

JSSC Para Teacher PRT and Upper Primary Paper 2 Science Set 1 - English

Q.1 Which of the following explains why desert plants often have sunken stomata?

- A. To increase transpiration
- B. To reduce diffusion of CO₂
- C. To decrease water loss by trapping moist air near stomata
- D. To facilitate rapid photosynthesis

Answer: C

Sol: The correct answer is (c). **Explanation** Sunken stomata create a micro-humid pocket around openings, reducing the **water vapor gradient** and lowering transpiration — crucial for xerophytes.

Additional Information • Option {a} is incorrect because desert plants try to **reduce**, not increase, transpiration. • Option {b} they still need CO₂; diffusion is not intentionally limited. • Option {d} rapid photosynthesis is not the primary adaptation.

Q.2 A mobile phone becomes warm after prolonged use. Which scientific principle best explains this phenomenon?

- A. Electrical energy converts to heat due to resistance
- B. Magnetic field strength increases with temperature
- C. Batteries release heat during photosynthesis
- D. Air friction around the phone causes heating

Answer: A

Sol: The correct answer is (a). **Explanation** Flow of current through circuits encounters **resistance**, converting electrical energy into heat {Joule heating}, warming internal components.

Additional Information • Option {b} temperature rises but not due to magnetic field changes. • Option {c} photosynthesis does not occur in batteries. • Option {d} air friction is negligible at mobile usage speeds.

Q.3 Which of the following is the correct reason why NaCl conducts electricity when molten but not when solid?

- A. Ions vibrate faster in molten state
- B. Covalent bonds break during melting
- C. Free ions are available for movement only in molten state
- D. Electrons move freely only in molten state

Answer: C

Sol: The correct answer is (c). **Explanation** In solid NaCl, ions are fixed in lattice positions, preventing charge movement. In molten NaCl, ions become **mobile**, allowing electrical conduction.

Additional Information • Option {a} vibration does not allow conduction. • Option {b} NaCl is ionic, not covalent. • Option {d} conduction occurs by **ions**, not electrons.

Q.4 A patient shows extremely high heart rate and elevated metabolism. Doctors suspect over-secretion of a hormone that contains iodine. Which gland is malfunctioning?

- A. Pituitary
- B. Thyroid
- C. Adrenal medulla
- D. Parathyroid

Answer: B



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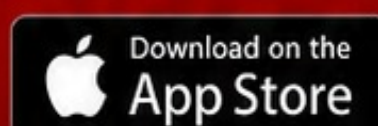


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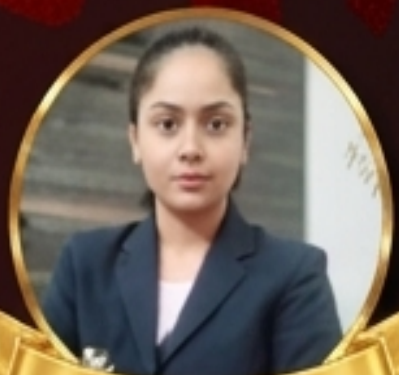
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Sol: The correct answer is (b) Thyroid. **Explanation** Thyroid gland secretes **thyroxine**, an iodine-containing hormone. Excess causes hyperthyroidism: rapid heartbeat, heat intolerance, and high metabolism.
Additional Information • Option {a} pituitary may stimulate thyroid but does not secrete iodine-based hormones. • Option {c} adrenaline increases heart rate but symptoms don't match metabolic disorder. • Option {d} parathyroid controls calcium, not metabolism.

Q.5 Which assessment strategy is MOST appropriate for evaluating students' understanding of "scientific attitudes" like curiosity and objectivity?

A. Multiple-choice tests
 B. Checklist-based observation during activities
 C. True/false worksheets
 D. Matching-type test items

Answer: B

Sol: The correct answer is (b). **Explanation** Scientific attitudes are **behavioral attributes**, best assessed through observation of how students work during experiments and group tasks. A checklist helps assess curiosity, open-mindedness, and objectivity in action.
Additional Information • Option {a} MCQs assess factual knowledge, not attitudes. • Option {c} and {d} also test memory, not behavior.

Q.6 Which of the following explains why noble gases have extremely low boiling points?

