



# UNIT 9

## TRANSFER OF HEAT

### SHORT QUESTIONS

**Q.1 How many method of transmission of heat are used? (LHR 2014)**

**Ans:** Heat can be transmitted from one object to the other by the following three processes, if these objects are at different temperatures.

- (i) Conduction
- (ii) Convection
- (iii) Radiation

**Q.2 What is Conduction? Explain the process and write down its usage in our daily life.**

**Ans:** "The mode of transfer of heat by vibrating atoms and free electrons in solids from hot to cold parts of a body is called conduction of heat".

**OR**

"Conduction is the process in which heat is transmitted from one body to another by the interaction of atoms and electrons".

**Q.3 What are Bad conductors or Insulator?**

**Ans:** The substances through which heat does not conduct easily are called bad conductors or insulators.

**Example**

Wood, cork, cotton, wool, glass, rubber etc.

**Q.4 What are Conductors?**

**Ans:** All metals are good conductors of heat. The substances through which heat conduct easily are called conductors.

**Example**

Copper, iron, aluminum etc.

**Q.5 Write down some uses of conductors and non – conductors. (GRW 2013)**

**Ans:** In houses, good thermal insulation means lower consumption of fuel. For this, following measures may be taken to save energy.

- Hot water tanks are insulated by plastic or foam lagging
- Ceiling of room is covered by insulating materials (false ceiling)
- Good conductors are used when quick transfer of heat is required through a body. Thus cookers, cooking plate, boiler, radiators and condensers of refrigerators etc. are made of metals such as aluminum or copper. Similarly metal boxes are used for making ice, ice cream etc.

**Q.6 Define convection? (LHR 2016)**

**Ans:** "Transfer of heat by actual movement of molecules from hot place to a cold place is known as convection".

Liquids and gases are poor conductors of heat. However, heat is transferred through fluids (liquids or gases) by another method called convection.

**Q.7 What do you know about convection currents in Air? Write down some uses. (GRW 2013)**

**Ans:** Gases also expand on heating, thus convection currents are easily set up due to the differences in the densities of air at various parts in the atmosphere.

**Uses of Convection currents**

- Convection currents set up by electric, gas or coal heaters help to warm our homes and offices.
- Central heating systems in buildings work on the same principle of convection.

**Q.8 How land and sea breezes are produced?**

Land and sea breezes are the result of convection.

**Sea Breeze**

On a hot day, the temperature of the land increases more quickly than the sea. It is because the specific heat of land is much smaller as compared to water. The air above land gets hot and rises up. Cold air from the sea begins to move towards the land. It is called sea breeze.

**Land Breeze**

At night, the land cools faster than the sea. Therefore, air above the sea is warmer, rises up and the cold air from the land begins to move towards the sea. It is called land breeze.

**Q.9 What is gliding? (LHR 2013)**

**Ans:** A glider looks like a small aeroplane without engine. Glider pilots use upward movement of hot air current due to convection of heat. These rising currents of hot air are called thermals. Gliders ride over these thermals. The upward movement of air currents in thermals helps them to stay in air for a long period.

**Q.10 What do you know about birds gliding?**

The birds stretch out their wings and circle in these thermals. The upward movement of air helps birds to climb up with it. Eagles, hawks and vultures are expert thermal climbers. After getting a free lift, birds are able to fly for hours without flapping their wings. They glide from one thermal to another, and thus travel through large distances and hardly need to flap their wings.

**Q.11 Define Radiation.**

Radiation is the mode of transfer of heat from one place to another in the form of waves called Electromagnetic waves.

**Q.12 Why tea in a cup becomes cold earlier as compared to a teapot? (GRW 2016)**



**Ans:** In a teapot there is a large amount of tea and also the mouth of the teapot is narrow, so loss of heat is minimum. On the other hand in a tea cup, there is little amount of tea and the mouth of cup is also large as compared to teapot. Since, larger the surface area, greater will be the heat loss by convection. That is why tea in a cup becomes cold earlier as compare to teapot.



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