Matter

Exercise

1) a) The temperature of a substance remains unaffected during its change of state. T

b) Ice melts at 100°C. F

c) Water at 100°C has more heat than steam at 100°C. F

d) Evaporation of liquid causes cooling. T

e) Water evaporates only at 100°C. F

f) Boiling takes place at all temperatures. F

g) Evaporation takes place over the entire mass of the liquid. F

h) The process of a gas converting directly into solid is called vaporization. F

i) At high altitudes, water boils above 100°C. F

j) The melting point of ice is 0°C. T

2) a) Evaporation takes place at all temperatures.

b) Freezing process is just the reverse of melting.

c) Sublimation is a process that involves direct conversion of a solid into its vapour on heating.

d) The temperature at which a solid converts into a liquid is called its melting point.

e) The smallest unit of matter that exists freely in nature is called molecule.

f) Molecules of a substance are always in a state of motion and so they possess kinetic energy.

g) Inter-molecular space is maximum in gases less in liquids and the least in solids.

h) Inter-molecular force of attraction is maximum in solids, less in liquids and the least in gases.

a) Molecules ——— iv) matter

b) 100° C ——— i) water boils

c) 0° C ——— v) water freezes

d) At all temperatures — ii) evaporation

e) Camphor ——— iii) changes from solid to gas.

4) a) The intermolecular force is maximum in:

Ans Solids

b) The intermolecular space is maximum in:

Ans gases

c) The molecules can move freely anywhere in:

Ans gases

d) The molecules move only within the boundary in:

Ans liquids

Exercise

e) The temperature at which a liquid gets converted into its vapour state is called as :

Ans boiling point.

f) Rapid conversion of water into stem is an example of :

Ans vaporization.

g) Evaporation takes place from the :

Ans surface of liquid.

h) Boiling takes place from :

Ans throughout the liquid.

B) i) Define the term matter. What is it composed of ?

Ans Anything which occupies space, has mass and can be perceived by our senses is called matter. It is composed of molecules.

2) State three properties of molecules of matter.

Ans Three properties of molecules of matter are:-

=> They are very small in size.
=> They attract each other.
=> They have spaces between them.

3) What do you mean by intermolecular spaces? How do they vary in different states of matter?

Ans The space between the molecules of matter is called inter-molecular spaces.

=> The inter-molecular spaces in solids are very less as the molecules in solid are closely packed due to the strong attractive forces between them.

=> The inter-molecular spaces in liquids are more than that in solids.

=> The molecules in a gas are wide apart and their positions are not fixed because the

inter-molecular forces in them are very week.

4) What is meant by inter-molecular forces of attraction ?. How do they vary in solids, liquids and gases ?.

Ans Intermolecular forces are weaker attractions that hold molecules close together when they are in a liquid or solid form. Gas particles have broken away from the inter molecular forces that hold liquids and solids together. An alternative name for intermolecular forces is the vander Waals forces.

5) Which of following are correct ?.

a) Solids have definite shape and definite volume.

b) Liquids have definite volume but no definite shape.

c) Gases have definite volume but no definite shape.

d) Liquids have both definite shape and definite volume.

Ans (a) and (b) are correct.

6) Discuss the three states of matter : solid, liquid and gas on the basis of molecules model.

Ans Matter can exist in one of three main states : solids, liquids or gases. Solid matter is composed of tightly packed particles. A solid will retain its shape ; the particles are not free to move around. Gaseous matter is composed of particles packed so loosely that it has neither a defined shape nor a defined volume

7) What do you mean by 'the change of state' ?

Ans A change of state is the change of a substance from one physical form to another. All changes of state are physical changes. The particles have different amounts of energy when the substance is in different states.

21) Why are volatile liquids such as alcohol and spirit stored in tightly closed bottles ?

Ans The more volatile liquids like alcohol and spirit

evaporate easily, hence they are stored in tightly closed bottles to avoid their evaporation

23) Why is cooling produced on evaporation of a liquid?

Ans Heat is required for evaporation of a liquid. This heat is taken from the surroundings, thus cooling the surrounding

24) Explain with an example that when a liquid evaporates it takes heat from its surroundings.

Ans If you pour spirit on cotton and wrap it around the bulb of a thermometer, the reading shows that cooling is produced when a liquid evaporates taking heat from the surroundings.

25) Give two applications of evaporation.

Ans i) Extraction of salt from seawater.
ii) Drying of wet clothes.

29) Why does the size of naphthalene balls decrease when left open?

Ans Size of napthalene balls decrease when left open because of sublimation.

30) Describe an experiment to demonstrate the process of sublimation.

Ans Aim:- process of sublimation

Materials required:- Cotton, Solid ammonium chloride, Inverted funnel, China dish, Burner, Tripod stand

Procedure:- Take some ammonium chloride powder on a china dish. Take an inverted funnel and put a cotton plug on the end of the funnel so that vapours do not escape. Set up the apparatus as shown. Heat the dish with a burner. Solid ammonium chloride changes into vapours. Which when come in contact with walls of funnels gets cold and changes to solid and gets deposited there.