

MATTER IN OUR SURROUNDINGS

1) Define boiling point. Write down the boiling point of water in Celsius scale and Kelvin scale.

A: The temperature at which a liquid boils and turns to vapour. The boiling point of water in Kelvin scale is 373K . As boiling point of water in Celsius scale is 100°C . So as per formula
$$\text{K} = 273 + 100$$
$$= 373\text{K}.$$

2) What is the physical state of water in: a) 25°C , b) 100°C .

A: a) The physical state of water at 25°C is a gaseous state. As we know that the boiling point of water is 100°C .

b) Water boils at 100°C . Water can exist in both liquid as well as gaseous state. After giving the sufficient

amount of heat, the water starts converting into gas.

3) Explain the factors that affect the rate of evaporation with examples.

- A: The rate of evaporation is affected by:
- i) Temperature: evaporation increases with an increase in temperature.
 - ii) Surface area: Evaporation increases with an increase in surface area.
 - iii) Humidity: Evaporation decreases with an increase in humidity.
 - iv) Wind speed: evaporation increases with an increase in wind speed.

4) "Evaporation causes cooling" justify the statement.

A: Evaporation causes cooling because during evaporation the particles of the liquid absorb energy from the surroundings to regain the energy lost during evaporation. The absorption of heat from the surrounding

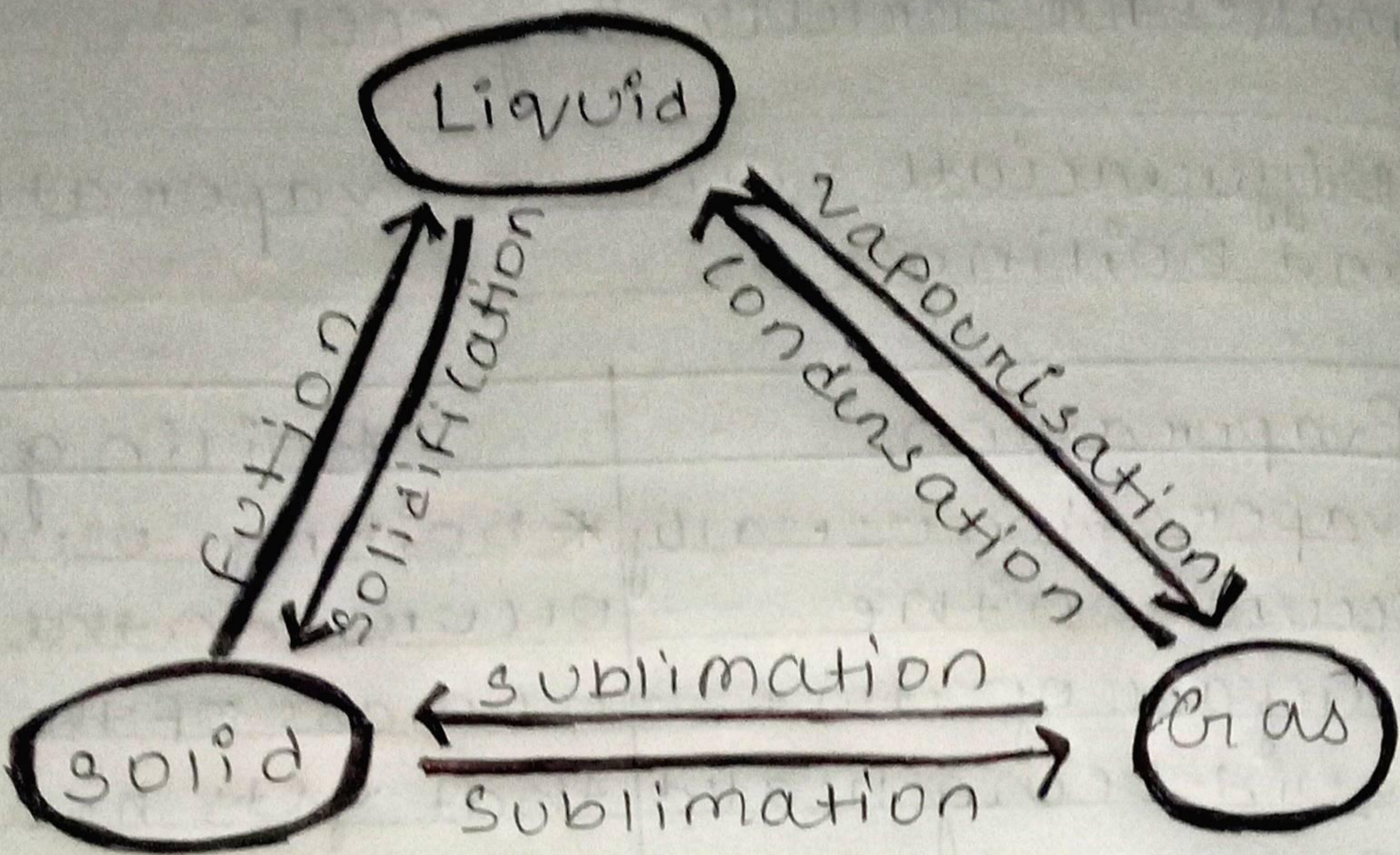
makes the surrounding cool.

