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LKG to 10th - ALL SUBJECTS
CBSE, NCERT, STATE BOARD



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Class 7 Science

Chapter 4 – Heat

Question 1: State similarities and differences between the laboratory thermometer and the clinical thermometer.

Answer: Similarities:

- (i) Both clinical and laboratory thermometers have long, narrow, uniform glass tubes.
- (ii) The bulbs of both the thermometers have mercury in them.

Differences:

- (i) The temperature range of clinical thermometers is from 35°C to 42°C while that of laboratory thermometer is from -10°C to 110°C.
- (ii) Clinical thermometer is used to measure the temperature of a human body.

Working principle of both the thermometer is same.

Both are used to measure temperature.

Both have a thick walled glass tube enclosing a fine uniform bore capillary tube.

Mercury is used in both thermometers to measure temperature.

Both have Celsius and Fahrenheit markings.

However, laboratory thermometer cannot be used to measure the temperature of a human body.

(iii) The least count of both the thermometers differs.

(iv) Unlike clinical thermometer that can be tilted, laboratory thermometer is kept upright while reading the temperature values.

Laboratory thermometer is used to measure temperature of different objects in factories and laboratory where as clinical thermometer is used to measure the temperature of human beings only.

Generally, laboratory thermometer has temperature range from -10°C to 110°C where as clinical thermometer has temperature range from 35°C to 42°C.

Usually laboratory thermometer does not have any constriction where as clinical thermometer has the small constriction near the mercury bulb.

Laboratory thermometer has to be kept upright while taking the reading where as clinical thermometer can be tilted while taking reading.

Question 2: Give two examples each of conductors and insulators of heat.

Answer: Two examples of conductors and insulators of heat are:

Conductors: Copper, aluminum and iron.

Insulators: Wood, water and air.

Question 3: Fill in the blanks:

Answer: (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 **dark** colours absorb heat better than clothes of light colours.

Question 4: Match the following:

Answer:

- | | |
|--|------------|
| (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 |

Question 5: Discuss why wearing more layers of clothing during winters keeps us warmer than wearing just one thick piece of clothing.

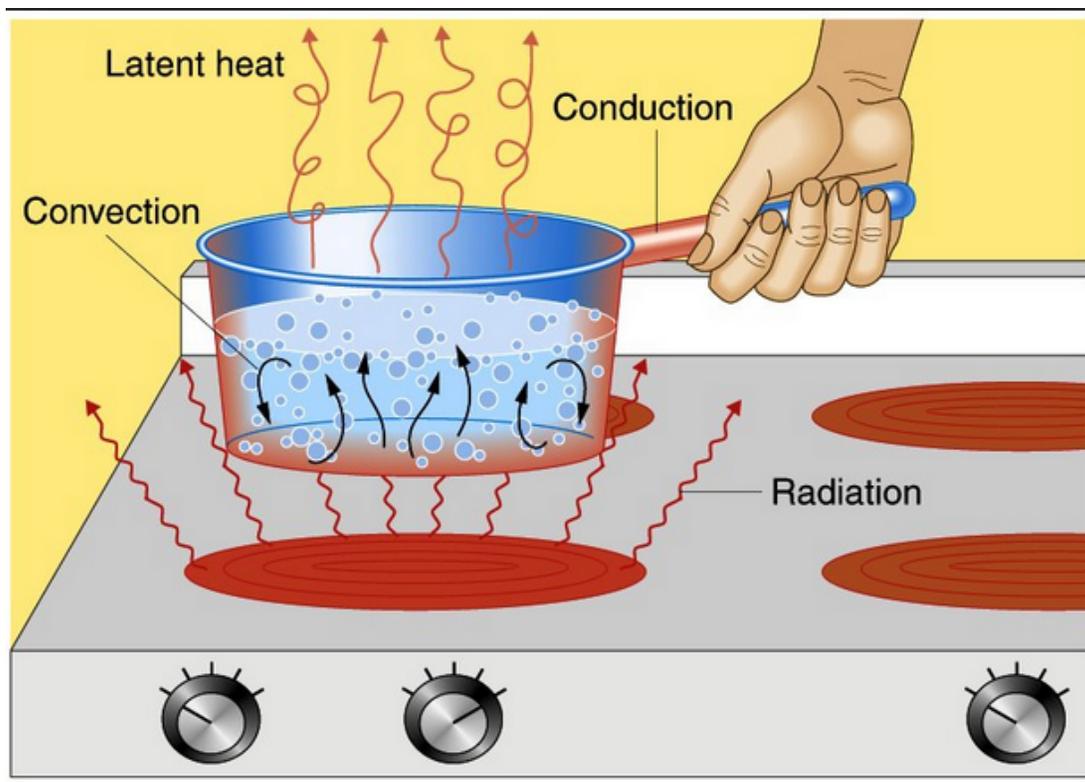
Answer: During winters, we prefer wearing more layers of clothing than just one thick piece of clothing because air gets trapped in between the various clothing layers. Being a poor conductor of heat, air prevents heat loss from our body. Hence, layers of clothing keep us warmer than a single layer.



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The air gets trapped between two layers of warm clothes. Air acts as insulator of heat. This layer prevents our body heat to escape in the surroundings. More layers of thin clothes will allow more air to get trapped and as a result we will not feel cold. So wearing more layers of clothing during winter keeps us warmer than wearing just one thick piece of clothing.

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



MODES OF HEAT TRANSFER

Answer: (i) Transfer of heat from burner to pan is by radiation.
(ii) Transfer of heat from pan to water is by conduction.
(iii) Transfer of heat within water is by convection.

Question 7: In places of hot climate it is advised that the outer walls of houses be painted white. Explain.
Answer: In places of hot climate, it is advised to paint the outer walls of houses as white because a light colour such as white reflects back most of the heat that falls on it or we can say it absorbs less amount of heat. Hence, a light colour tends to keep the house cool and the temperature inside the house does not increase very much.

Question 8: One litre of water at 30°C is mixed with one litre of water at 50°C . The temperature of the mixture will be
(a) 80°C (b) more than 50°C but less than 80°C
(c) 20°C (d) **between 30°C and 50°C**

Question 9: An iron ball at 40°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.** (to water or from water to iron ball as both the substances have same temperature.)
(d) increase the temperature of both.

Question 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.

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(c) becomes cold by the process of radiation.

(d) does not become cold. (Its other end does not become cold as wood is a bad conductor of heat.)

Question 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 a better conductor of heat than the stainless steel.

(d) copper is easier to clean than the stainless steel.