Chapter 1

MATTER IN OUR SURROUNDINGS

Multiple Choice Questions

1. Which one of the following sets of phenomena would increase on raising the temperature?

(a) Diffusion, evaporation, compression of gases

(b) Evaporation, compression of gases, solubility

(c) Evaporation, diffusion, expansion of gases

(d) Evaporation, solubility, diffusion, compression of gases

2. Seema visited a Natural Gas Compressing Unit and found that the gas can be liquefied under specific conditions of temperature and pressure. While sharing her experience with friends she got confused. Help her to identify the correct set of conditions

(a) Low temperature, low pressure

(b) High temperature, low pressure

(c) Low temperature, high pressure

(d) High temperature, high pressure

3. The property to flow is unique to fluids. Which one of the following statements is correct?

(a) Only gases behave like fluids

(b) Gases and solids behave like fluids

(c) Gases and liquids behave like fluids

(d) Only liquids are fluids

4. During summer, water kept in an earthen pot becomes cool because of the phenomenon of

(a) diffusion

(b) transpiration

(c) osmosis

(d) evaporation

5. A few substances are arranged in the increasing order of 'forces of attraction' between their particles. Which one of the following represents a correct arrangement?

(a) Water, air, wind

(b) Air, sugar, oil

(c) Oxygen, water, sugar

(d) Salt, juice, air

6. On converting 25°C, 38°C and 66°C to kelvin scale, the correct sequence of temperature will be
   (a) 298 K, 311 K and 339 K
   (b) 298 K, 300 K and 338 K
   (c) 273 K, 278 K and 543 K
   (d) 298 K, 310 K and 338 K

7. Choose the correct statement of the following
   (a) conversion of solid into vapours without passing through the liquid state is called vapourisation.
   (b) conversion of vapours into solid without passing through the liquid state is called sublimation.
   (c) conversion of vapours into solid without passing through the liquid state is called freezing.
   (d) conversion of solid into liquid is called sublimation.

8. The boiling points of diethyl ether, acetone and *n*-butyl alcohol are 35°C, 56°C and 118°C respectively. Which one of the following correctly represents their boiling points in kelvin scale?
   (a) 306 K, 329 K, 391 K
   (b) 308 K, 329 K, 392 K
   (c) 308 K, 329 K, 391 K
   (d) 329 K, 392 K, 308 K

9. Which condition out of the following will increase the evaporation of water?
   (a) Increase in temperature of water
   (b) Decrease in temperature of water
   (c) Less exposed surface area of water
   (d) Adding common salt to water

10. In which of the following conditions, the distance between the molecules of hydrogen gas would increase?
   (i) Increasing pressure on hydrogen contained in a closed container
   (ii) Some hydrogen gas leaking out of the container
   (iii) Increasing the volume of the container of hydrogen gas
   (iv) Adding more hydrogen gas to the container without increasing the volume of the container
   (a) (i) and (iii)
   (b) (i) and (iv)
   (c) (ii) and (iii)
   (d) (ii) and (iv)

Short Answer Questions

11. A sample of water under study was found to boil at 102°C at normal temperature and pressure. Is the water pure? Will this water freeze at 0°C? Comment.

12. A student heats a beaker containing ice and water. He measures the temperature of the content of the beaker as a function of time. Which of the following (Fig. 1.1) would correctly represent the result? Justify your choice.

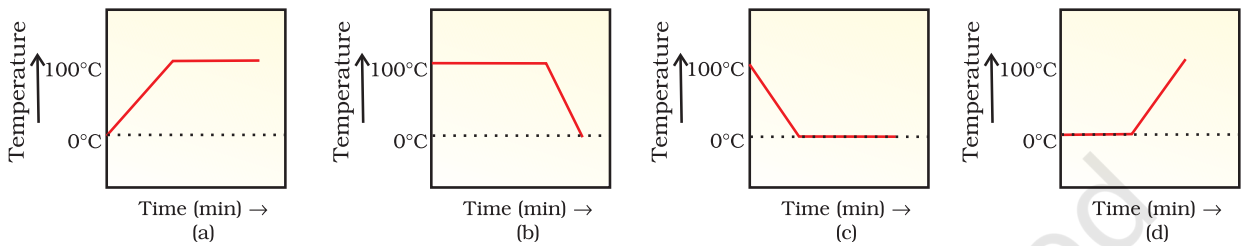

Fig. 1.1

13. Fill in the blanks:

(a) Evaporation of a liquid at room temperature leads to a——— effect.

(b) At room temperature the forces of attraction between the particles of solid substances are———than those which exist in the gaseous state.

(c) The arrangement of particles is less ordered in the ——— state. However, there is no order in the ——— state.

