CBSE Class 9 Science
Important Questions
Chapter 1
Matter in Our Surrounding

2 Marks Questions

1. Give reasons for the following observation:

The smell of hot sizzling food reaches you several meters way, but to get the smell from cold food you have to go close.

Ans. Since hot sizzling food has temperature higher than cold food and at higher temperature diffusion rate (movement) of particles is very fast due to this the smell of hot sizzling reaches us from several meters away.

2. The mass per unit volume of substance is called density.

(density = mass/volume).

Arrange the following in order of increasing density – air, exhaust from chimneys, honey, water, chalk, cotton and iron.

Ans. Arranging substances in their increasing order of densities:
Air< exhaust from chimneys< cotton< water< honey< chalk< iron.

3. Liquids generally have lower density as compared to solids. But you must have observed that ice floats on water. Find out why.

Ans. Ice represents solid state of water. If we observe its 3D structure, a large empty space is found inside ice as a result it becomes less in weight as compared to water. Due to its specific structure though solid, ice floats on water.

4. Why does a desert cooler cool better on a hot dry day?

Ans. On a hot dry day rate of evaporation is faster. In a desert cooler when exhaust fan is on, hot air enters through the straw mates and at this site evaporation of water takes place and that also at faster rate. It takes away heat from air so the air becomes cool even cooler on a hot dry day.

5. How does the water kept in an earthen pot (matka) become cool during summer?

Ans. During summers the water present on the surface of the earthen pot evaporates which causes the cooling effect. Besides earthen pot bears pores on it hence evaporation occurs continuously so is cooling.

6. Why does our palm feel cold when we put some acetone or petrol or perfume on it?

Ans. Some liquids get quickly vapourised and they are called volatile liquids. Acetone, petrol and perfume are also volatile liquids therefore they get heat from our palm and cause cooling.

7. Why are we able to sip hot tea or milk faster from a saucer rather than a cup?

Ans. Saucer has a bigger surface area as compared to cup. Since evaporation is a surface phenomenon, by using a saucer instead of cup we are increasing the surface are for evaporation to occur. Faster evaporation of particles of tea or milk allows cooling and taking a sip becomes easier.

8. What type of clothes should we wear in summer?

Ans. Cotton is a good absorbant of water hence it absorbs sweat quite well and pores in the fabric expose that sweat to easy evaporation hence we should prefer wearing cotton clothes in summer.

9. Convert the following temperatures to the celsius scale.

(a) 293 K (b) 470 K.

Ans. a) $^{\circ}C = K - 273 = 293 - 273 = 20^{\circ}C$

b) $°C = K - 273 = 470 - 273 = 197°C$

10. Convert the following temperatures to the Kelvin scale.

(a) 25° C
(b) 373° C.

Ans. a) $K = °C + 273 = 25 + 273 = 298\ K$
b) $K = °C + 273 = 373 + 273 = 656\ K$

11. Give reason for the following observations.

(a) Naphthalene balls disappear with time without leaving anysolid.

(b) We can get the smell of perfume sitting several metres away.

Ans. a) Some substances possess the property of sublimation like camphor and naphthalene balls. Such substances directly change from solid to gaseous state without changing into liquid like ice→water→water vapour does. Therefore, naphthalene balls disappear with time without leaving any solid.

b) Being a volatile substance (gets evaporated easily) perfumes change from liquid to gaseous state very fast. Those particles mix up with air particles and diffuse to reach our nostrils such that we get the smell of perfume sitting several metres away.

12. 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) The room temperature is generally always more than $0°C$ and less than $100°C$ and within this range water is a liquid so water at room temperature is a liquid.

b) The melting point of iron is much higher than the room temperature therefore an iron almirah is a solid at room temperature.

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

Ans. While melting ice absorbs latent heat of melting from the surroundings and gets changed into water that makes the cooling effect more intense as compared to water at same temperature.

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

Ans. As compared to boiling water it is observed that steam produces more severe burns since as the steam changes into boiling water it releases heat of condensation which is equivalent to latent heat of water result is more severe burning.

15. What is evaporation? What are the factors affecting it?

Ans. Evaporation is the process by which water (liquid) changes to vapours at any temperature below its boiling point.

Factor on which evaporation depends:

(a) Surface area

(b) Humidity

(c) Wind speed

(d) Temperature

16. What happen when we apply pressure to the particles of matter?

Ans. When we apply pressure to the particles of the matter, then the particles come closer to each other because pressure is the force applied per cross-sectional area so the force applied brings the particle closer to each other.

17. Define latent heat of vaporization and latent heat of fusion.

Ans. Latent heat of vaporization is the heat energy required to change 1 kg of a liquid to gas at atmospheric pressure without changing its state.

Latent heat of fusion is the amount of heat energy required to change 1 kg of solid into liquid without changing its state.

18. If the melting point of an object A is high then what state you expect it to be at room temperature?

Ans. Melting point is the temperature at which a solid melts/change into a liquid state. So, if the melting point of an object A is higher means that it requires greater temperature to change into liquid the object will remain the same at room temperature because room temperature is less and the object cannot change its state.

19. What happens when the temperature of the solids increase?

Ans. When temperature of the solid is increased, kinetic energy of the particles increases as results particles vibrates more freely with greater speed. They overcome the force of attraction between the particles and start moving more freely.

20. When heat is being supplied to a solid, then what does the heat energy do to the particles of solid?

Ans. The heat supplied to the solid, helps the particles to overcome the forces of attraction between them and increases their kinetic energy, as a result of which particle break free the forces of attraction and changes to liquid state.

21. Why is it that on increasing the wind speed the rate of evaporation increases?

Ans. When the speed of wind increases, then they blow away with them the water vapour in the air and as results evaporation will increase because the surrounding air will be able to receive more vapours and hence evaporation increases.

22. Why do we say that evaporation is a surface phenomenon?

Ans. Evaporation is called a surface phenomenon because only particles of the surface of liquid gains energy and changes into vapours.