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STUDY MATERIAL SCIENCE CLASS-VII

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► Heat

3. Radiation

The mode of transfer of heat through which heat energy from a hot body to a cold body by means of heat rays without any material medium between them is known as radiation, e.g. the sun's heat reaches the earth by the process of radiation. The sun is very far away from the earth, and there is mainly an empty space (vacuum) between the sun and the earth even, then the heat from the sun reaches the earth. This is due to the fact that the sun being extremely hot, emits invisible heat radiation (or infrared rays) in all directions.

These radiations travel through the vacuum between the sun and the earth at a very high speed and ultimately, reach us on the earth. Therefore, we can say that the transfer of heat from a hot object to a cold object by the process of radiation does not require any medium.

In our daily life activities, we have many situations where heat is transferred by radiation through air, e.g.

- Depending on the temperature of surroundings, our body too gives heat to the surroundings or receives heat from the surroundings by radiation.
- If a hot utensil filled with hot milk is kept away from the flame, then it cools down by transferring its heat to the surroundings by radiation.
- If we stand next to a burning fire, then we will feel the heat of the fire falling on our face. The heat is transferred from the fire to our face by the process of radiation.

Clothes

During hot summer days, people prefer to wear white clothes or light coloured clothes because light coloured clothes absorb less heat from the sun and hence, keep us cool and comfortable in hot weather while in the cold winter days people prefer to wear dark clothes because the dark coloured clothes absorb more heat rays from the sun and keep us warm in winter season.

Thus, we can say that dark coloured objects absorb heat better and also emit heat better than light coloured objects. Now, let us try to study this concept on the basis of the given activity.

In the winters, we use woollen clothes. Wool is a poor conductor of heat. Moreover, there is air trapped in between the wool fibres. This air prevents the flow of heat from our body to the cold surroundings. So, we feel warm.