Chapter 1

ANSWERS

Multiple Choice Questions

1. (c) **2.** (c) **3.** (c) **4.** (d)

5. (c) **6.** (a) **7.** (b) **8.** (c)

9. (a) **10.** (c)

Short Answer Questions

11. It's freezing point will be below 0°C due to the presence of a non-volatile impurity in it.

12. Since ice and water are in equilibrium, the temperature would be zero. When we heat the mixture, energy supplied is utilized in melting the ice and the temperature does not change till all the ice melts because of latent heat of fusion. On further heating, the temperature of the water would increase. Therefore the correct option is (d).

13. (a) cooling
(b) stronger
(c) liquid, gaseous
(d) sublimation, liquid
(e) evaporation

14. (a) — (iii)
(b) — (iv)
(c) — (v)
(d) — (ii)
(e) — (i)

15. (a) — (iv)
(b) — (iii)
(c) — (v)
(d) — (ii)
(e) — (i)

16. Yes, this is true. In both the phenomena, there is movement of particles from region of higher concentration to that of lower concentration. However, in the case of osmosis the movement of solvent is through a semi permeable membrane which is permeable only to water molecules.

17. (a) Osmosis
(b) Diffusion
(c) Osmosis
(d) Osmosis
(e) Osmosis
(f) Diffusion
(g) Diffusion

18. In case of ice the water molecules have low energy while in the case of steam the water molecules have high energy. The high energy of water molecules in steam is transformed as heat and may cause burns. On the other hand, in case of ice, the water molecules take energy from the body and thus give a cooling effect.

19. The temperature of both boiling water and steam is 100°C, but steam has more energy because of latent heat of vapourisation.

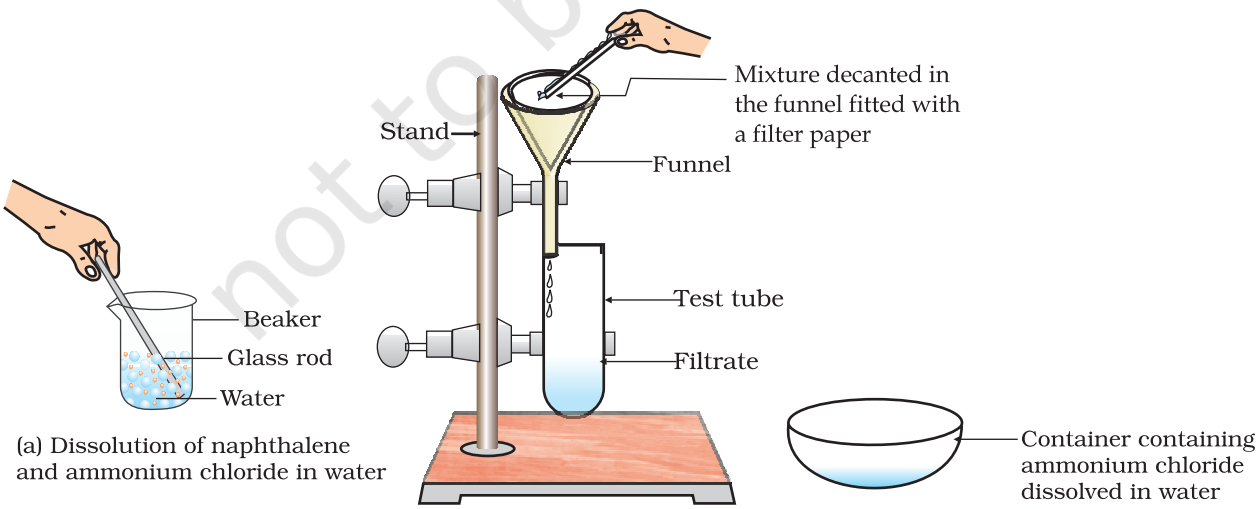
20. (a) The water will cool initially till it reaches 0 °C, the freezing point. At this stage the temperature will remain constant till all the water will freeze. After this temperature would fall again.

21. (c) The rate of evaporation increases with an increase of surface area because evaporation is a surface phenomenon. Also, with the increase in air speed, the particles of water vapour will move away with the air, which will increase the rate of evaporation.

22. (a) Sublimation
(b) The amount of heat required to convert 1 kg of solid into liquid at one atmosphere pressure at its melting point is known as its latent heat of fusion.

Long Answer Questions

23. **Hint—** Naphthalene is insoluble in water but soluble in ether an organic solvent. It is volatile at room temperature. Ammonium chloride is soluble in water and volatile at higher temperature. It decomposes on heating to dryness.



(a) Dissolution of naphthalene and ammonium chloride in water

(b) Filtration

(c) Evaporation

24. Cotton being a better absorber of water than nylon helps in absorption of sweat followed by evaporation which leads to cooling. So Priyanshi is more comfortable, whereas Ali is not so comfortable.

25. Conditions that can increase the rate of evaporation of water are
(a) an increase of surface area by spreading the shirt
(b) an increase in temperature by putting the shirt under the sun
(c) increase the wind speed by spreading it under the fan.

26. (a) Evaporation produces cooling as the particles at the surface of the liquid gain energy from the surroundings and change into vapour thereby producing a cooling effect.
(b) Air around us cannot hold more than a definite amount of water vapour at a given temperature which is known as humidity. So, if the air is already rich in water vapour, it will not take up more water therefore, rate of evaporation of water will decrease.
(c) A sponge has minute holes in which air is trapped. Also the material is not rigid. When we press it, the air is expelled out and we are able to compress it.

27. The temperature of a substance remains constant at its melting and boiling points untill all the substance melts or boils because, the heat supplied is continuously used up in changing the state of the substance by overcoming the forces of attraction between the particles. This heat energy absorbed without showing any rise in temperature is given the name latent heat of fusion/latent heat of vapourisation.