CBSE Test Paper 02

Chapter 01 Matter in Our Surrounding

1. The evaporation of a liquid occur only at **(1)**

   a. all temperatures

   b. temperature less than $100^{o}C$

   c. fixed temperature

   d. temperature more than $100^{o}C$

2. Match the following with the correct response:- **(1)**

(1) Element	(A) Sugar
(2) Compound	(B) Mercury
(3) Mixture	(C) Salt solution
(4) Liquid element	(D) Gold

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

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

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

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

3. Which of the following have least inter atomic spacing? **(1)**

   a. solid

   b. plasma

   c. liquid

   d. gases

4. According to ancient Indian philosophers, matter was made up of: **(1)**

   a. Six constituents

   b. Five constituents (Panchtatvas)

   c. Three constituents

   d. Four constituents

5. The melting point of a substance is defined as the constant temperature at atmospheric pressure when: **(1)**

   a. Both the solid & liquid exist together
   b. The solid starts melting.
   c. The solid is completely changed into liquid.
   d. Only liquid is present

6. Why should we wear cotton clothes in summer? **(1)**

7. Name the process which occurs when a drop of Dettol is added to water. **(1)**

8. What is the reason for the existence of the three states of matter? **(1)**

9. Under what conditions gases can be liquefied? In which form LPG is filled in gas cylinder? **(1)**

10. Define density and give its SI unit. **(1)**

11. A glass tumbler containing hot water is kept in the freezer compartment of a refrigerator (temperature < $0^{\circ}C$). If you could measure the temperature of the content of the tumbler, which of the following graphs would correctly represent the change in its temperature as a function of time? **(3)**

12. Why are gases compressible but not liquids? **(3)**

13. Give two reasons to justify Water at room temperature is a liquid **(3)**

14. Describe an activity to determine the boiling point of water and melting point of ice. **(5)**

15. a. Tabulate the differences in the characteristics of states of matter.
    b. Comment upon the following: rigidity, compressibility, fluidity, filling a gas container, shape, kinetic energy and density. **(5)**

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Answers

1. a. all temperatures

   Explanation: The process of changing liquid into gases (vapour) even below its boiling point is called evaporation. The rate of evaporation increase with the increase in temperature, surface area and wind speed.

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

   Explanation:

   a. Solid Element - Gold occurs in solid state.
   b. Compounds - Sugar(Cane sugar - $C_{12}H_{22}O_{11}$)is made of two or more elements (C, H and O) which are chemically combined in a fixed proportion by mass.
   c. Mixture - Salt solution consists of two or more compounds (Sodium chloride,and Water)which are not chemically combined.
   d. Liquid element - Mercury is an element which is a liquid at room temperature.

3. a. solid

   Explanation: This is because the force of attraction between the particles (or inter-particles forces) are stronger in solids, less in liquids and negligible in gases and the movement of particles (or kinetic energy of particles) is the minimum in solids, more in liquids and the maximum in gases.

4. b. Five constituents (Panchtatvas)

   Explanation: Early Indian philosopher categorized matter in five types and called them panch-tatwa (Five-elements) - Vayu (Air), Jal (Water), Agni (Fire), Prithvi (Earth) and Aakash (Sky).

5. a. Both the solid & liquid exist together

   Explanation: Melting point is defined as the constant temperature at which the solid and the liquid phases of substance coexist.

6. During summer, we perspire more and the particles at the surface of the liquid gain energy from the surrounding or body surface and change into vapour. Now, cotton

being a good absorber of water helps in absorbing the sweat and expose it to the atmosphere for easy evaporation and we feel cool.

7. When dettol is added to water, diffusion takes place.

8. The three states of matter differ with respect to the inter particle spaces and forces. The inter particle spaces are minimum in the solid state and maximum in the gaseous state while force of attraction is much stronger in solid state than gaseous state.

   Both these conditions favour 3 different categories of states of matter.

9. By applying pressure and reducing temperature, gases can be liquefied. The liquefied petroleum gas (LPG) is filled in gas cylinders in the compressed gas form.

10. Density of a substance is defined as the mass per unit volume. Its SI unit is kilogrammes per cubic metres I.e. kg/m^3.

