

1. Convert the following temperatures to the Celsius scale.

- (a) 293 K (b) 470 K

**Ans.** (a)  $293 - 273 = 20^\circ \text{C}$  (b)  $470 - 273 = 197^\circ \text{C}$

2. Convert the following temperatures to the Kelvin scale.

- (a)  $25^\circ \text{C}$  (b)  $373^\circ \text{C}$

**Ans.** (a)  $25^\circ \text{C} = (25 + 273) \text{K} = 298 \text{K}$

(b)  $373^\circ \text{C} = (373 + 273) \text{K} = 646 \text{K}$

3. Give reason for the following observations.

- (a) Naphthalene balls disappear with time without leaving any solid.  
 (b) We can get the smell of perfume sitting several metres away.

**Ans.** (a) Naphthalene balls are the example of sublimable substance from solid state it directly turns into gaseous state and hence over a period of time they disappear without leaving any solid.

(b) Perfume is very volatile in nature and it evaporates at a faster rate. Perfume particles can diffuse very easily through air and hence, we can get the smell.

4. Arrange the following substances in increasing order of forces of attraction between the particles - Water, Sugar, Oxygen

**Ans.** Oxygen, Water, Sugar

5. What is the physical state of water at

- (a)  $25^\circ \text{C}$  (b)  $0^\circ \text{C}$   
 (c)  $100^\circ \text{C}$ ?

**Ans.** (a) Water at  $25^\circ \text{C}$  is in liquid state.

(b) At  $0^\circ \text{C}$ , the solid (ice) and liquid (water) states of water co-exist.

(c) At  $100^\circ \text{C}$ , the liquid (water) and gaseous (steam or water vapour) states of water coexist.

Below  $0^\circ \text{C}$  the water completely changes into solid state (ice) while above  $100^\circ \text{C}$ , water completely changes into steam.

6. Give two reasons to justify.

- (a) Water at room temperature is a liquid.  
 (b) An iron almirah is a solid at room temperature.

**Ans.** (a) Water at room temperature exists as liquid because its melting point is below room temperature while boiling point ( $100^\circ \text{C}$ ) is above room temperature. Similarly,

(i) A fixed mass of water occupies a fixed volume.

(ii) Water at room temperature does not have a fixed shape but flows to take the shape of the container.

Hence, water at room temperature is a liquid.

(b) An iron almirah is a solid at room temperature because its melting point as well as boiling point is above room temperature. Similarly,

(i) An iron almirah is rigid and has a fixed shape.

(ii) The density of metal is quite high.

Hence, iron almirah is a solid at room temperature.

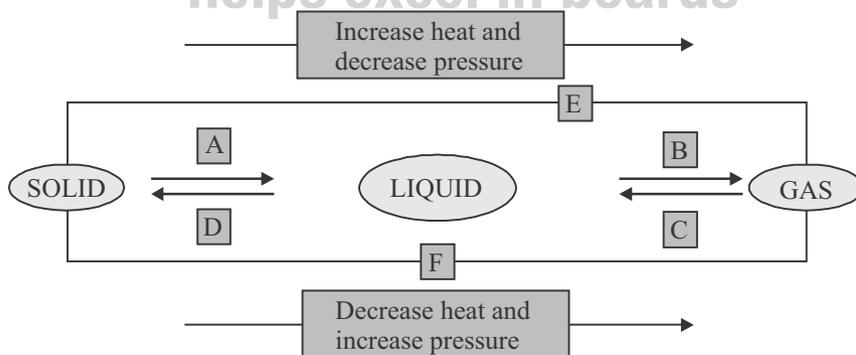
7. Why is ice at 273 K more effective in cooling than water at the same temperature?

**Ans.** At 273 K water can exist in solid as well as in liquid state but liquid water will absorb latent heat of freezing and changes into solid state but solid ice can be directly used for cooling purpose as it will not absorb latent heat of freezing.

8. What produces more severe burns, boiling water or steam?

**Ans.** Steam produces more severe burns because it has more energy than water. Boiling water absorbs latent heat of vaporisation and its temperature will not increase beyond 100° C, however, steam has temperature more than 100° C and hence, steam produces more severe burns than boiling water.

9. Name A, B, C, D, E and F in the following diagram showing change in its state.



**Ans.** A – Fusion

C – Condensation

E – Sublimation

B – Vaporization

D – Freezing

F – Sublimation