Class 7 Science Worksheet: Heat

Conceptual Questions (Testing definitions, basic scales, and core mechanisms)

Q1. A metal spoon is placed inside a cup of boiling hot soup. After a few minutes, the handle of the spoon becomes hot to touch. Which method of heat transfer is responsible for this?

(a) Convection

(b) Radiation

(c) Conduction

(d) Insulation

Q2. Fill in the blanks to complete the core facts about temperature and heat transfer:

** The normal temperature of a healthy human body is _____ °C. (37 / 98.6)*

** Heat energy always naturally flows from an object at a _____ temperature to an object at a lower temperature. (higher / lower)*

Q3. Write True or False for the following statements:

** A clinical thermometer can be washed with boiling hot water to sterilise it safely. [_____]*

** Dark-colored clothes absorb more radiant heat from the sun compared to light-colored clothes. [_____]*

Q4. Clinical thermometers have a slight bend or narrow twist in the glass tube just above the bulb. What is this structural feature called, and what is its main purpose?

Answer: Name: _____ | Purpose: _____

Q5. Match the natural phenomenon to its correct primary method of heat transfer:

** The warmth we receive from the Sun across empty space is due to _____ . (radiation / convection)*

** The circular movement of air that causes sea breeze and land breeze happens due to _____ . (conduction / convection)*

Logical Questions (Testing reasoning, calculations, and behavior of materials)

Q6. Why do the wooden handles of frying pans or the plastic handles of electric irons not get hot enough to burn our hands when we use them?

(a) Wood and plastic are excellent conductors that push heat away.

(b) Wood and plastic are poor conductors (insulators) of heat.

(c) Wood and plastic store heat inside them permanently.

(d) Wood and plastic automatically drop to freezing temperatures when touched.

Q7. You are given a laboratory thermometer and a clinical thermometer. Explain the logical reason why you cannot use a clinical thermometer to measure the temperature of boiling water in a school laboratory experiment.

Answer:

_____

Q8. In coastal areas during the daytime, the air over the land gets heated much faster than the air over the sea.

** In which direction does the cool wind blow during the day? [_____]*

** What is this specific daytime breeze called? [_____]*

Q9. Two identical steel containers are filled with equal amounts of cold water. One container is painted shiny white, and the other is painted dull black. Both are left under the hot midday sun for one hour.

** Which container will have warmer water? [_____]*

** State the logic behind your choice:*

_____

Q10. Why is a laboratory thermometer kept completely upright (vertical) and not tilted while reading the temperature of a liquid inside a beaker?

Answer:

_____

HOTS Questions (Higher Order Thinking Skills - Testing application and deep analysis)

Q11. Imagine you are traveling to a freezing cold place for a winter vacation. You have the choice of wearing one single very thick woolen blanket OR wearing three thin woolen blankets layered on top of each other. Analyze which choice will keep you warmer and explain the scientific reason why.

Answer:

_____

Q12. An iron bridge is built across a river. Engineers purposely leave small, empty gaps between the long iron rails at regular distances instead of joining them tightly together in a single solid line. What would happen to the bridge in peak summer if these gaps were not left?

Answer:

_____

Q13. In places with extremely hot desert climates, people are highly advised to paint the outer walls of their houses white or light pastel colors. How does this architectural choice help in managing the temperature inside the house?

Answer:

_____

Q14. A student takes a laboratory thermometer out of a beaker filled with hot milk to read the temperature clearly under a bright light. The moment the thermometer bulb leaves the milk, the mercury level begins to drop immediately. Analyze why this happens with a laboratory thermometer but does not happen when a doctor removes a clinical thermometer from a patient's mouth.

Answer:

_____

Q15. Ice blocks are often wrapped in thick gunny bags (jute sacks) or covered with sawdust during transport in summer to stop them from melting quickly. Explain how the air trapped inside these materials acts to protect the ice.

Answer:

_____