

Heat Transfer**Short Notes****Keywords**

Heat: The form of energy which gives the sensation of hotness of any object.

Temperature: The degree or intensity of heat present in a substance or object.

Boiling: Rapid evaporation of Liquid at a particular temperature.

Evaporation: A process of turning liquid into its vapour.

Thermal expansion: Tendency of matter to change its shape, area and volume in response to a change in temperature.

Linear expansion: An increase in Length of a solid on heating.

Superficial expansion: An increase in area of a solid on heating.

Cubical expansion: An increase in volume of a gas, liquid or solid on heating.

Chapter at a glance

- Boiling and evaporation are two different phenomenon of converting liquids into gas by heating it.
- The temperature at which the liquid starts boiling is called its boiling point. It depends on the force of attraction between the particles of a liquid.
- All the forms of matter expand on heating but gases expand most due to weak inter particle forces.
- A solid can expand along its length, surface area and volume,
- The amount of expansion of matter depends on its actual dimensions, its nature and temperature differences.
- There are three types of thermal expansions:
 - Linear expansion
 - Superficial expansion and
 - Cubical expansion
- Thermal coefficient of expansion is an important feature of expansion. It depends purely on the nature of the matter.

Heat Transfer**DPP - 1**

Tick the correct option.

1. The process of a liquid changing into vapour (at any temperature/at boiling point) is called evaporation.
2. Superficial expansion is a (one/two) dimensional change.
3. Liquids and gases undergo (superficial/cubical) expansion.

Fill in the blanks.

4. The temperature at which a liquid boils and changes rapidly into a at pressure is called boiling of the liquid.
5. The cooling caused by evaporation is due to the fact that the evaporating liquid draws the heat of from anything that it
6. Thermal expansion is categorized into expansion, expansion and expansion.
7. Linear expansion depends on the, original of the solid and of the material.
8. The boiling point of water.
9. is the amount of heat required to change 1kg of the liquid at its point to vapour without any change in temperature.
10. Common salt is recovered from seawater by the process of
11. The amount of water vapours present in the air.....

Write T for true and F for false statements. Correct the false statements.

12. Boiling of a liquid takes place at a fixed temperature.
13. The rate of evaporation of a liquid becomes maximum at its boiling point.
14. Atoms of solid, liquid and gas expand on heating.
15. Cubical expansion is a three dimensional change.

Heat Transfer**DPP - 2**

1. Complete the following table by comparing boiling and evaporation under the given parameters.

Parameter	Boiling	Evaporation
Definition		
Phenomenon		
Temperature required		
Bubbles		
Energy		
Temperature of liquid		

Define the following terms.

- Heat
- Boiling
- Evaporation
- Thermal expansion
- Differentiate the following: - Cubical expansion & Linear expansion

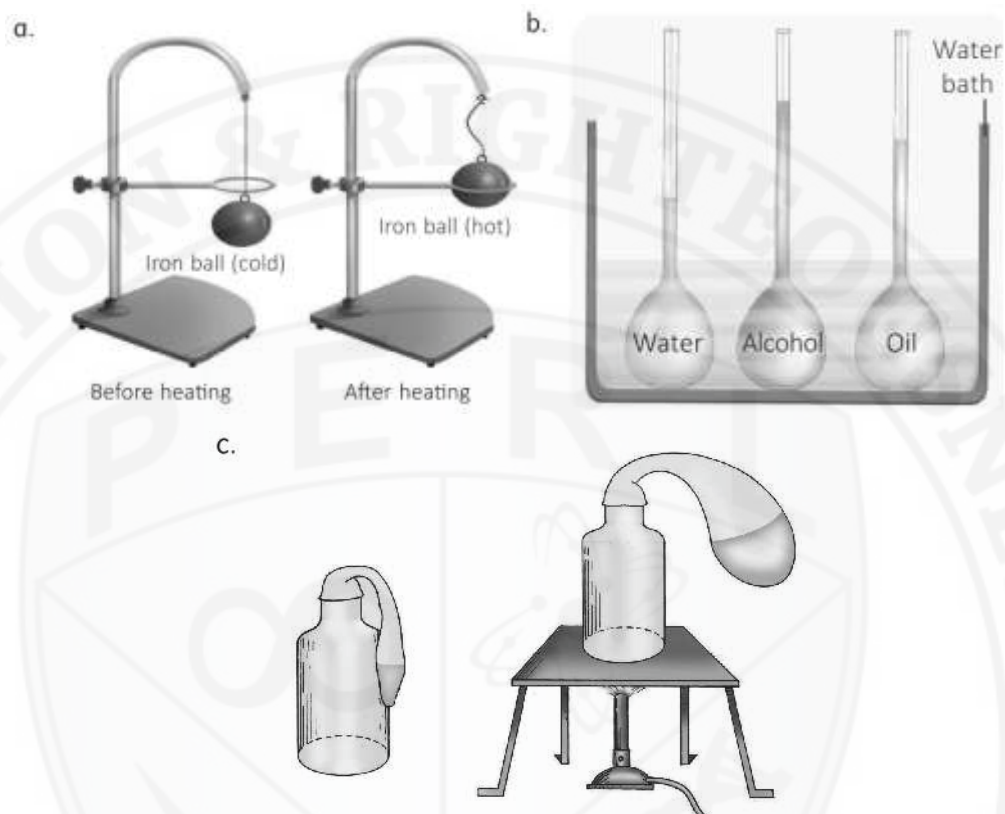
Give reason for the following.

- Liquid changes into gas on heating.
- The temperature of the boiling water system remains constant while the water is being transformed to steam.
- Wet clothes and rain water puddles dry up after sometime.
- Evaporation causes cooling effect.
- Water kept in a test tube evaporates at a slower rate than that kept in a china dish.
- On a moist or rainy day, sweat from our body does not evaporate easily.
- Washed wet clothes dry in air quickly on a windy day.
- Metal railway tracks have small gaps
- Liquids expand more on heating than solids.
- Roller supports are commonly located at one end of long bridges
- There are several joint gaps provided on the concrete road.
- Overhead cables have to be slack.

Heat Transfer

DPP - 3

1. Picture based questions. Observe the given pictures what do you infer from pictures and write inferences from your observations.



Answer the following.

2. What is the latent heat of vaporization?
3. Explain the principle behind the following.
 - (a) The liquid in glass thermometers.
 - (b) Why do the hot air balloons rise?
 - (c) Why does glass crack or break if a hot liquid is poured into it?
4. How is the smaller iron rim filled onto the larger wooden wheel of horse carts and buttock carts?
5. What are applications of bimetallic strip?