A. Strong intermolecular forces
 B. Presence of covalent bonds
 C. Weak van der Waals forces
 D. High atomic mass

Answer: C

Sol: The correct answer is (c). **Explanation** Noble gases exist as single atoms with very weak **interatomic forces**, causing extremely low boiling points.
Additional Information • Option {a} contradicts the actual weak forces present. • Option {b} no bonds exist between atoms since they are monoatomic. • Option {d} higher atomic mass does not reduce boiling point.

Q.7 A metal block has a mass of 250 g and a volume of 50 cm³. What is its density?

A. 3 g/cm³
 B. 4 g/cm³
 C. 5 g/cm³
 D. 6 g/cm³

Answer: C

Sol: The correct answer is (c). **Explanation** Density = Mass ÷ Volume = 250 ÷ 50 = 5 {g/cm³}.
Additional Information • Option {a} corresponds to mass 150 g. • Option {b} corresponds to mass 200 g. • Option {d} corresponds to mass 300 g.

Q.8 A seed fails to germinate even though water, oxygen, and suitable temperature are present. Which factor is MOST likely missing?

A. Chlorophyll
 B. Light
 C. Viability
 D. Carbon dioxide

Answer: C

Sol: The correct answer is (c). **Explanation** A non-viable seed cannot germinate regardless of ideal conditions. Viability refers to the **ability of an embryo to grow**.
Additional Information • Option {a} chlorophyll is not needed for germination. • Option {b} most seeds do not require light initially. • Option {d} CO₂ is needed after germination for photosynthesis, not before.

Q.9 Which physiological change would occur FIRST in a human body exposed suddenly to extremely high altitude?

- A. Increase in RBC count
- B. Decrease in breathing rate
- C. Rapid increase in breathing rate
- D. Thickening of blood

Answer: C

Sol: The correct answer is (c). **Explanation** At high altitude, oxygen availability drops sharply. The **immediate response** of the body is to increase breathing rate to compensate for low oxygen pressure. Other adaptations like increased RBC count occur only after hours or days.
Additional Information • Option {a} RBC increase is a long-term acclimatization change. • Option {b} breathing does not decrease; it accelerates. • Option {d} blood thickening occurs later due to elevated RBC production, not immediately.

Q.10 A solution contains 4 g of salt dissolved in 96 g of water. What is the mass percentage of salt?

- A. 3%
- B. 4%
- C. 5%
- D. 6%

Answer: B

Sol: The correct answer is (b). **Explanation** Mass percentage = {Mass of solute ÷ Total mass} × 100 = {4 ÷ 100} × 100 = 4%? ✓ Check total mass first: 4 + 96 = 100 g → so 4%.
Explanation Mass percentage = {4 ÷ 100} × 100 = 4%.
Additional Information • Option {a} 3% assumes solute mass 3 g. • Option {c} 5% assumes total mass 80 g. • Option {d} miscalculates solute proportion.

Q.11 The root pressure in plants is MOST prominent under which condition?

- A. High transpiration and high temperature
- B. Low transpiration and high soil moisture
- C. Low soil moisture and low humidity
- D. High wind speed and high transpiration

Answer: B

Sol: The correct answer is (b). **Explanation** Root pressure develops when water enters roots actively but **transpiration is low**, causing upward push of water in xylem.
Additional Information • Options {a} and {d} high transpiration reduces root pressure influence. • Option {c} low moisture inhibits water absorption.

Q.12 A seed absorbs water and its mass increases from 2 g to 2.6 g. What is the percentage increase in mass?

- A. 20%
- B. 25%
- C. 30%
- D. 35%

Answer: C

Sol: The correct answer is (c). **Explanation** Increase = 2.6 – 2 = 0.6 g Percentage increase = {0.6 ÷ 2} × 100 = 30%? WRONG. Correct: 0.6 ÷ 2 = 0.3 → 30%.
Additional Information • Option {a} corresponds to 0.4 g gain. • Option {b} corresponds to 0.5 g gain. • Option {d} corresponds to 0.7 g gain.

Q.13 A gas at 25°C is heated to 75°C. If its volume was 4 L initially, what will be the final volume? (Assume constant pressure)

- A. 4.5 L

- B. 5 L
- C. 6 L
- D. 8 L

Answer: B

Sol: The correct answer is (b). **Explanation** Use Charles’ law $\{V_1/T_1 = V_2/T_2\}$. Convert temperatures to Kelvin: $T_1 = 25 + 273 = 298\text{ K}$ $T_2 = 75 + 273 = 348\text{ K}$
 $V_2 = 4 \times \{348 \div 298\} \approx 4 \times 1.16 = 4.64 \approx 5\text{ L}$.
Additional Information • Option {a} underestimates temperature ratio. • Option {c} assumes ratio = 1.5. • Option {d} doubles volume incorrectly.

