Physics Class Notes

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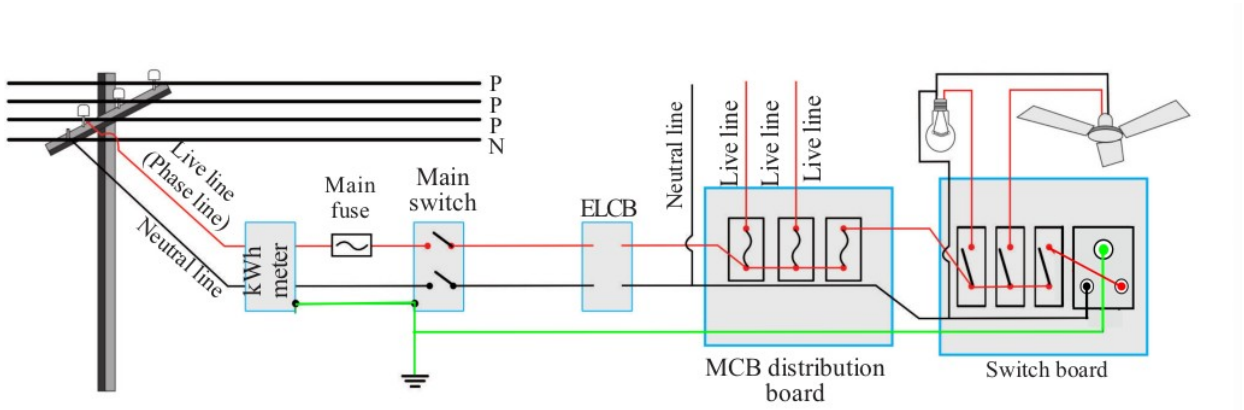
Household Electrification

The pictorial representation of a household electrification is given below



- **To which device is the electric line reaching our home connected first?**
  Ans: Watt-Hour Meter.
- **From where does the earth line start?**
  Ans: From the Watt-hour meter.
- **What is the use of a watt hour meter?**
  Ans: Watt-hour meter is used for measuring the consumed power.
- **In which line are the fuses connected?**
  Ans: Phase line(Live line)
- **What is the function of the main switch? Where is its position in the circuit?**
  Ans: Main switch is used to control or block supply to all branches of the circuit. It is connected just after the watt hour meter.
- **In the household electrical circuit, which is the third line, other than the phase and the neutral?**
  Ans: Earth line
- **What are the colours used for wires in phase, neutral and earth lines?**
  Ans: Phase line-Red
  Neutral line-Black
  Earth line- Green
- **Where is the earth wire connected in a three pin socket?**
  Ans: Earth pin
- **How are the household devices connected?**
  Ans: Parallel.

Advantages of Connecting Devices in Parallel

- **Devices work according to the marked power.**
- **Devices can be controlled using switches as per need.**
- **All the devices get the same voltage.**

Safety Measures in Household Electrification

1. Safety Fuse: Safety fuse is a device which protects electric circuit by breaking the circuit automatically when excess current flows through it. **It works on heating effect of electric current**. **It is connected in series to the circuit.** When excess electric current flows through the circuit due to overloading and short circuit, the fuse wire gets heated and the fuse wire melts, which leads to break the circuit.

2. **MCB(Miniature Circuit Breaker) and ELCB(Earth leakage Circuit Breaker) :** MCB is used instead of safety fuse. It automatically breaks the circuit whenever there is an excess current in the circuit due to short circuit or overloading. **MCB works on heating and magnetic effect of electricity.**

ELCB helps to break the circuit automatically whenever there is a current leak due to insulation failure or any other reason. Nowadays RCCB, which ensure more safety than ELCB is made use of.

Differences Between Ordinary Fuse and MCB

- **Ordinary fuse works making use of heating effect of electricity. While MCB works making use of heating and magnetic effect of electricity.**
- **When there is excess current in a circuit due to overloading or short-circuit, the fuse wire melt and the flow of current stops. But MCB automatically breaks the circuit.**
- **The circuit can be brought back to the original state by using a fuse wire of suitable amperage, after rectify the case of excess current in the circuit. After rectify the circuit, we can switch ON the MCB and make the circuit on it was.**