5) Differentiate between evaporation and boiling.

A: Evaporation	Boiling
* evaporation usually occurs on the surface of the liquid being heated up.	* boiling usually occurs on the entire mass of the liquid that gets heated up.
* Bubbling effect is not visible in evaporation.	* Bubbling effect is visible during the process of boiling.

6) What do you mean by interconversion of matter? Draw a flow chart to show the change of state?

A: It is a process by which matter changes from one state to another and back to original state, without any change in its chemical composition.



7) Why perspiration keeps our body cool?

A: perspiration helps in cooling our body by the process of evaporation.

* human being is a warm blooded organism, that means it has the capability to maintain uniform body temperature all throughout its life. In addition to this the human being are capable of secreting sweat through the sweat glands.

* As a result of this there is loss of sweat by the process of evaporation which cools the body in hot weather and helps in maintaining the body temperature.

8) What do you mean by latent heat of fusion? Give a practical application of it.

A: Latent heat of fusion is the amount of heat in joules required to convert a unit mass of ice into liquid at its melting point.

The practical application of latent heat are :-

- * Steaming foods
- * Extinguishing fire by using boiling water.
- * Cooling drinks with cold water and ice.

9) Why does the smell of hot food can be smelt from a distance? Explain.

Hot food has a very high temperature thus it spreads to a very large distance, so we can say that we smell hot food from a distance because of diffusion.

10) What do you mean by sublimation? Explain by an activity, how can we separate a mixture of ammonium chloride and salt using sublimation.

- 11) Define a) compressibility.
b) Rigidity
c) fluidity

A) a) compressibility: the ability of a substance to occupy a lesser volume when pressure is applied. More the compressibility, more easily the substance can occupy a lesser volume.

b) Rigidity: the inability of an object to bend or to change its shape. More the rigidity, less the object can bend.

c) Fluidity: the ability of a substance to flow. More the fluidity, more easily the substance can flow.

- 12) Describe by an activity to show that particles of matter have space between them.

A: Take a glass of water, add sugar and stir. You will observe that there is no rise in the water level. This shows that particles of matter have spaces between them. When sugar is added to the water, the sugar particles adjust themselves in the spaces between water particles. Hence, we can say that particles of matter have space between them.

13) Differentiate between solids, liquid and gas.

A: SOLID

* The solids have definite shape, size & volume.

* The particles of solid have negligible kinetic energy.

* The particles of matter are tightly packed.

