

NCERT Solutions for Class 7 Science Chapter 4

Heat Class 7

Chapter 4 Heat Exercise Solutions

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Q1 :

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. 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.

Q2 :

Give two examples each of conductors and insulators of heat.

Answer :

Two examples of conductors of heat are:

- (i) Aluminium
- (ii) Iron

Two examples of insulators of heat are:

- (i) Wood
- (ii) Plastic

Q3 :

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.

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.

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 |

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 |

Q5 :

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.

Q6 :

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



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.

Q7 :

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. Hence, a light colour tends to keep the house cool.

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 than 50°C but less than 80°C
- (c) 20°C
- (d) between 30°C and 50°C

Answer :

(d)

The temperature of the mixture will be 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)

The heat will not flow from iron ball to water or from water to iron ball as both the substances have same temperature.

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)

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

Q11 :

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.

Answer :

(c)

The reason for this is that copper is a better conductor of heat than stainless steel.