are trained

SOURCE EXPLANATION The medical students who volunteer belong to the trained set.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.

MAT 076 • GLOBAL 0729 500 / Q100 PYQ-DERIVED • CEE-STYLE PRACTICE | PYQ Intensive 500

In a family, P is the mother of Q; Q is brother of R; R is the mother of S. What relation is P to S?

A. Aunt
B. Grandmother
C. Sister
D. Mother

CORRECT ANSWER **B. Grandmother**

SOURCE EXPLANATION P is parent of R, and R is parent of S: P is S's grandmother.

SOLUTION / REVISION METHOD REASONING ROUTE: Translate the wording into a small table, equation, diagram, or explicit rule. Test the proposed rule against every supplied example and only then choose the option.