(d) ——— is the change of gaseous state directly to solid state without going through the ———state.

(e) The phenomenon of change of a liquid into the gaseous state at any temperature below its boiling point is called———.

14. Match the physical quantities given in column **A** to their S I units given in column **B** :

(A)	**(B)**
(a) Pressure	(i) cubic metre
(b) Temperature	(ii) kilogram
(c) Density	(iii) pascal
(d) Mass	(iv) kelvin
(e) Volume	(v) kilogram per cubic metre

15. The non S I and S I units of some physical quantities are given in column **A** and column **B** respectively. Match the units belonging to the same physical quantity:

(A)	**(B)**
(a) degree celsius	(i) kilogram
(b) centimetre	(ii) pascal
(c) gram per centimetre cube	(iii) metre
(d) bar	(iv) kelvin
(e) milligram	(v) kilogram per metre cube

16. 'Osmosis is a special kind of diffusion'. Comment.

17. Classify the following into osmosis/diffusion

(a) Swelling up of a raisin on keeping in water.
(b) Spreading of virus on sneezing.
(c) Earthworm dying on coming in contact with common salt.
(d) Shrinking of grapes kept in thick sugar syrup.
(e) Preserving pickles in salt.
(f) Spreading of smell of cake being baked through out the house.
(g) Aquatic animals using oxygen dissolved in water during respiration.

18. Water as ice has a cooling effect, whereas water as steam may cause severe burns. Explain these observations.

19. Alka was making tea in a kettle. Suddenly she felt intense heat from the puff of steam gushing out of the spout of the kettle. She wondered whether the temperature of the steam was higher than that of the water boiling in the kettle. Comment.

20. A glass tumbler containing hot water is kept in the freezer compartment of a refrigerator (temperature < 0°C). If you could measure the temperature of the content of the tumbler, which of the following graphs (Fig.1.2) would correctly represent the change in its temperature as a function of time.

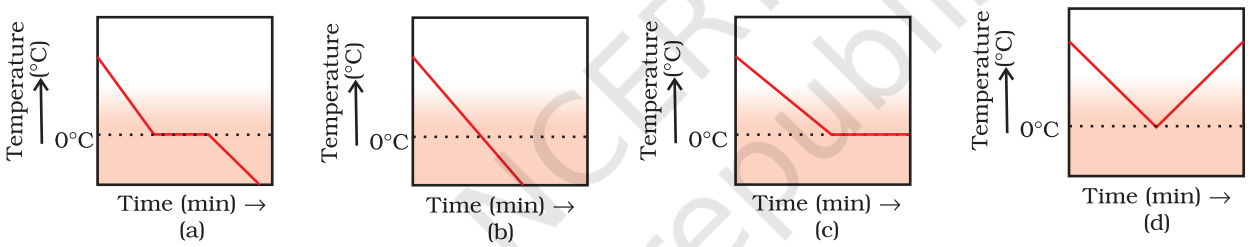

Fig. 1.2

21. Look at Fig. 1.3 and suggest in which of the vessels A,B, C or D the rate of evaporation will be the highest? Explain.

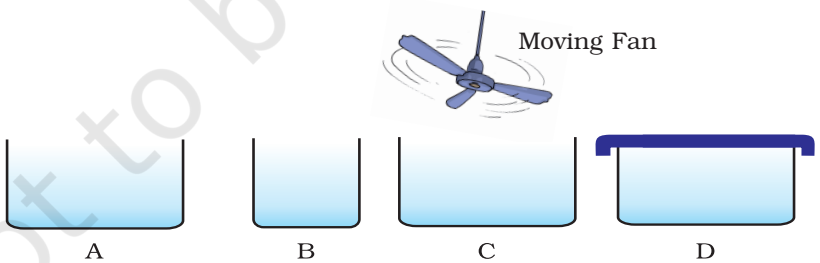

Fig. 1.3

22. (a) Conversion of solid to vapour is called sublimation. Name the term used to denote the conversion of vapour to solid.

(b) Conversion of solid state to liquid state is called fusion; what is meant by latent heat of fusion?

Long Answer Questions

23. You are provided with a mixture of naphthalene and ammonium chloride by your teacher. Suggest an activity to separate them with well labelled diagram.

24. It is a hot summer day, Priyanshi and Ali are wearing cotton and nylon clothes respectively. Who do you think would be more comfortable and why?

25. You want to wear your favourite shirt to a party, but the problem is that it is still wet after a wash. What steps would you take to dry it faster?

26. Comment on the following statements:

(a) Evaporation produces cooling.

(b) Rate of evaporation of an aqueous solution decreases with increase in humidity.

(c) Sponge though compressible is a solid.

27. Why does the temperature of a substance remain constant during its melting point or boiling point?