



INDIAN SCHOOL AL WADI AL KABIR



Class: VII	DEPARTMENT: SCIENCE 2021-2022	DATE: 29.04.2021
WORKSHEET NO: 2	TOPIC: HEAT	NOTE: A4 FILE FORMAT
NAME OF THE STUDENT:	CLASS & SEC:	ROLL NO.

I. VERY SHORT ANSWERS (1M):

1. Define temperature?
[Hint: A reliable measure of the hotness of an object is its temperature.]
2. Why do we wear light coloured cotton clothes in summer?
[Hint: Light coloured cotton clothes give us a feeling of coolness by reflecting heat.]
3. Name the device used to measure temperature.
[Hint: Thermometer]
4. What is the normal temperature of the human body?
[Hint: The normal temperature of the human body is 37 °C.]
5. Mention the use of a kink in a clinical thermometer.
[Hint: Kink prevents immediate backflow of mercury from the tube to the bulb, thus it allows us to read the temperature conveniently.]
6. What is the direction of flow of heat when you touch a cold object?
[Hint: When we touch a cold object, heat flows from our body to the cold object].
7. How is heat transferred in liquids and gases?
[Hint: In liquids and gases the heat is transferred by convection.]
8. What are the scales commonly used to measure temperature?
[Hint: Celsius and Fahrenheit are the two scales commonly used to measure temperature.]
9. A clinical thermometer has the range between 35⁰C to 42⁰C. Give reason.
[Hint: Because the temperature of human body does not go below 35⁰C or above 42⁰C.]

10. What are the conditions necessary for heat to be conducted?

[Hint: Two bodies should be in solid state, they should be in direct contact with each other, their temperatures should be different.]

II. For the questions that follows, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below:

- i) Both A and R are true and R is the correct explanation of the assertion.**
- ii) Both A and R are true but R is not the correct explanation of the assertion.**
- iii) A is true but R is false.**
- iv) A is false but R is true.**

11. **Assertion (A):** Woollen clothes keep the body warm in winter.

Reason (R): There is air trapped in between woollen fibres and air is a bad conductor of heat.

i) Both A and R are true and R is the correct explanation of the assertion.

12. **Assertion (A):** Temperature of boiling water can be measured by a clinical thermometer.

Reason (R): The range of a clinical thermometer is from 35°C to 42°C.

iv) A is false but R is true.

13. **Assertion (A):** All hot bodies radiate heat.

Reason (R): When heat falls on an object, a part of it is reflected, a part is absorbed and a part may be transmitted.

ii) Both A and R are true but R is not the correct explanation of the assertion.

II. PASSAGE BASED QUESTIONS:

In solids, generally, the heat is transferred by conduction. In liquids and gases, the heat is transferred by convection. When we come out in the sun, we feel warm. How does the heat from the sun reach us ? It cannot reach us by conduction or convection as there is no medium such as air in most part of the space between the earth and the sun. From the sun, the heat comes to us by another process known as radiation.

The transfer of heat by radiation does not require any medium. It can take place whether a medium is present or not. When we sit in front of a room heater, we get heat by this

process. Our body too, gives heat to the surroundings and receives heat from it by radiation.

i) When a pan is removed from the fire,

- a) heat is transferred to the surroundings
- b) the pan cools down.
- c) Heat transfer occurs by radiation.

d) All of these.

ii) Handles of cooking utensils should be made of a material that

- a) conducts heat well
- b) does not conduct heat well**
- c) radiates heat well
- d) absorbs heat well

iii) Heat from the sun reaches to us by

- a) radiation**
- b) conduction
- c) convection
- d) all of these

iv) Identify the correct statement

- a) All hot bodies radiate heat.**
- b) The temperature of the object decreases due to the absorbed part of the heat.
- c) The transfer of heat by radiation requires a medium.
- d) Our body cannot receive heat by radiation.

