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## Chapter - 14

### Electric Current and its Effects

- **Electric Current:** Flow of electrons through a conductor.
  - It is convenient to represent electric components by symbols. Using these, an electric circuit can be represented by a circuit diagram.
  - When an electric current flows through a wire, the wire gets heated. It is the heating effect of current. This effect has many applications.
  - Wires made from some special materials melt quickly and break when large electric currents are passed through them. These materials are used for making electric fuses which prevent fires and damage to electric appliances.
  - When an electric current flows through a wire, it behaves like a magnet.
  - **Electric Circuit:** A complete pathway of the flow of electric current.
  - **Component of Electric Circuit:**
    - (i) **Cell:** Provides energy for the current to flow.
    - (ii) **Bulb:** Lights up when an electric current flows through it.
    - (iii) **Switch:** Keeps the circuit off or on.
    - (iv) **Connecting wires:** Help to conduct the electric current and complete the circuit.
  - **Effects of Electric Current:**

**Heating Effect:** The wire gets hot when an electric current passes through it. This is the heating effect of the electric current. Electric heater contains a coil of wire called element which becomes red hot when current passes through it. The amount of heat produced in a wire depends on its material, length and thickness.

    - (i) **Fuse:** It is a safety device which prevents damage to electric circuit. It is made by inserting a short wire into porcelain or insulating material.
    - (ii) **MCB:** Stands for Miniature Circuit Breakers. These are switches which automatically turn off when current in a circuit exceeds the safe limit.

**Magnetic Effect:** When electric current passes through a wire, it behaves like a magnet. This is the magnetic effect of the electric current. First observed by Hans Christian Oersted.
  - A current carrying coil of an insulated wire wrapped around a piece of iron is called an electromagnet.
  - **Electromagnet:** An electromagnet is a coil of wire wound on a soft iron core. Used to separate magnetic material from the junk. Doctors use tiny electromagnets to take out small pieces of magnetic material that have accidentally fallen in the eye. Many toys also have electromagnets inside them.
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