Q.14 Which teaching approach BEST helps students overcome misconceptions in science topics such as “heat” and “temperature”?

- A. Repeating the correct scientific definition several times
- B. Using short-answer drills
- C. Providing cognitive conflict through experiments
- D. Giving additional homework on the textbook chapter

Answer: C

Sol: The correct answer is (c). **Explanation** Misconceptions stick until students confront a situation that **contradicts their initial belief**. Experiments that produce unexpected outcomes create cognitive conflict, compelling students to revise their mental models.
Additional Information • Option {a} repetition cannot change deeply held misconceptions. • Option {b} drills reinforce memory, not conceptual clarity. • Option {d} homework does not address conceptual conflict.

Q.15 How many moles are present in 22 g of CO₂? (Molar mass = 44 g/mol)

- A. 0.25 mol
- B. 0.5 mol
- C. 1 mol
- D. 2 mol

Answer: B

Sol: The correct answer is (b). **Explanation** Moles = {Given mass ÷ Molar mass} = $22 \div 44 = 0.5$ {mole}.
Additional Information • Option {a} corresponds to 11 g of CO₂. • Option {c} corresponds to 44 g. • Option {d} corresponds to 88 g.

Q.16 A science teacher begins a lesson on “Air Pressure” by creating a vacuum inside a tin can and collapsing it in front of students. This strategy primarily promotes—

- A. Rote memorization of science facts
- B. Concept formation through direct experience
- C. Verification of textbook definitions
- D. Lecture-based theoretical learning

Answer: B

Sol: The correct answer is (b). **Explanation** Demonstrating a real phenomenon allows learners to **construct understanding** based on concrete observation. This aligns with experiential and constructivist approaches, where students make sense of concepts by witnessing them in action rather than hearing definitions.
Additional Information • Option {a} is incorrect because the demonstration encourages understanding, not memorization. • Option {c} is incorrect because the teacher is not verifying a known law but creating curiosity. • Option {d} is incorrect because this is a demonstration-based approach, not a lecture.

Q.17 A plant growing in waterlogged soil often shows yellowing of leaves. What is the MOST likely reason?

- A. Excess chlorophyll formation
- B. Magnesium deficiency
- C. Reduced oxygen availability to roots
- D. Excess transpiration



