

Important Short Questions.**1. Define Conduction.**

Answer: The mode of transfer of heat by vibrating atoms and free electrons in solids from hot to cold parts of a body is called conduction of heat.

2. Define convection.

Answer: Transfer of heat by actual movement of molecules from hot place to a cold place is known as convection.

3. Define radiation.

Answer: Radiation is the mode of transfer of heat from one place to another in the form of waves called electromagnetic waves.

4. What is the difference between land and sea breeze?

Answer:

The land breeze occurs at night when cool air from the land moves towards the sea	The sea breeze occurs during the day when cool air from the sea moves towards the land.
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5. Define thermal conductivity of a substance.

Answer: The rate of flow of heat across the opposite faces of a metre cube of a substance maintained at a temperature difference of one kelvin is called the thermal conductivity of that substance.

6. Write uses of good conductors and non-conductor.

Answer: **Uses of Good Conductors of Heat:**

1. Making cooking utensils (e.g., steel, silver).
2. Heat exchangers in industries.
3. Radiators for heating systems.

Uses of Non-Conductors of Heat:

7. Insulation in buildings (e.g., fiberglass).
8. Making thermos flasks to keep drinks hot or cold.
9. Handles of cookware (e.g., plastic, wood).

10. Write two consequences of radiation.

Answer: **Global Warming:** Excessive radiation from the Sun, trapped by greenhouse gases, leads to increased Earth's temperature.

Skin Damage: Prolonged exposure to UV radiation can cause sunburn, skin aging, and even skin cancer.

11. What is meant by global warming? What is the main cause?

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Answer: **Global warming** is the gradual increase in Earth's average temperature due to the buildup of greenhouse gases in the atmosphere.

Main cause: Excessive emission of greenhouse gases like carbon dioxide (CO₂) from burning fossil fuels, deforestation, and industrial activities.

12. Conduction of heat does not take place in gases. Give a reason.

Answer: Conduction of heat relies on the transfer of energy through direct collisions between neighboring particles. In gases, the particles are widely spaced due to their low density, which means fewer collisions occur between them. As a result, the transfer of heat energy is much slower and less effective in gases compared to solids and liquids, where particles are closer together and interact more frequently.

13. What is meant by convection currents?

Answer: **Convection currents** are the circular movements of fluid (liquid or gas) caused by differences in temperature and density. Warmer, less dense fluid rises, while cooler, denser fluid sinks, creating a continuous flow.

For example, in boiling water, hot water rises from the bottom of the pot, cools at the surface, and sinks again, forming convection currents. These currents help transfer heat in fluids.

14. What is meant by transfer of heat? What ways by which transfer of heat takes place.

Answer: **Transfer of heat** refers to the movement of thermal energy from a region of higher temperature to a region of lower temperature.

This occurs through three methods:

Conduction Convection Radiation

15. Define rate of flow of heat and write its formula.

Answer: The amount of heat that flows in unit time is called the rate of flow of heat.

$$\text{Rate of flow of heat} = \frac{Q}{t}$$

16. How does heat reach us from the sun?

Answer: Heat reaches us from the Sun through **radiation**. The Sun emits electromagnetic waves, including infrared radiation, which travel through the vacuum of space. These waves are absorbed by the Earth, warming the surface and atmosphere. Unlike conduction or convection, radiation does not require a medium to transfer heat, allowing the Sun's energy to reach us across the empty space.

17. Write two uses of convection currents.

Answer: Following are the two uses of convection currents:

**Land and Sea Breeze
Gliding**

18. What is the greenhouse effect?

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Answer: The **greenhouse effect** is the trapping of the Sun's heat by gases in Earth's atmosphere, which allows sunlight to enter but prevents some of the heat from escaping, leading to the warming of the planet.

19. What measure do you suggest to conserve energy in houses?

Answer: **Insulate the home:** Proper insulation in walls, windows, and roofs helps maintain indoor temperature, reducing the need for heating and cooling.

Seal leaks: Close gaps around windows and doors to prevent heat loss or gain.

Adopt smart thermostats: Use programmable thermostats to control heating and cooling efficiently.

20. Write three ways of transfer of heat.

Answer: Three ways of transfer of heat are:

Conduction Convection Radiation

21. Why does the land breeze blow at night?

Answer: At night, the land loses heat rapidly, cooling the air above it. This cooler, denser air moves towards the warmer, less dense air over the sea, causing the land breeze to blow from the land to the sea.

22. Upon which factors do radiations depend?

Answer: Radiation depends on the following factors:

Temperature: Hotter objects emit more radiation and at shorter wavelengths (e.g., the Sun emits visible light and UV radiation).

Surface Area: Larger surfaces radiate more heat.

Surface Color and Texture: Dark, rough surfaces absorb and emit more radiation than light, smooth surfaces.

23. Why does transfer of heat in fluids take place by convection?

Answer: The transfer of heat in fluids (liquids and gases) takes place by **convection** because fluids can flow and move, allowing for the transfer of heat through the circulation of heated particles.

24. Differentiate between conductor and insulator.

Answer: **Conductor:**

- A material that allows the easy flow of heat or electricity.
- Has free electrons that move easily, enabling the transfer of energy.
- Examples: Metals like copper, aluminum.

Insulator:

- A material that resists the flow of heat or electricity.
- Has tightly bound electrons that do not move freely.
- Examples: Rubber, glass, wood.

25. Why do we wear white or light coloured clothes in summers?

Answer: We wear white or light-colored clothes in summer because these colors **reflect** most of the sunlight, including heat, rather than absorbing it. This helps keep the body cooler by reducing the amount of heat absorbed from the Sun.

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26. Write uses of leslie cube.

Answer: The **Leslie cube** is an apparatus used to measure the **emissivity** of different surfaces and study heat radiation. Its uses include:

Measuring Radiation

Comparing Emissivity

Demonstrating Heat Transfer

Important Long Questions.**1) Define Thermal conductivity. Explain the factors affecting rate of heat flow.****2) Why do we use conductors and insulators in our daily life?****3) What is the transfer of heat? Explain the three modes of transfer of heat.**

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