



মণিপুরৰ শাসনৰত্ন (অংল)

DEPARTMENT OF EDUCATION (S)
Government of Manipur

CHAPTER: 4

HEAT

SOLUTIONS:

Exercises:

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

Answer:

Similarities

1. Both clinical and laboratory thermometers measure temperature.
2. Both clinical and laboratory thermometers have structural similarity having a narrow elongated tube and a bulb at one end.

Differences

1. A clinical thermometer reads temperature from 35 °C to 42 °C whereas a laboratory thermometer reads temperature generally from 10 °C to 110 °C.
2. Clinical thermometer measures the temperature of human body only whereas laboratory thermometer measures temperatures of other objects.

Q2. Give two examples each of conductor and insulator of heat ?

Answer:

Examples of conductors of heat: Iron and Copper.

Examples of Insulator of heat : Plastic and wood.

Q3. Fill in the blanks :

- 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 (° C).
- 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. Heat is transferred to its other end by the process of conduction.
- f. Clothes of dark colours absorbed more heat than clothes of light colour.

Q4. 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 |

Answers; i-d, ii-c, iii-b, iv-a.

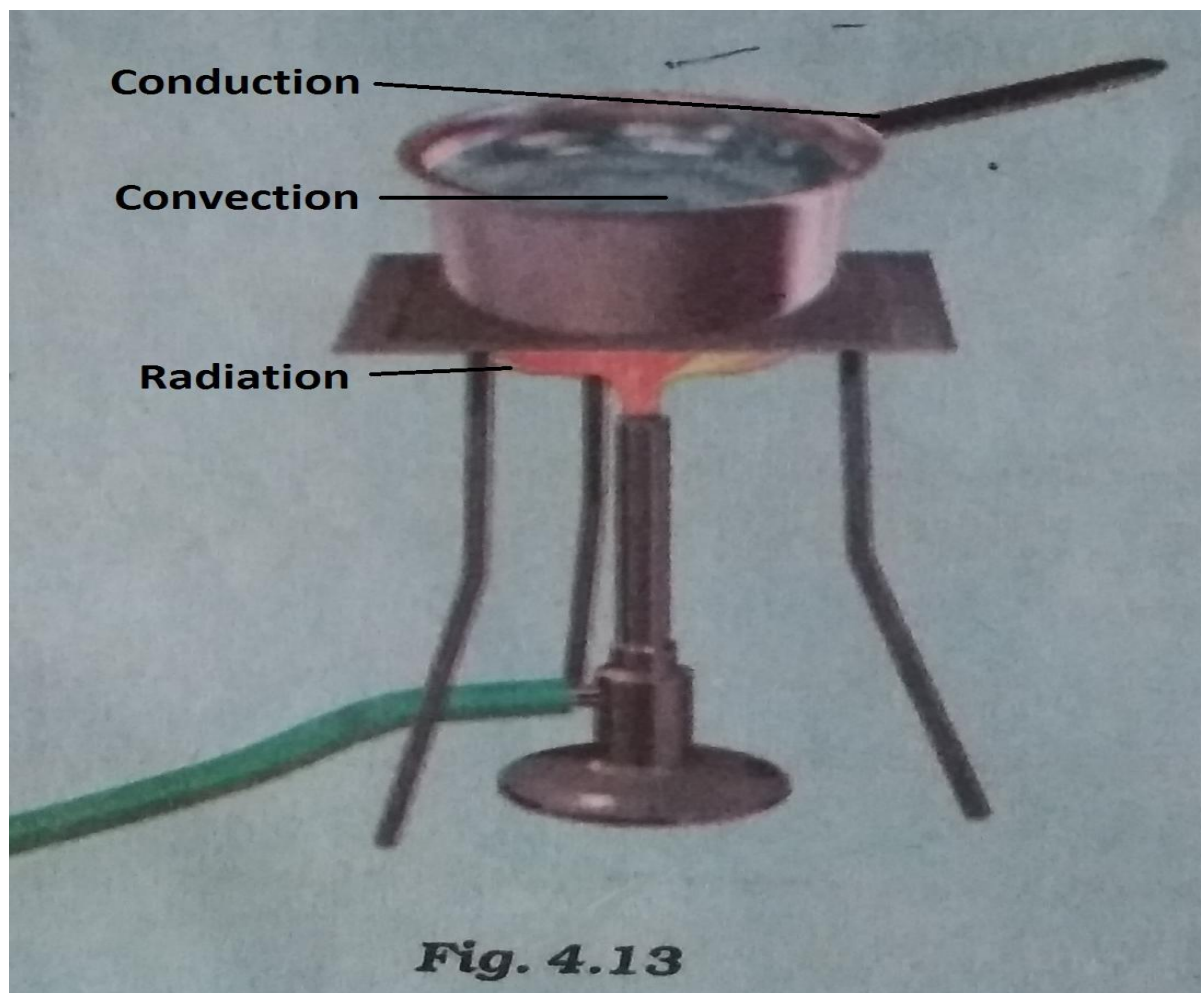
Q5. Discuss why wearing more layers of clothing during winter keeps us warmer than wearing just one thick piece of clothing?

Answer: Wearing more layers of clothing during winter keeps us warmer than wearing just one thick piece of clothing because air gets trapped in between the various clothing layers. Being a poor conductor of heat, air prevents flow of heat from our body. Hence layers of clothing keep us warmer than a thick single clothing.

Q6. Look at figure 4.13. Mark where the heat is being transferred by conduction, convection and radiation.



Answer:



Q7. In places of hot climate it is advised that the outer walls of houses be painted white. Explain.

Answer: In place of hot climate it is advised that the outer wall of the houses to paint white because white colour do not absorbed any heat radiation from the Sun which keep inside cool even if there is hot climate outside the house.

Q8. 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 then 50°C but less then 80°C
- c. 20°C
- d. Between 30°C and 50°C .

Answer: d. Between 30°C and 50°C

Q9. 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
- d. Increase the temperature of both.

Answer: b. Not flow from iron ball to water or from water to iron ball.

Q10. 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

Answer: d. Does not become cold (wood is a bad conductor of heat)

Q11. Stainless steel pans are usually provided with copper bottom. The reason for this could be

- 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.

Answer: c. Copper is a better conductor of heat than the stainless steel.



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Extra questions and answers.

1. What is a sea breeze?

→A breeze blowing towards the land from the sea especially during the day is called sea breeze owing to the relative warmth of the land.

2. What is a land breeze?

→A breeze blowing toward the sea from the land especially at night owing to the relative warmth of the sea.

3. In summer we prefer light coloured clothes and in winter we usually wear dark coloured clothes. Why is it so?

→In summer we prefer light coloured clothes because light colours reflect heat which help our body to keep cool and in winter we usually wear dark coloured because dark colours absorb heat which help our body to keep warm.

4. What are conductors and insulators of heat ? Give examples.

→The materials which allow heat to pass through them easily are conductors of heat . Eg. Aluminium and Iron. And materials which do not allow heat to pass through them easily are insulator of heat. Eg. Rubber and Plastic.



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