IMPORTANT POINTS

- Characteristics of Solid - A solid are a state in which matter is characterized by having definite shape, distinct boundaries, rigidity, incompressibility and fixed volume.
- Characteristics of Liquid - A liquid is a state in which matter is characterized by having fluidity, low compressibility, no definite boundary or shape but fixed volume.
- Characteristics of Gases - The gaseous state are characterized by having fluidity, high compressibility, no definite boundary, volume or shape.
- Melting Point is the temperature at which a solid becomes a liquid at atmospheric pressure.
- Boiling Point is the temperature at which a liquid changes into its vapour at atmospheric pressure.
- Latent Heat of Fusion is the amount of heat consumed when 1 kg of a solid changes into liquid at a constant temperature.
- Latent Heat of Vaporization is the amount of heat consumed when 1 kg of a liquid changes into its vapour at a constant temperature.
- Evaporation is a surface phenomenon in which a liquid changes into vapour or gas below its boiling point. It results in lowering in temperature (Cooling).

Extrascore Important Notes-cum-Questions

Q.1: Give reasons for the following observation:

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

Ans: We smell food as the particles of the aroma of food diffuse in the air of the kitchen and reach us. Diffusion becomes faster if the particles are hot. So the smell of hot sizzling food reaches you several meters away as food particles diffuse faster in air when hot and we smell it in no time whereas cold food particles take a very long time to diffuse and hence, we have to go close to have a smell of it.

Q.2: A diver is able to cut through water in swimming pool. Which property of matter does this observation show?

Ans: The inter-particulate force of attraction in liquid is less than the solid. So, particles of water attract each other but the attraction is not strong enough to prevent the diver to cut through water.

Q.3: What are characteristics of particles of matter?

Ans: Characteristics of particles of matter are as follows -

(i) Particles of matter have space between them.

(ii) Particles of matter are continuously moving and thus, possess kinetic energy.

(iii) Particles of matter can diffuse into one another.

(iv) Particles of matter attract each other. The force of attraction depends on the kind of matter.

(v) The size of a particle of matter can be very small.

Q.4: Why are gases compressible not liquids?

Ans: Inter-particulate distance is more in gas than the liquid. Thus, in gases particles are far apart and there is a lot of empty space between them. So, the gases are compressible whereas in liquids, particles are relatively close to each other and can be brought closer only by applying very high pressure.

Q.5: Give reasons

(a) A gas fills completely the vessel in which it is kept.

(b) A gas exerts pressure on the walls of the container.

(c) A wooden table should be called solid.

(d) We can easily move our hand in air but to do the same through a solid block of wood we need a karate expert.

Ans: (a) A gas fills completely the vessel in which it is kept because there is no force of attraction between gas particles. These are thus, free to move and occupy all the space available to them.

(b) The gas particles are always in random movement at a very speed in all directions. In this process they collide with each other and also with the walls of the container. The impact or the force of the moving gas particles per unit area exerts a pressure on the walls of the container.

(c) A wooden table is called a solid because it maintains its shape even when subjected to outside force. Moreover, it has a definite volume as well as a definite shape. Therefore a wooden table is a solid.

(d) We can move our hand in air freely because gas particles are far apart and these have no forces of attraction among themselves. But in a solid block of wood the particles are strongly held together because of inter-particulate attractive force and need huge force to break them apart.

Q.6: Liquids generally have lower density as compared to solids. But you must have observed that ice floats on water. Find out why?

Ans: Generally liquids have lower density than solids. But in case of ice, which is a solid, the structure of ice is such that there are vacant spaces between water molecules and thus, making ice lighter than water. Hence ice floats on water.

Q.7: Differentiate between the properties of three states of matter.

Ans:

Solid	Liquid	Gas
1. They are rigid and incompressible.	1. Not rigid and can be compressed to a little extent.	1. These are not at all rigid and can be easily compressed.
2. Have definite volume and definite shape.	2. Have definite volume but no definite shape.	2. Have neither definite shape nor volume.
3. Minimum or no fluidity.	3. Slippery and fluid. They flow from higher level to lower level.	3. Flow in all directions. Maximum fluidity.
4. Can be stored without vessel.	4. Need vessel for storing. Open vessel can store.	4. Can be stored in a closed vessel only.
5. Inter-molecular force of attraction is the maximum.	5. Inter-molecular force of attraction is intermediate. It is lesser than solid and greater than gases.	5. Inter-molecular force of attraction is the minimum.
6. Least inter-molecular space hence, tightly packed.	6. Inter-molecular space is greater than solids but lesser than gases.	6. Inter-molecular space is the maximum.

Q.8: For any substance, why does temperature remain constant during the change of state?

Ans: During the change of state temperature remains constant because the heat given to the matter is used up in changing the state of matter. This is called latent heat.

Q.9: Suggest a method to liquefy atmospheric gases.

Ans: Atmospheric gases can be liquefied if a high pressure is applied at some low temperature.

Q.10: Why does a desert cooler cool better on a hot dry day?

Ans: On a hot dry day, there is high temperature and low humidity. Both these factors are responsible for increasing evaporation. This means better cooling.

Q.11: How does the water kept in an earthen pot (matka) become cool during summer?

Ans: Water kept in an earthen pot (matka) becomes cool during summer, particularly hot day as the evaporation of water from the pot through its pores becomes faster.

The latent heat of vaporization absorbed by the evaporating water keeps the water inside the matka cool.

Q.12: Why does our palm feel cold when we put some acetone or petrol or perfume on it?

Ans: Acetone or petrol or perfume are volatile liquids, i.e. they have low boiling points. When kept on palm, they can absorb enough energy from the palm or surroundings and evaporate causing the palm feel cool.

Q.13: Why are we able to sip hot tea or milk faster from a saucer rather than a cup?

Ans: Hot tea or milk covers larger surface area on a saucer and resulting in increase of evaporation. The tea or milk cool faster on a saucer and we can sip it more comfortably.

Q.14: What type of clothes should we wear in summer?

Ans: We should wear cotton clothes during summer season. Because during summer season, we sweat more to maintain our body temperatures.

Cotton is a good absorber and so it can expose water to atmosphere for easy evaporation leaving us dry and cool.

Q.15: What is meant by saying that the latent heat of vaporization of water is 22.5 x 10^5 J/Kg?

Ans: It means that the amount of heat energy consumed when 1 Kg of water changes into vapour at constant temperature is equal to 22.5 x 10^5 J/Kg.

Q.16: What is meant by saying that the latent heat of fusion of ice is 3.34 x 10^5 J/Kg?

Ans: It means that the amount of heat energy consumed when 1 Kg of ice changes into water at constant temperature is equal to 3.34 x 10^5 J/Kg.