

Heat

Q.1 State similarities and differences between the laboratory thermometer and the clinical thermometer.

Sol: Similarities: In both thermometers, mercury (Hg) in narrow glass tube is used for measuring the temperature.

Differences: The range of laboratory thermometer is -10°C to 110°C while the range of clinical thermometer is 35°C to 45°C . The clinical thermometer have kink to prevent the falling of temperature itself while in laboratory thermometer, kink is absent.

Q.2 Give two examples each of conductors and insulators of heat.

Sol: Conductors: Copper and iron
Insulators: Plastic and wood

Q.3 Fill in the blanks:

- (a) The hotness of an object is determined by its _____.
- (b) Temperature of boiling water cannot be measured by a _____ thermometer.
- (c) Temperature is measured in degree _____.
- (d) No medium is required for transfer of heat by the process of _____.
- (e) A cold steel spoon is dipped in a cup of hot milk. It transfers heat to its other end by the process of _____.
- (f) Clothes of _____ colours absorb heat better than clothes of light colours.

Sol:

- (a) The hotness of an object is determined by its temperature.
- (b) Temperature of boiling water cannot be measured by a clinical thermometer.
- (c) Temperature is measured in degree Celsius.
- (d) No medium is required for transfer of heat by the process of radiation.
- (e) A cold steel spoon is dipped in a cup of hot milk. It transfers heat to its other end by the process of conduction.
- (f) Clothes of black colours absorb heat better than clothes of light colours

Q.4 Match the following:

- | | |
|--|------------|
| (i) Land breeze blows during | (a) summer |
| (ii) Sea breeze blows during | (b) winter |
| (iii) Dark coloured clothes are preferred during | (c) day |
| (iv) Light coloured clothes are preferred during | (d) night |

Sol:

(i) Land breeze blows during	(d) night
(ii) Sea breeze blows during	(c) day
(iii) Dark coloured clothes are preferred during	(b) winter
(iv) Light coloured clothes are preferred during	(a) summer

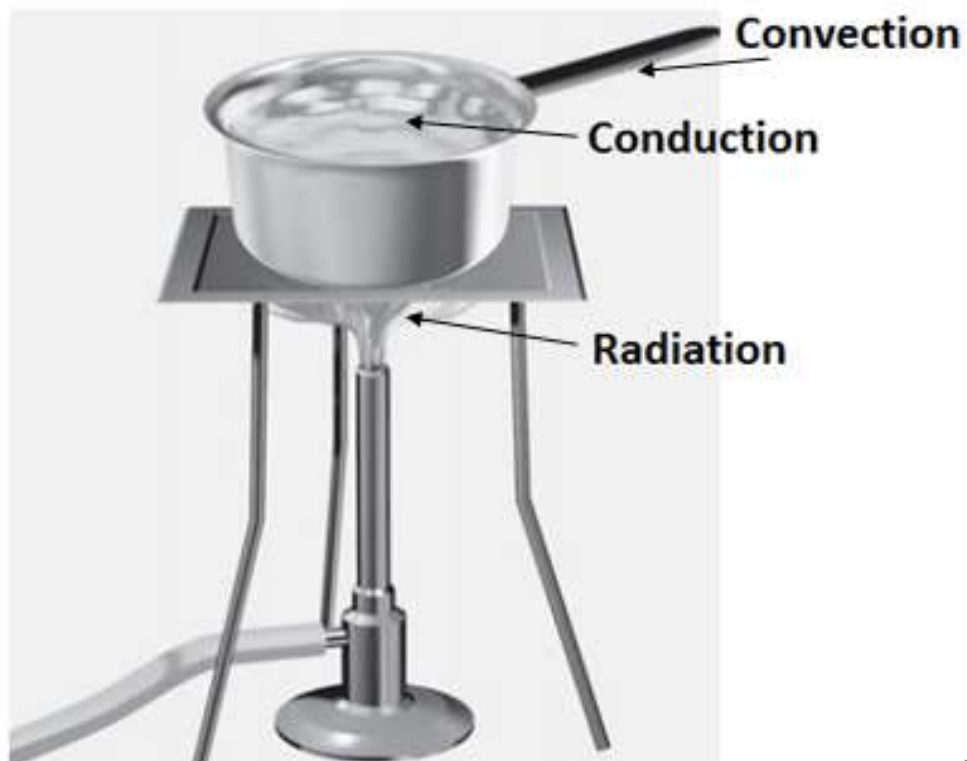
Q.5 Discuss why wearing more layers of clothing during winter keeps us warmer than wearing just one thick piece of clothing?

Sol: Wearing more layers of clothing during winter keeps us warmer than wearing just one thick piece of clothing because more layers have lots of space and air would be trapped in between them. Air is a poor conductor. This increases the insulation and it does not allow the body heat to escape out. Thus we feel more comfort in winter.

Q.6 Look at Figure. Mark where the heat is being transferred by conduction, by convection and by radiation.



Sol:



Q.7 In places of hot climate, it is advised that the outer walls of houses be painted white. Explain.

Sol: In places of hot climate, it is advised that the outer walls of houses be painted white because the outer walls with white surface reflect more heat and absorb less. So, less heat from outside would enter the house and the houses do not heat up too much.

Q.8 One liter of water at 30°C is mixed with one liter of water at 50°C . The temperature of the mixture will be

- (a) 80°C
- (b) More than 50°C
- (c) 20°C
- (d) Between 30°C and 50°C

Sol: (d) Between 30°C and 50°C

Q.9 An iron ball at 400°C is dropped in a mug containing water at 40°C the heat will

- (a) Flow from iron ball to water.
- (b) Not flow from iron ball to water or from water to iron ball.
- (c) Flow from water to iron ball.
- (d) Increase the temperature of both.

Sol: (b) Not flow from iron ball to water or from water to iron ball.

Q.10 A wooden spoon is dipped in a cup of ice cream. Its other end

- (a) becomes cold by the process of conduction.
- (b) becomes cold by the process of convection.
- (c) becomes cold by the process of radiation.
- (d) does not become cold.

Sol: (d) does not become cold.

Q.11 Stainless steel pans are usually provided with copper bottoms. The reason for this could be that

- (a) Copper bottom makes the pan more durable.
- (b) Such pans appear colourful.
- (c) Copper is better conductor of heat than the stainless steel.
- (d) copper is a better conductor of heat than the stainless steel.

Sol: (c) Copper is better conductor of heat than the stainless steel.