St. Andrews Scots Sr. Sec. School

9th Avenue, I.P. Extension, Patparganj, Delhi – 110092
Session: 2025 – 2026
(Answer Key)

Class: VII | **Subject: Science** | **Chapter: Transfer of Heat**

CHECK POINT 1

1. (T) 2. (F) 3. (F) 4. (T) 5. (T)

CHECK POINT 2

1. convection 2. Convection currents 3. Ocean currents 4. Sea breeze 5. land breeze

CHECK POINT 3

1. Radiation 2. Waves 3. Thermal radiation 4. Dark colour

CHECK POINT 4

1. (T) 2. (F) 3. (T) 4. (T) 5. (F)

PRACTICE TIME

A. Tick the correct answers:

1. (b) 2. (d) 3. (a) 4. (d) 5. (a)

B. Assertion – Reason type question:

1. (a) 2. (c) 3. (b) 4. (a)

C. Fill in the blanks:

1. higher; lower 2. sea 3. cold 4. poor 5. vacuum 6. good

D. Very short answer type question :

1. Conduction.
2. All metals like copper, gold, silver, aluminium, iron, etc. are good conductors of heat.
3. Anything that can flow is called fluid. Since both gases and liquids can flow, they are called fluids.
4. We receive heat energy from the sun by radiation. The radiation carrying heat energy is called thermal radiation.
5. The water at the surface of ocean moves from equatorial region to polar regions.

E. Short answer type questions :

1. The materials which do not conduct heat through them easily are known as insulators. Wood, brick, plastic, glass wool, wool, cotton, ice, snow, air and water are some insulators.

2. Good conductors of heat such as:
   - Steel, copper and aluminium are used to make cooking utensils, so that they can easily transfer the heat from the source to the food being cooked.

- Copper, iron and aluminium are used to make the base of an electric iron, solar heating pipes and boilers in chemical and textile industries.

3. Because of a large temperature difference between the earth's crust and the core, huge convection currents are developed in the magma. They result in an immense pressure under the landmasses causing eruption of volcanoes and earthquakes.

4. In everyday life, the principle of convection currents is applied to a number of situations as follows:
   - Air coolers and air conditioners are fitted at higher levels on the walls so that the cold air generated by them moves downwards and be more effective in cooling the whole room quickly.
   - Room heaters are placed at or near the floor of the room. The air heated by them rises up setting convection currents in the room. This heats up the air of the room quickly and uniformly.
   - The freezers inside the refrigerators are surrounded by the cooling pipes and have the minimum temperature. Also, the freezers are always located at the top of the refrigerators so as to easily circulate the cool air downwards and keep the refrigerators cold.

5. The absorbance of heat by an object depends upon :
   - **The nature of the material:** Metals and water absorb more heat than nonmetals.
   - **Its distance from the source of heat:** If the source of heat and the object are kept close, the object receives more heat.
   - **The colour of the object:** Dark colours absorb more as well as give out more thermal radiation. Light colours absorb less and give out less thermal radiation.

6. Applications of poor conductors in our everyday life are:
   - Wood, plastic and bakelite are used to make handles of cooking utensils, electric irons, etc.
   - Fluffed up cotton and woollens are used in quilts and garments to prevent the loss of body heat to the cold surroundings in winters.
   - Ice is a poor conductor of heat. Eskimos live in igloos which are made of ice blocks. These houses do not allow the heat from inside to escape to the outer cold surroundings.
   - Asbestos sheets are used to make rooftops of buildings at places with hot climate.
   - Thermocol is used to make ice boxes to store ice.

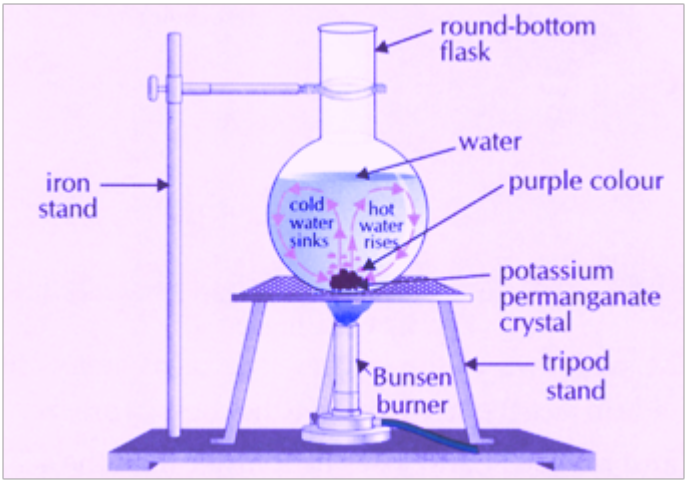
7. The phenomena of sea and land breezes make the climate of coastal areas mild and pleasant.