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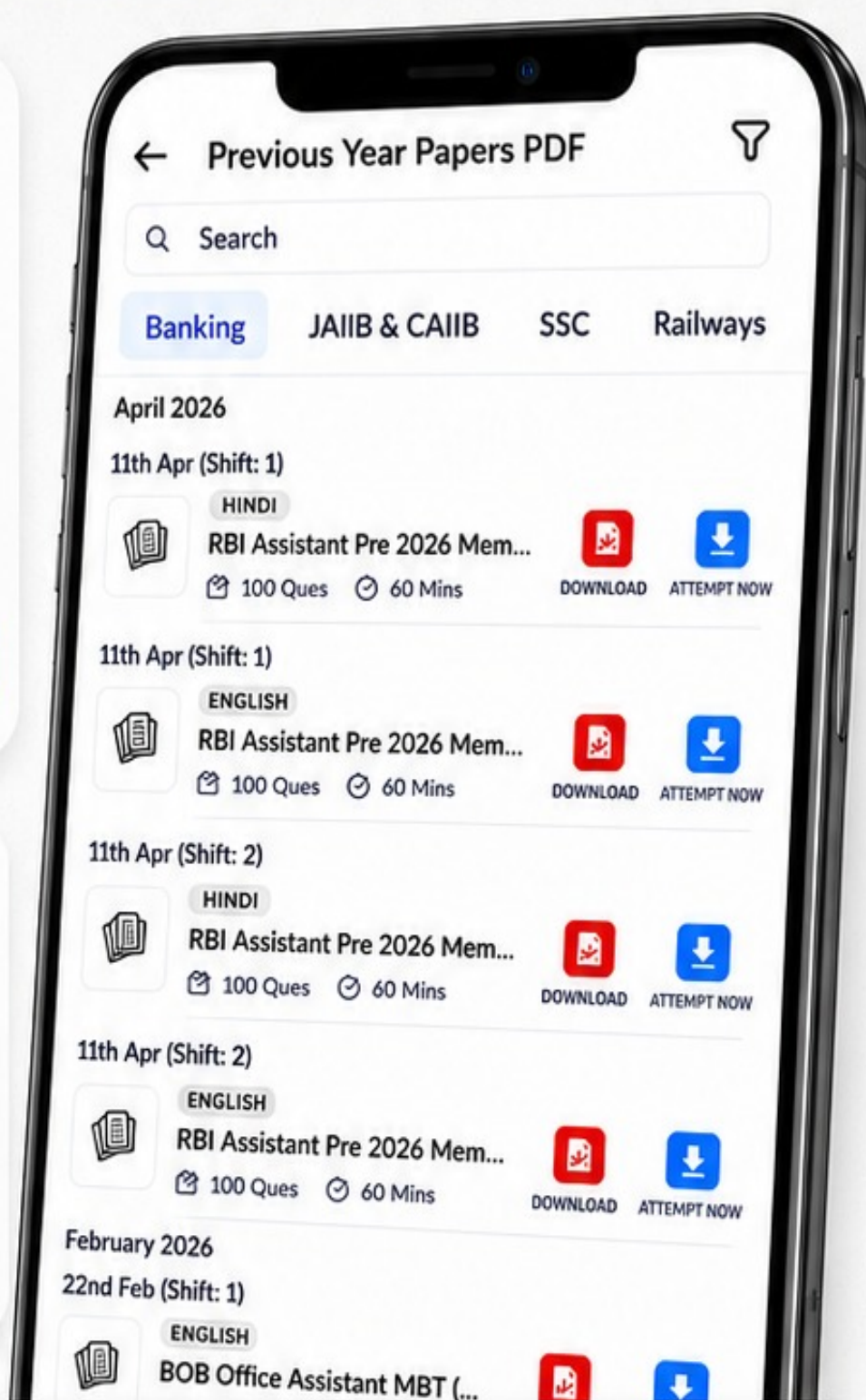
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Answer: C

Sol: The correct answer is (c).
Explanation Waterlogged soil traps water in pore spaces, preventing air entry. Roots face **oxygen starvation**, reducing nutrient uptake and causing chlorosis {yellowing}.
Additional Information • Option {a} excess chlorophyll would darken leaves, not yellow them. • Option {b} magnesium deficiency can cause yellowing but is not directly linked to waterlogging. • Option {d} transpiration decreases in waterlogged conditions.

Q.18 During a group activity, students measure the temperature change in water when salt is added. This activity mainly supports—
 A. Inquiry-based learning
 B. Teacher-centered instruction
 C. Memorizing chemical formulas
 D. Passive observation

Answer: A

Sol: The correct answer is (a).
Explanation Students actively investigate a scientific problem by collecting data, observing changes, and forming explanations. This is the essence of **inquiry-based learning**, where learners construct knowledge through exploration.
Additional Information • Option {b} is incorrect because the activity is student-centered. • Option {c} does not relate to the task. • Option {d} is wrong because students are participating actively.

Q.19 A teacher encourages students to classify leaves based on venation, shape, and margin. Which science process skill is being developed?
 A. Hypothesizing
 B. Classification
 C. Experimentation
 D. Inferring

Answer: B

Sol: The correct answer is (b). **Explanation** Grouping based on observable features directly develops the **classification skill**, a foundational scientific process used to organize data and identify patterns.
Additional Information • Option {a} hypothesizing involves forming predictions. • Option {c} experimentation requires controlled testing. • Option {d} inferring requires interpretation beyond observation.

Q.20 In which of the following conditions would the oxygen-carrying capacity of haemoglobin decrease even though the oxygen concentration around the blood is normal?
 A. When carbon monoxide binds preferentially to heamoglobin
 B. When carbon dioxide concentration decreases
 C. When temperature in tissues decreases
 D. When blood pH becomes slightly alkaline

Answer: A

Sol: The correct answer is (a). **Explanation** Carbon monoxide has **240 times stronger affinity** for hemoglobin than oxygen. Even if oxygen is present normally, hemoglobin becomes saturated with CO, drastically lowering oxygen transport capacity.
Additional Information • Option {b} lowering CO₂ increases hemoglobin's oxygen affinity, not decreases. • Option {c} low temperature increases hemoglobin's oxygen binding tendency. • Option {d} alkaline pH also increases oxygen affinity rather than reducing it.