Heat Transfer

1. **What is Heat Energy?**
   Ans. Heat is a form of Energy possessed by an object due to the vibration of the molecules.

2. **What is Heat Transfer?**
   Ans. Heat transfer describes the flow of heat due to temperature differences and the subsequent temperature distribution and changes.

3. **What is Boiling?**
   Ans. The process in which a liquid substance changes into a gas rapidly on heating is called Boiling.

4. **What is Boiling Point?**
   Ans. The temperature at which temperature at which a liquid becomes vapor is called Boiling Point.

5. **Why the boiling occurs from the whole volume of the liquid.**
   Ans. When a liquid is heated the heat energy makes its particles to move faster. At the boiling point the particles of the liquid have sufficient kinetic energy to overcome the attraction force holding them together and separate into individual particles and the liquid boils to form a gas.
   During this process all the molecules of the liquid are involved in the process. Hence, boiling occurs in the whole volume of the liquid.

6. **What is latent heat of Vaporisation?**
   Ans. The latent heat of vaporisation of a liquid is the quantity of heat is required to convert 1 kilogram of liquid to vapour or gas, without any change in temperature.

7. **What is Vaporization or Evaporation?**
   Ans. The process in which liquid substance changes into a gas rapidly on heating, is called boiling.

8. **Which factors are affected the Evaporation Process?**
   Ans. The evaporation of liquid depends on the following factors:
   - **Temperature:** As the temperature increases, the rate of evaporation also increases. Temperature and rate of evaporation are proportional to each other.
   - **Surface area:** As the surface area increases, the rate of evaporation increases. The surface area and rate of evaporation are proportional to each other.
   - **Humidity:** The rate of evaporation decreases with an increase in humidity. Humidity and the rate of evaporation are inversely proportional to each other.
   - **Wind speed:** Increase in wind speed results in increased evaporation. Wind speed and rate of evaporation are proportional to each other.

9. **What is Humidity?**
   Ans. **Humidity** is the amount of water vapor in the air. If there is a lot of water vapor in the air.

10. **What are the differences between Boiling and Evaporation?**
    Ans.

Evaporation	Boiling
Evaporation is a normal process that occurs when the liquid form changes into the gaseous form; while causing an increase in the pressure or temperature.	Boiling is an unnatural process where the liquid gets heated up and vaporized due to continuous heating of the liquid.
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.
The process of evaporation is usually slower and more carried out when compared to boiling.	The process of boiling is usually much quicker and the process happens quite rapidly as well.

11. **What is Thermal Expansion?**
    Ans. Thermal expansion can be defined as the change in the length, width, height, or volume of any material on changing the temperature.

12. **Why the thermal expansion happens when the material is heated?**
    Ans. When a material is heated its atoms vibrate faster about their fixed point. As a result, the distance between the molecules increases and the substance expands.

13. **What are the different types of Thermal Expansions?**
    Ans. Thermal expansions are three types:
    a. Linear Expansion
    b. Superficial Expansion
    c. Cubical Expansion

14. **What is Linear Expansion?**
    Ans. The expansion along the length of the material is known as Linear Expansion.

15. **On which factors Linear Expansion depends?**
    Ans. Linear Expansion depends on
    a. Temperature
    b. Original length of the solid
    c. Nature of the solid

16. **How Linear expansion depends on Nature of Materials?**
    Ans. When two rods of different metals having the same length are heated to the same temperature, one rod expands more than the other, depending on the nature of the metal.

17. **What is Superficial Expansion?**
    Ans. The expansion along with the surface area of the material is known as Superficial Expansion.

18. **What is Cubical Expansion?**
    Ans. When a solid metal block is heated, its volume increases. The increase in the volume of the block is called Cubical Expansion.

19. **How can we put iron rim around wooden wheel?**
    Ans. The iron rim is made slightly smaller than the wooden wheel. The iron rim is heated uniformly by making a fire due to which it expands and becomes bigger. Being bigger in size the hot iron rim is easily put around the wooden wheel. Cold water is then poured over the hot rim to cool it. On cooling, the hot iron rim contracts and fits tightly on to the wooden wheel.

20. **Why a gap is put between two railway tracks?**
    Ans. The gap is left between the rails to provide a space for the iron metal to expand and contract during the summer and winter season due to the change in the temperatures. If the gap is not left in between then the rails will bend more and cause derailing of the trains.

21. **Why do one side of the iron girders of bridges are placed on rollers?**
    Ans. when we have rollers at one end then it is allowed to expand freely without any thermal stress.in summers the bridges may expand due to the increase in the temperature and in winters the bridges may compress due to decrease in the temperature. the rollers help to increase/decrease the length of the bridge without any thermal stress.