Class 9 Science Worksheet 5: Chapter 1 - Matter in Our Surroundings

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Student Details:

- Name: _____
- Class: _____
- Date: _____

Instructions:

- Answer all the questions.
- Write neatly and legibly.
- For MCQs, circle the correct option.
- For assertion and reason questions, choose the correct option and provide brief explanations if necessary.

Section A: Multiple Choice Questions (MCQs)

1. **Which of the following statements correctly describes the behaviour of particles in a liquid?**

   a) Particles are closely packed and vibrate in fixed positions.

   b) Particles are far apart and move freely in all directions.

   c) Particles are moderately packed and can slide past each other.

   d) Particles have no fixed arrangement and are constantly in motion.

2. **The process in which a liquid changes directly into a solid without becoming a gas first is called:**

   a) Freezing

   b) Condensation

   c) Solidification

   d) Sublimation

3. **When a substance melts, its temperature:**

   a) Increases gradually until it reaches the melting point.

   b) Remains constant at the melting point until the entire substance has melted.

   c) Decreases gradually as it absorbs heat.

   d) Increases continuously without a specific melting point.

4. **Which of the following conditions will lead to a faster rate of evaporation?**

   a) High humidity and low temperature

   b) Low surface area and high temperature

   c) High surface area and high temperature

   d) Low humidity and low temperature

5. **If you increase the pressure on a gas at constant temperature, what happens to its volume?**

   a) The volume increases.

   b) The volume decreases.

   c) The volume remains unchanged.

   d) The volume fluctuates randomly.

Section B: Assertion and Reason

Instructions: For each assertion and reason pair, choose the correct option.

6. **Assertion (A): Solids have a definite shape and volume.**

   Reason (R): The particles in a solid are arranged in a fixed and orderly manner.

   a) Both A and R are true, and R is the correct explanation of A.

   b) Both A and R are true, but R is not the correct explanation of A.

c) A is true, but R is false.

d) A is false, but R is true.

7. **Assertion (A): Evaporation occurs only at the surface of a liquid.**

   Reason (R): Evaporation requires the liquid particles to gain enough energy to escape into the gas phase.

   a) Both A and R are true, and R is the correct explanation of A.

   b) Both A and R are true, but R is not the correct explanation of A.

   c) A is true, but R is false.

   d) A is false, but R is true.

Section C: Short Answer Questions

8. **How does the density of a substance change when it transitions from a liquid to a solid state? Provide an example to illustrate this change.**
9. **What is the significance of the latent heat of vaporization in everyday life? Provide examples where this concept is applied.**
10. **Discuss the effect of surface area on the rate of evaporation with a real-life example.**
11. **Explain why gases are more compressible than liquids and solids, considering their particle arrangement and intermolecular forces.**

Section D: Long Answer Questions

12. **Describe the different ways in which the state of matter can be changed in terms of energy input and removal. Use examples of phase transitions to support your explanation.**
13. **Explain how the boiling point of a liquid is affected by the atmospheric pressure. Discuss this effect using practical examples.**

14. **Discuss the role of evaporation in cooling mechanisms. Provide examples of how evaporation is used to cool substances or environments.**
15. **Analyze the impact of temperature changes on the properties of matter. How do temperature fluctuations influence the physical state of substances? Include specific examples to support your answer.**