8. When we sit around a campfire, we feel warmer because heat from fire reaches us by radiation or by convection.

9. Conduction and convection are such modes which need material medium to transfer heat. But, there is no material medium outside the earth's atmosphere. Hence, heat reaches from the sun to the earth by radiation only.

F. Long answer type questions :

1. When a liquid or a gas is heated, its particles near the source of heat get heated and move upwards. The space left by them is quickly filled by the colder particles from the surroundings. Now, these particles get heated and rise upwards causing convection currents. Gradually, more and more particles keep on getting heated. The process continues till the whole fluid gets heated.

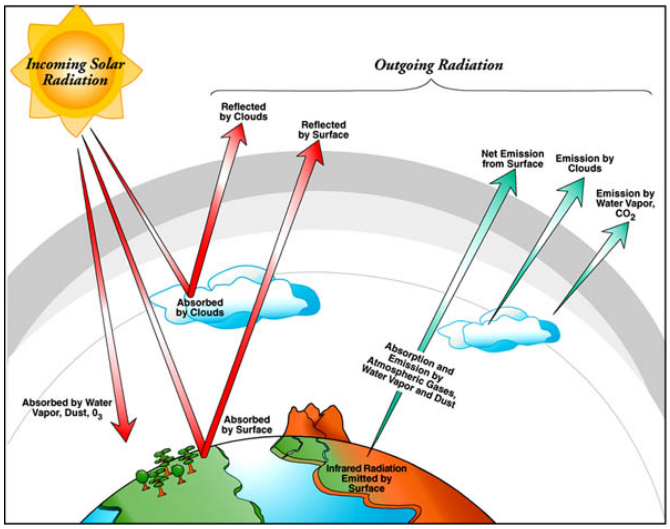


2. **Sea Breeze:** During the daytime, the land gets heated faster than the seawater. The air above the land becomes hot and rises up. The cool air from the sea rushes towards the land to occupy the space left by the hot air. The convection currents from the sea to the land cause sea breeze.

Land Breeze: During the night time, the land loses heat faster than seawater. The air above the sea is warmer than that of the land. Thus, the warm air above the sea rises upwards. The cool air from the land rushes towards the sea to occupy the space created. The convection currents from the land to the sea cause land breeze.

3. The mode of transfer of heat from distant sources in the environment, without requiring any medium or contact is called radiation.

When radiation falls on an object, a part of it gets reflected, a part is absorbed and some of the part may be transmitted. The temperature of the object increases and it becomes hot.



4. The amount of heat absorbed or radiated out depends upon the colour of the object. This affects the choice of colours in day-to-day life as follows:

- We wear light-coloured clothes in summers because they reflect most of the heat falling on them.
- Dark-coloured clothes are preferred in winters because they absorb more heat from the surroundings during the daytime.
- The bottom of cooking utensils is painted black while the sides are kept sparkling bright to absorb the maximum heat through the bottom and radiate (give out) minimum from the sides.
- Pipes of solar heaters and containers of solar cookers are painted black from outside so that maximum radiation from the sun can be absorbed.
- The radiators of cars and air conditioners are painted black to radiate the heat away.

5. (a) Conduction (b) Convection (c) Convection
   (b) It is shown by fig. (c)

G. HOTS :

1. The black metallic box will get hotter because metals are good conductors and black colour absorbs maximum radiation.
2. We will prefer two thin blankets joined together because air is trapped between two thin blankets. As air is a poor conductor of heat, it prevents heat of body from escaping and hence keeps us warm.
3. The presence of a hot object can be felt without any contact because of thermal radiation.
4. Because of more inter-molecular spaces in fluids, transfer of heat does not take place by conduction. In fluids, molecules move from hotter part to colder part carrying heat and hence a convection current is set up.
5. Black coloured surface is a good radiator of heat, hence the radiators of cars are painted black to radiate the heat away.

Passage/Case-based questions:

1. Light-coloured clothes are good reflectors of light and heat, so these are comfortable to wear in summer. They keep the body cool. Therefore, Saksham advised Ketan to wear light-coloured clothes in summer.
2. The heat of the sun reaches us by the mode of radiation.