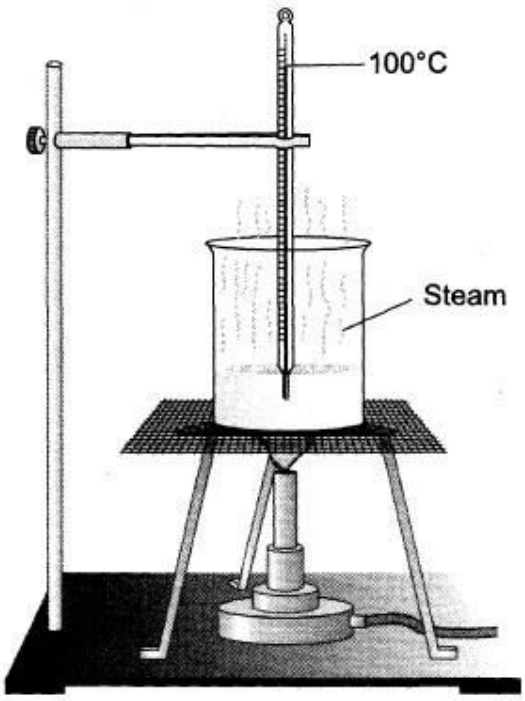
11. The water will cool initially till it reaches $0^{\circ}C$, the freezing point. At this stage, the temperature will remain constant till all the water will freeze due to latent heat. After this, temperature would fall again.

12. Gases are compressible because the inter-molecular space is very large and kinetic energy is higher in gases, whereas liquids are not compressible because in liquids, the inter-molecular space is less and kinetic energy is comparatively lesser.

13. Water is a liquid at room temperature ($25^{o}C$) due to the following reasons:

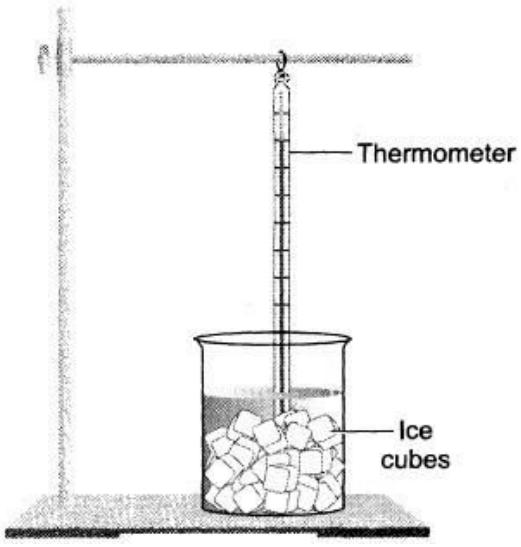
    i. When placed in a beaker, its level cannot be changed on pressing.
    ii. It can take the shape of any container in which it is placed.

14. **Determination of boiling point of water:** Boiling point of water is the temperature at which water starts boiling. Boiling point of pure water is 100^{o} C. It can be determined by following activity:



Determination of melting point of ice: Melting point of ice is the temperature at which it starts melting.It can be determined by following activity:

a. In a beaker take some water and seal it with an aluminum block with one hole in it.
b. Insert a thermometer in the hole of the aluminium block.
c. Put the beaker on a tripod stand as shown in figure and heat the apparatus with the help of kerosene burner slowly.
d. Observe what happens to the water.
e. You will observe a steady stream of bubbles.
f. Note the reading on thermometer .This temperature is the boiling point of water.
g. Take crushed ice in a beaker and insert a thermometer in the beaker by hanging it from the clamp of the stand in such a way that the bulb of the thermometer is completely inside the ice.
h. Wait for some time and keep recording the temperature after small intervals of time.
i. Note down the temperature when ice just starts melting.
j. Let the bulb of the thermometer remain in a mixture of ice and water for some more time and keep recording the temperature.



15.

a.

Solid	Liquid	Gas
Particles are rigid and uncompressible.	Particles are not rigid but can be compressed to limited extent.	Particles are not at all rigid and can be compressed easily.
They possess a definite shape and volume.	They have only a definite volume but acquire shape of container in which they are kept.	They don't have a definite shape or volume.
They don't have the ability to flow.	They can easily flow from higher to the lower level.	They can flow in all the possible directions.
Example: salt, sugar, chalk, gold, silver etc.	Example: water, alcohol, diesel, petrol etc.	Example: air, CNG, smoke etc.

b. **Rigidity**→ It is the property of matter to maintain its shape even if external forces work and the solids show this property.

Compressibility → It is the property of matter to allow compression under high pressure and the gases show this property.

Fluidity → It is the property of a substance to easily flow and allow change in its

shape under external forces and this property is exhibited by both liquids and gases.

Filling a gas container → Gases can be compressed easily hence they can be filled within a vessel at high pressure. This property of gases allows their convenient filling into a small container or cylinder and that also in a large volume. It also allows their easy transport from one place to the other eg CNG.

Shape → According to the type of matter shape differs depending upon location of particles like Solids have definite shape while Liquids acquire the shape of their container and gases as such don't have any shape.

Kinetic energy → It is the kind of energy present in an object when it is under motion as the particles of that object/matter are continuously moving therefore matter has kinetic energy. However greater is the movement more will be the kinetic energy and vice versa i.e. solid < liquid < gas

Density → Mass per unit volume of a substance/matter is known as its density i.e. density = mass/volume