Cosmo School

Physics | **Worksheet 4 : 15/10/2020** | **Class - IX**

CHAPTER 6 : EFFECT OF HEAT ON MATTER

Instructions:

- ✓ Read the chapter in your book - quickly and thoroughly, preferably more than once.
- ✓ Watch the uploaded video classes of this chapter from school's website/You Tube channel. For becoming more clear about the basics, watch more than once, if needed.
- ✓ Contact me in case of any difficulty in understanding.

(Questions given in this worksheet are important questions for all exams)

Cognitive Questions (Mark - 1)

1. Define triple point of water.

Ans.: The particular temperature and pressure at which water remains at its three states - solid, liquid and gas, is called the triple point of water.

2. What is called melting?

Ans.: To transform a substance from solid to liquid by applying heat is called melting.

3. What is freezing point?

Ans.: At standard pressure, the temperature at which ice starts to melt is called ice point or freezing point.

4. What is latent heat?

Ans.: The heat required to convert a solid into a liquid or vapor, or a liquid into a vapor, without change of temperature is called latent heat.

5. Define evaporation.

Ans.: The process in which a liquid at any temperature slowly changes from its free surface into vapor state is called evaporation.

6. What is the unit of thermal capacity?

Ans.: The amount of heat required to increase the temperature of an object by one unit is called the thermal capacity of that object.

7. What is fusion?

Ans.: A solid may be liquefied by applying heat. This process is called fusion.

8. What is condensation?

Ans.: The process of converting a gaseous substance from its gaseous state to liquid state by lowering the temperature is called condensation.

Analytical Questions (Marks - 2)

1. How the amount of water evaporates in the air regulates vaporization? Explain.

Ans.: The amount of vapor air can contain is fixed for a specific temperature. At the time of evaporation, the wetter the air over the liquid surface is, the less the liquid will evaporate. The drier the air over the liquid surface is, the more the liquid will evaporate. Therefore, the amount of vapor determines the rate of evaporation.

2. Why thermal expansion occurs due to increase of temperature?

Ans.: Almost all the substance expand due to application of heat and contract for the extraction of heat. When a body is heated the heat energy and as such the kinetic energy of each molecule of the body increases.

Due to increase of temperature when the molecules of a body vibrate at a random fashion, they approach further towards the exterior than towards the interior. As such the average equilibrium position of each molecule gets displaced towards the exterior and the body expands. Since intermolecular force is less in liquids, expansion due to heat is more in it. For gaseous substances with the increase of temperature the random motion of the molecules increases. The

thermal expansion of gases is maximum. The expansion of liquid is lower than that of gas and expansion of solid is the least.

3. Why is temperature used to open the cork of bottle?

Ans.: The co-efficient of expansion of metal is higher than the co-efficient of expansion of glass. So the increase of same amount of temperature causes the metal cork to expand more than the bottle. So by applying little amount of heat the cork of the bottle can be opened.

4. Why is coldness generated during evaporation.

Ans.: When a molecule evaporates it has to break all the intermolecular forces so it can escape. Only the molecules that have sufficient kinetic energy can do this. These high energy molecules leave to the gas phase and the remaining molecules are the ones that did not have enough energy to evaporate. This, the average kinetic energy of the molecules in the liquid left behind us lower than it was before the hot ones leave. So, evaporation 'cools' what is left behind because the heat was used up breaking the hotter molecules out into the gas phase.