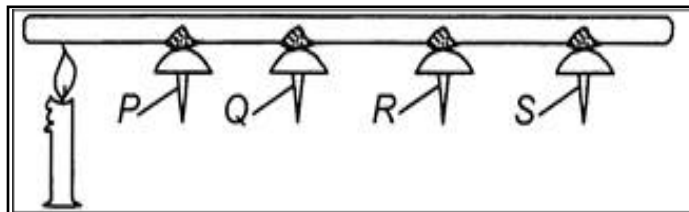
v) The given figure demonstrates



- a) Conduction of heat
- b) Convection of heat by water**
- c) Convection in air
- d) Radiation of heat

III.a) SHORT ANSWER TYPE QUESTIONS: (2M)

1. Some pins are stuck to a metal rod with wax and a lighted candle is kept below the rod as shown in the diagram below –



Which one of the pins will fall off the metal rod first? Give reason.

[Hint: The pin 'P' nearest to the flame falls down first, because heat is transferred from the hot end of a metal rod to its colder end by the process of conduction.]

2. The houses in Oman are painted with light colours. Why?

[Hint: Because white colour reflects most of the sun's heat rays. This keeps the house cool.]

3. It is preferred to use two thin blankets rather than one thick blanket. Explain.

[Hint: The two thin blankets joined together will have a layer of air trapped in-between them. Air is a poor conductor of heat. Air doesn't allow our body heat to escape to the cold surroundings and hence keep us warm.]

4. A few sharp jerks are given to a clinical thermometer before using it. Why is it done so?

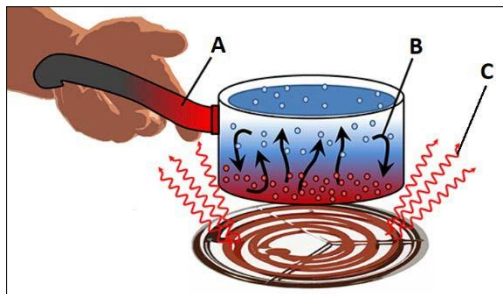
[Hint: Jerks are given to a clinical thermometer before using it to settle down the mercury level below normal temperature so that the measurement taken of a body be accurate.]

5. The handle of a pressure cooker is covered with the thick plastic. Explain why.

[Hint: Plastic is a bad conductor of heat due to which the heat from the cooker does not flow to its handle and we can hold it easily].

III. b) SHORT ANSWER TYPE QUESTIONS: (3M)

1. Observe the figure given below, identify a, b and c and explain each of them.



[Hint: A – CONDUCTION – The process by which heat is transferred from the hotter end to the colder end of an object without actual movement of particles. B – CONVECTION – The method in which heat is transferred by actual movement of the particles of a substance. C – RADIATION – It is a process of heat transfer which does not require any material medium.]

2. State the reasons why mercury is very commonly used in thermometers?

[Hint: i) It is the only metal which is found in liquid state.

ii) It does not stick to the walls of the glass.

iii) Its boiling point is very high and has low freezing point

iv) It is shiny which makes it easily visible through the glass

v) it expands equally for every degree of rise in temperature.]

3. Write any two applications of convection and radiation in daily life.

[Convection – i) Room heater warms the air near the floor. When the warm air rises upwards, the cool air sinks to the floor which results in effective heating of the room,

ii) Exhaust fans are fitted near the ceiling for hot air to escape.

[Radiation – i) In cold and hilly areas, the outer walls and roofs are usually painted dark to keep the houses warm,

ii) In factories, the roofs are painted shiny silver to reduce the loss of heat in winters and increase the radiation of heat in summers.]

4. Write the difference between conductors and insulators of heat. Give suitable examples.

[Hint: Conductors – The materials which allow heat to pass through them easily.
eg. Iron and Copper

Insulators – The materials which do not allow heat to pass through them easily.
eg. Wood and plastic]

5. What is meant by heat transfer? Explain.

[Hint: Flow of heat from one object to another with or without a medium is called transfer of heat. Heat always flows from a body at higher temperature to another body at lower temperature. The flow of heat stops when temperature of both the bodies becomes equal. Transfer of heat take place through the methods of conduction, convection and radiation.]