Liquid

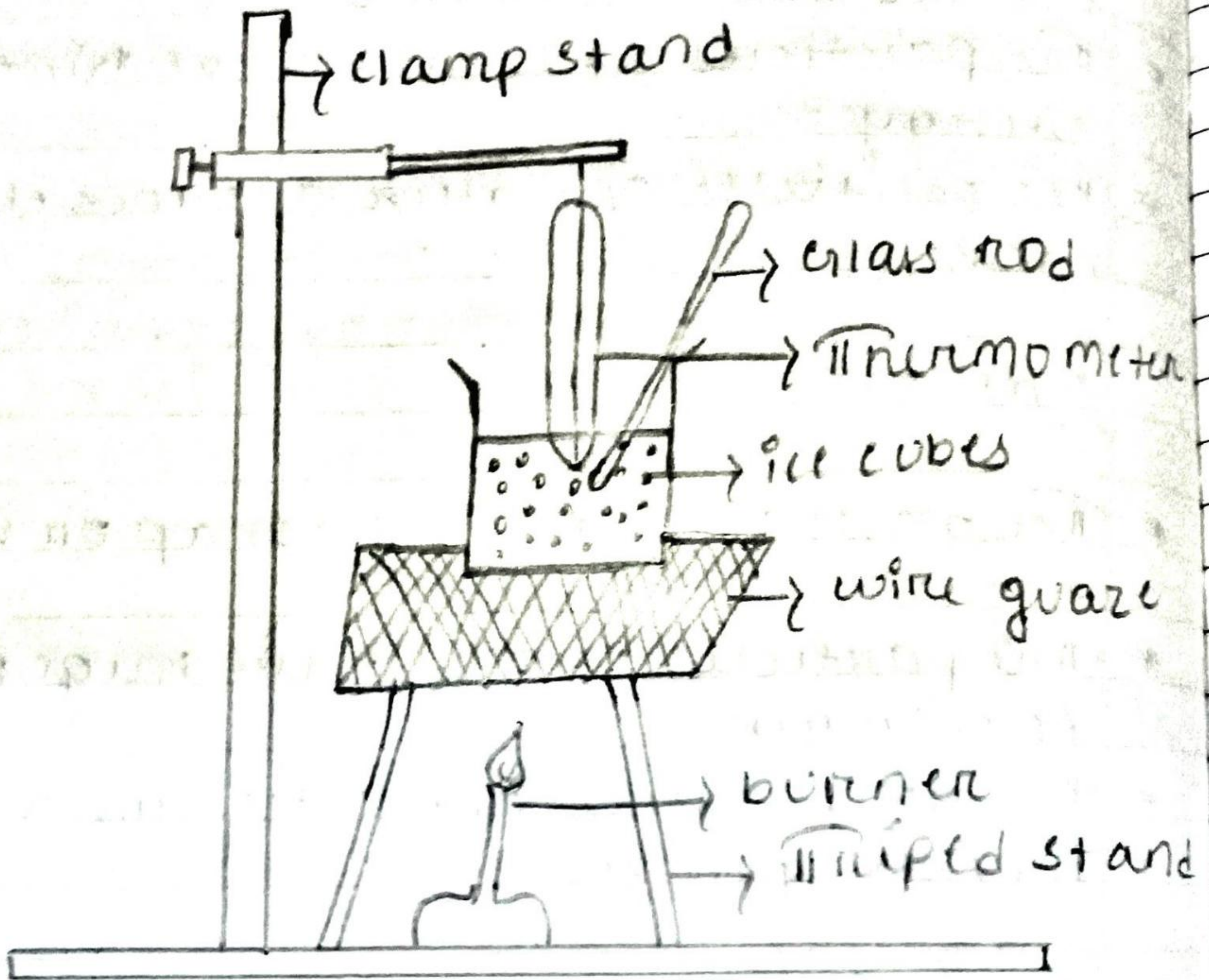
- * Liquids have no definite shape, size but have definite volume.
- * The particles of liquid have kinetic energy.
- * The particles of matter are loosely packed.

Gas

- * The gas have no size, shape or volume.
- * The particles of gas have huge kinetic energy.
- * The ~~are~~ particles of matter are very loosely packed.

14) Explain by an activity how can one determine the melting point of ice with a diagram.

A^o: Materials required: A burner, Ice cubes, Beaker.



- * put the ice cubes inside the beaker.
- * place the beaker on the burner.
- * let the burner heat the beaker for some time.

Observation: after letting the burner to heat the beaker for some time, we will notice that ice melts to water. This is because the heat increases the kinetic energy of the particles which led to a increase in their inter particle spaces and also a decrease inter particle forces of attraction due to which the particles move more rapidly converting to liquid.

15) Give reasons:-

a) A liquid generally flows easily.

A: A liquid generally flows easily because the intermolecular spaces between the liquid particles are well as compared to solid. Moreover, these particles are loosely packed due to the presence

of little force of attraction between them.

b) Ice at zero degree Celsius appears colder in the mouth than water at the same status.

A: Due to the more latent heat absorbed by ice as compared to water at same temperature, ice appears more colder than water.

c) Doctors advise to put strips of wet clothes on the forehead of a person having a high fever.

A: When strips of wet cloth are put on the forehead of person having fever, the water in the cloth absorbs heat from forehead to get vapourise. It helps to decrease the extra heat in the body caused due to high fever consequently helps to reduce body fever.

16) How does temperature affect the process of change of state?

A: Change in temperature affect the state of matter because when we increase the temperature the kinetic motion of small particles in a substance increase and go far to one another and this region make change in state of a substance.

17) Explain by an activity to show that particles of matter are in random motion.

A: Take two beakers^{er} filled with water, put a drop of red ink in one beaker and honey in the second beaker and leave them undisturbed. After some time it can be observed that the colour of the ink spreads evenly throughout the water and also the honey in the second beaker. This happens because the molecules continuously keep on moving. When temperature is increased

the movement of particles become faster.
This is due to increase in their kinetic energy.

17) Oxygen exerts pressure due to collision of the molecules on the walls.

18) Write a short note on plasma

A: * Plasma is the fifth state of matter.
* The fluorescent tubes and neon sign bulbs contain plasma.
* The state consist of super energetic and super excited particles.

19) Write a short note on BEC.

A: * It is gas having very high density.
* It is the sixth state of matter.
* Its density is $1/1000^{th}$ of the normal air.
* It was predicted by Albert Einstein based on the calculation done by Satyendra Nath Bose.

20) write a short note on dry ice.

A: * Dry ice is nothing but solid carbon dioxide.

* It is prepared by providing high pressure and low temperature to the gaseous carbon dioxide.