Answer Key: First Terminal Evaluation
2025-26
Chemistry, Class VIII

Section A: Multiple-Choice Questions (3 out of 4, 1 score each, Total: 3)

1. **Which of the following is a characteristic of matter?**
   (a) It has no mass (b) It occupies space (c) It does not change state (d) It has no volume
   Answer: (b) It occupies space
   Explanation: Matter is defined as anything that occupies space and has mass, as demonstrated by experiments where objects cause a change in water level when submerged.

2. **Which of these is an example of a chemical change?**
   (a) Melting of ice (b) Burning of firewood (c) Dissolution of salt in water (d) Formation of ice
   Answer: (b) Burning of firewood
   Explanation: Burning of firewood is a chemical change because it produces new substances, such as ash and gases, unlike melting or dissolving, which only alter the physical state.

3. **Which scientist proposed that all matter is made up of indivisible particles called atoms?**
   (a) Henry Cavendish (b) Sir Humphry Davy (c) Democritus (d) Mendeleev
   Answer: (c) Democritus
   Explanation: Democritus is credited with proposing that all matter consists of indivisible particles called atoms, a foundational concept in atomic theory.

4. **In the chemical formula $2N_2$, how many nitrogen atoms are present?**
   (a) 2 (b) 4 (c) 6 (d) 8
   Answer: (b) 4
   Explanation: The formula $2N_2$ represents two nitrogen molecules, each containing two nitrogen atoms, so the total is $2 \times 2 = 4$ nitrogen atoms.

Section B: Short-Answer Questions (4 out of 5, 2 scores each, Total: 8)

5. **Answer the following about states of matter:**
   (a) In which state of matter are the particles farthest apart? (1)
   (b) Why do solids have a fixed shape? (1)
   Answer:
   (a) Gas
   (b) Solids have a fixed shape because their particles are very close together with strong forces of attraction, restricting their movement.
   Explanation: In gases, particles are widely separated with weak forces, allowing free movement. In solids, tightly packed particles with strong attractions maintain a fixed structure.

6. **Classify the following as physical or chemical changes:**
   (a) Rusting of iron (1)
   (b) Melting of wax (1)
   Answer:
   (a) Chemical change
   (b) Physical change
   Explanation: Rusting of iron forms new substances (iron oxides), indicating a chemical change. Melting of wax only changes its state from solid to liquid, a physical change.

7. **Answer the following about electrochemical reactions:**
   (a) What is the process of coating a metal with another metal using electricity called? (1)
   (b) Name one metal commonly used for coating ornaments. (1)
   Answer:
   (a) Electroplating
   (b) Gold
   Explanation: Electroplating involves using electricity to coat a metal onto another, often for decoration or protection. Gold is commonly used for coating ornaments due to its luster and resistance to tarnish.

8. **Complete the following chemical equation and identify the type of reaction:**
   Quicklime + Water $\rightarrow$ Slaked lime + ____ (1)
   Type of reaction: ____ (1)
   Answer:
   Quicklime + Water $\rightarrow$ Slaked lime + Heat
   Type of reaction: Exothermic
   Explanation: The reaction of quicklime with water produces slaked lime and releases heat, classifying it as an exothermic reaction due to heat liberation.

9. **Calculate the total number of atoms in** $3NH_3$**.**
   Show your working. (2)
   Answer: Total number of atoms = 12

Working:
One NH_3 molecule contains 1 nitrogen (N) atom and 3 hydrogen (H) atoms = 4 atoms.
For 3 molecules: $3 \times (1 + 3) = 3 \times 4 = 12$ atoms.
Explanation: The chemical formula NH_3 indicates one nitrogen and three hydrogen atoms per molecule, so three molecules contain a total of 12 atoms.

Section C: Long-Answer Questions (3 out of 4, 3 scores each, Total: 9)

10. **Refer to the reaction of magnesium with hydrochloric acid:**
(a) Write the chemical equation for the reaction. (1)
(b) What gas is produced, and how can it be identified? (1)
(c) Is this reaction exothermic or endothermic? Explain. (1)
Answer:
(a) $Mg + 2HCl \rightarrow MgCl_2 + H_2$
(b) Gas produced: Hydrogen; Identification: It burns with a pop sound when a burning matchstick is brought near the mouth of the test tube.
(c) Exothermic; Explanation: The reaction releases heat, as the test tube feels warm during the reaction, indicating heat liberation.
Explanation: Magnesium reacts with hydrochloric acid to form magnesium chloride and hydrogen gas, which produces a pop sound when ignited. The heat released classifies it as exothermic.

11. **Answer the following about the Periodic Table:**
(a) What is the basis of Mendeleev's Periodic Table? (1)
(b) Why did Mendeleev leave blank spaces in his table? (1)
(c) Name one limitation of Mendeleev's Periodic Table. (1)
Answer:
(a) The basis is the ascending order of atomic mass.
(b) Blank spaces were left for elements yet to be discovered, with predicted properties.
(c) Hydrogen could not be given an exact position.
Explanation: Mendeleev arranged elements by increasing atomic mass, grouping those with similar properties. He left spaces for undiscovered elements and faced challenges placing hydrogen due to its unique properties.

12. **Observe the activity of heating sugar in a boiling tube:**
(a) What are the products formed when sugar is heated? (1)
(b) Is this a physical or chemical change? Why? (1)
(c) Write the chemical equation for this reaction. (1)
Answer:
(a) Carbon and water
(b) Chemical change; New substances (carbon and water) are formed.
(c) $C_{12}H_{22}O_{11} \rightarrow 12C + 11H_2O$
Explanation: Heating sugar decomposes it into carbon (black residue) and

water (vapor or droplets), forming new substances, indicating a chemical change. The equation represents this decomposition.

13. **Answer the following about diffusion:**
(a) Define diffusion and give one example from daily life. (1)
(b) Why does diffusion occur faster in gases than in liquids? (1)
(c) Describe an activity to demonstrate diffusion in liquids. (1)
Answer:
(a) Diffusion is the movement of particles from a region of higher concentration to lower concentration; Example: The smell of perfume spreading in a room.
(b) Diffusion is faster in gases because gas particles are farther apart and move faster due to weaker forces of attraction compared to liquids.
(c) Add a drop of ink to a glass of water and observe the ink slowly spreading throughout the water without stirring.
Explanation: Diffusion occurs due to random particle movement, faster in gases due to greater spacing and weaker attractions. The ink-in-water activity shows diffusion as the ink particles spread evenly in the liquid.