IV. LONG ANSWER TYPE QUESTIONS. (5M)

1. What are the precautions to be taken while using a laboratory thermometer and a clinical thermometer?

[Hint: Clinical thermometer –

i) Thermometer should be washed before and after use, preferably with an antiseptic solution.

ii) Ensure that the mercury level is below 35°C.

iii) Our eyes should be at the level of the mercury while reading the temperature.

iv) Handle the thermometer with care. If it hits against some hard object, it can break.

v) Do not hold the thermometer by the bulb while reading it.

Laboratory thermometer –

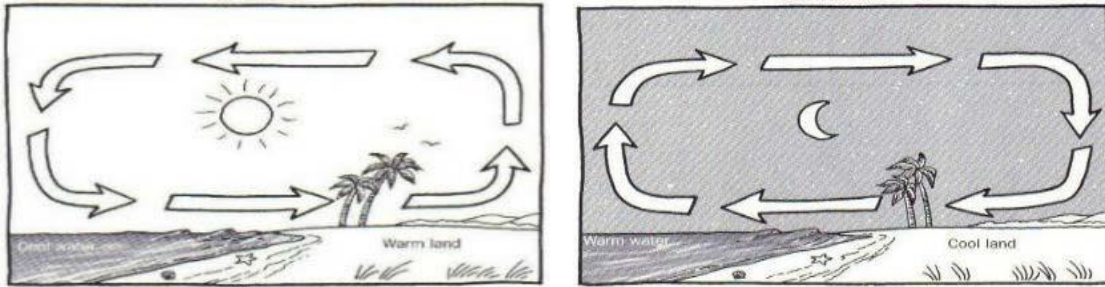
i) Thermometer should be washed before and after use, preferably with an antiseptic solution.

ii) It should be kept upright, not tilted.

iii) Bulb should be dipped in the substance in the vessel.

iv) The bulb should not touch the sides or base of the container.]

2.Explain the differences between sea-breeze and land -breeze with the help of labelled diagrams.



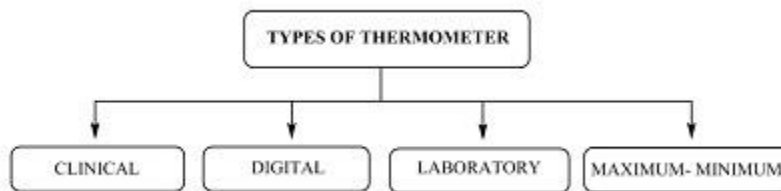
SEA BREEZE

LAND BREEZE

[Hint: **SEA BREEZE** - During the day, the land heats up much faster than sea water. So, air above the land becomes hotter and rises up. The cool air above the sea surface moves towards land to fill the space. This flow of air from sea towards the land is called **sea breeze**.

LAND BREEZE – At night, the land cools much faster than the sea water. So, the air above the land surface is cooler than the air over the sea. The warm air above the sea surface rises up. The cool air from the land moves towards the sea. This flow of air from land towards the sea is called **land breeze**.]

3. Explain the different types of thermometers.



[Hint: Clinical thermometer

The thermometer that measures our body temperature is called a clinical thermometer. It consists of a long, narrow, uniform glass tube. It has a bulb at one end which contains mercury. A clinical thermometer reads temperature from 35°C to 42°C.

Digital thermometer

Digital thermometers are an advance to the existing clinical thermometers;

Due to high toxicity of the mercury present in clinical thermometers and difficulty in its disposal in case when the thermometer breaks ,digital thermometers are manufactured ,that can measure the accurate temperature without the use of mercury.

Digital thermometers do not use mercury and hence safe to use.

Laboratory thermometer

Laboratory thermometer is used to measure the temperature of things other than human body. The range of a laboratory thermometer is generally from -10°C to 110°C .

Maximum- minimum thermometerThe daily maximum and minimum temperatures reported in weather reports, are all measured by a thermometer known as the Maximum minimum thermometer.]

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