#CRESTInnovator

CREST Science Olympiad (CSO)
Worksheet for
Class 7

Topic

Methods of Heat Transfer

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Worksheet on Methods of Heat Transfer

1. **In a heat transfer experiment, a student heats a metal rod at one end and observes that the other end also becomes warm. This transfer of heat is an example of:**

   a. Conduction
   b. Convection
   c. Radiation
   d. Absorption

2. **Which of the following applications best demonstrates the use of radiation?**

   a. Heating a pot of water on a gas stove
   b. Cooling a room with an air conditioner
   c. Generating electricity using solar panels
   d. Operating an electric fan to circulate air in a room

3. **To investigate the best material for a heat insulator, a student sets up an experiment with four cups containing hot water. Each cup is covered with a different material (aluminium foil, cotton fabric, plastic wrap, and glass). Which cup is likely to retain the heat best?**

   a. Aluminium foil
   b. Cotton fabric
   c. Metal plate
   d. Glass

4. **An experiment is conducted to compare the heat transfer of different coloured objects. Which of the following objects will absorb the most heat from the sun?**

   a. A white T-shirt
   b. A green leaf
   c. A yellow umbrella
   d. A black car

5. **Consider the following statements and choose the correct option:**

   Statement I: Radiation is the only method of heat transfer that can occur in a vacuum.
   Statement II: Convection requires the presence of a solid medium for heat transfer to occur.

   a. Statement I is correct but statement II is incorrect.
   b. Statement I is incorrect but statement II is correct.
   c. Both statements are correct.
   d. Both statements are incorrect

Answer Key

1. a - The transfer of heat observed in the experiment is an example of conduction. Conduction is the process of heat transfer through direct contact between objects or substances. In this case, heat is being conducted from the hot end of the metal rod to the colder end through the solid material of the rod itself.

2. c - Generating electricity using solar panels best demonstrates the use of radiation. Solar panels harness the radiant energy from the sun and convert it into electrical energy through the process of photovoltaic conversion. This application directly utilises radiation as a source of energy for power generation.

3. b - Cotton fabric is likely to retain the heat best. Cotton is a good insulating material that traps air pockets within its fibres, providing thermal insulation and reducing heat transfer.

4. d - The black car will absorb the most heat from the sun. Dark-coloured objects, like the black car, are better absorbers of heat compared to lighter-coloured objects. This is because dark colours absorb more of the sun's energy and convert it into heat, while lighter colours reflect more of the sun's energy, resulting in less heat absorption.

5. b - Statement I is correct because radiation is the transfer of heat through electromagnetic waves, which can occur in a vacuum where there is no medium. However, statement II is incorrect because convection is the transfer of heat through the movement of fluids (liquids or gases) and does not require a solid medium.

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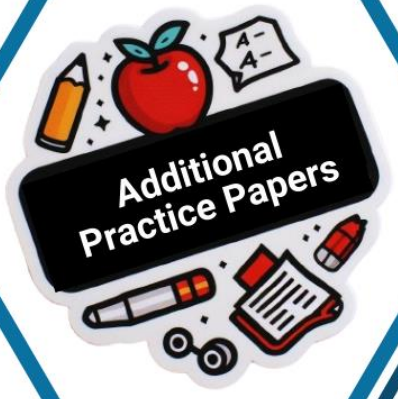

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