CBSE Test Paper 04

Chapter 01 Matter in Our Surrounding

1. Match the following with correct response. **(1)**

Column A	**Column B**
(1) Solids	(A) Combined in any ratio
(2) Gases	(B) Intermolecular spaces are maximum
(3) Liquids	(C) Intermolecular spaces are minimum
(4) Mixture	(D) Have definite volume do not have definite shape

   a. 1-C, 2-B, 3-D, 4-A
   b. 1-B, 2-D, 3-A, 4-C
   c. 1-D, 2-A, 3-C, 4-B
   d. 1-A, 2-C, 3-B, 4-D

2. Find the incorrect statement **(1)**

   a. Low boiling liquids evaporate faster than high boiling liquids.
   b. The normal room temperature is 298K
   c. Evaporation is a surface phenomenon but boiling is not
   d. Cooling is caused during boiling

3. Diethyl ether evaporates faster than ethyl alcohol because of which factor? **(1)**

   a. Vapour pressure of ether is greater than that of alcohol.
   b. Molar mass of ether is graters than that of ether.
   c. vapour pressure of alcohol is greater than that of ether
   d. Boiling point of ether is higher than that of alcohol.

4. Physical state of water at $25^{\circ}C$, $0^{\circ}C$ and $100^{\circ}C$ is respectively **(1)**

   a. gas, solid and liquid
   b. solid, gas and liquid
   c. liquid, solid and gas

d. solid, liquid and gas

5. Which of the following statements is correct for the solid state? **(1)**

   A. The constituent particles are closely packed.
   B. The attracting forces are very strong.
   C. The movement of constituent particle is restricted.
   D. They do have fixed shape.

   a. A and B
   b. A, B and C
   c. All of these
   d. Only D

6. Define gaseous state of a substance. **(1)**

7. On suffering from fever which will lower down your body temperature, more ice or ice cold water? **(1)**

8. In what ways are materials different from each other? **(1)**

9. Arrange the following substances in increasing order of forces of attraction between the particles— water, sugar, oxygen. **(1)**

10. Explain why temperature remains constant during interconversion of states of matter? **(1)**

11. A cooler is quite effective on a hot and dry day. Explain. **(3)**

12. When we pour some acetone or perfume on our palm, we get a cooling sensation. Give reason. **(3)**

13. How much water should be mixed with 12 mL of alcohol so as to obtain a 12 % alcohol solution? **(3)**

14. In severe cold weather, a family burnt wood in the room during the night by keeping the door and windows close. After sometime, they felt suffocated. They immediately opened the windows and got relief. What did actually happen? **(5)**

15. Give reasons for the following observations: **(5)**
    a. A gas completely fills the vessel in which it is kept.
    b. A gas exerts pressure on the walls of the container.
    c. Naphthalene balls disappear with time without leaving any solid.
    d. We can easily move our hand in air but to do the same through a solid block of wood, we need a karate expert.
    e. Our palm feel cold when we put some acetone or petrol or perfume on it.

CBSE Test Paper 04

Chapter 01 Matter in Our Surrounding

Answers

1. a. 1-C, 2-B, 3-D, 4-A

   Explanation:

   i. Solids- (C) Intermolecular spaces are minimum Because of the strong force of attraction between particles of a solid.

   ii. Gases - (B) Intermolecular spaces are maximum, Because due to high kinetic energy and negligible forces of attraction between particles of gases.

   iii. Liquids - (D) Have definite volume do not have a definite shape, Liquid has a fixed volume because, at a given temperature, the spaces between its particles are fixed. Liquid do not have a definite shape because the positions of its particles are not fixed due to comparatively less strong forces of attraction between them.

   iv. Mixture - (A) Combined in any ratio, A mixture is a substance which consists of two or more elements or compounds not chemically combined together.

2. d. Cooling is caused during boiling

   Explanation: Cooling is not caused during boiling. The normal room temperature is 298K or. $25^{o}C$ Evaporation is a surface phenomenon but boiling is a bulk phenomenon. The liquid having low boiling points evaporate faster.

3. a. Vapour pressure of ether is greater than that of alcohol.

   Explanation: Being lower vapour pressure ether starts evaporating faster than alcohol. Diethyl ether evaporates faster than that of ethyl alcohol because the vapour pressure of ether is greater than that of alcohol.

4. c. liquid, solid and gas

   Explanation: At $25^{o}C$ particles of water are in liquid state.

   At **$0^{o}C$** particles stops moving and vibrates about a fixed position. At this stage, the water freezes and becomes a solid.

   At $100^{o}C$ particles of a water have sufficient kinetic energy to overcome the forces of attraction holding them together and separate into individual particles. and the liquid

boils to form a gas.

5. c. All of these

   Explanation: The constituent particles in a solid are closely packed. The intermolecular forces of attraction in a solid are very strong since the particles are closely-packed. The inter-molecular spaces are small. The movement of constituent particles about the mean position is restricted. Solids have fixed shapes. Particles of solid state are arranged in a regular pattern.

6. A substance is said to be in the gaseous state if under normal temperature and pressure, its boiling point is below the room temperature.

7. Ice will lower down body temperature more because it will take latent heat of fusion from our body and fever will come down faster.

8. Materials are different from each other in their mass, volume and shape.

9. Oxygen< water< sugar.

10. Heat supplied to a substance is getting used during changing its state to overcome the force of attraction between the particles. The excess heat is absorbed by the particles in the form of latent heat.

11. The humidity level in the atmosphere is quite low and the evaporation rate of water expected to be high. Since cooling is caused during evaporation, a cooler is quite effective on a hot and dry day.

12. Both acetone and perfume are low boiling liquids. When any of them is poured on the palm, it readily changes into vapours or evaporates. For this, it needs some energy which is taken from the palm. The temperature of the palm gets lowered and we get a cooling sensation.

13. Volume of alcohol (solute) =12 mL
    Let the volume of water (Solvent) = x mL
    ∴ Volume of solution = (12 + x) mL
    Concentration of solution = $\frac{\text{Volume of solute}}{\text{Volume of solution}} \times 100 = \frac{\text{Volume of alcohol}}{\text{Volume of solution}} \times 100$
    $12 = \frac{12}{12+x} \times 100$

12 + x = 100

x = 100 - 12 = 88 mL

So, 88 mL of water should be mixed with 12 mL of alcohol to obtain 12% alcohol solution. .

14. When wood burns, the carbon present is oxidised to carbon dioxide (CO2) which is non-poisonous. When the windows are close, the air or oxygen cannot enter the room. In the incomplete supply of oxygen, carbon is oxidised to carbon, monoxide (CO) which is a highly poisonous gas. It caused suffocation. On opening the window, the poisonous gas slowly diffused out of the room and fresh air came inside. That is how, the poisonous effect of the gas was neutralised and the family got relief.

15. a. The molecules of a gas possess high kinetic energy and very weak inter-molecular forces. The molecules move in all directions. As a result, the vessel is completely filled with gas.
    b. The molecules of a gas possess high kinetic energy and random motion. The molecules keep hitting the walls of the container. As a result, the pressure is exerted by the gas.
    c. Naphthalene is a volatile solid; therefore, it changes into vapour completely and no solid is left. Sublimation of naphthalene occurs.
    d. Solids have very strong inter-molecular attraction among their particles while inter-molecular attraction is very poor in case of gases. Due to this reason, we are able to easily move our hands in air but cannot do the same through a solid block of wood Acetone.
    e. Petrol and perfumes are highly volatile compounds. When we place them on our palm, they evaporate at a high rate and absorb heat from our palm; as a result, our palm feel cold.