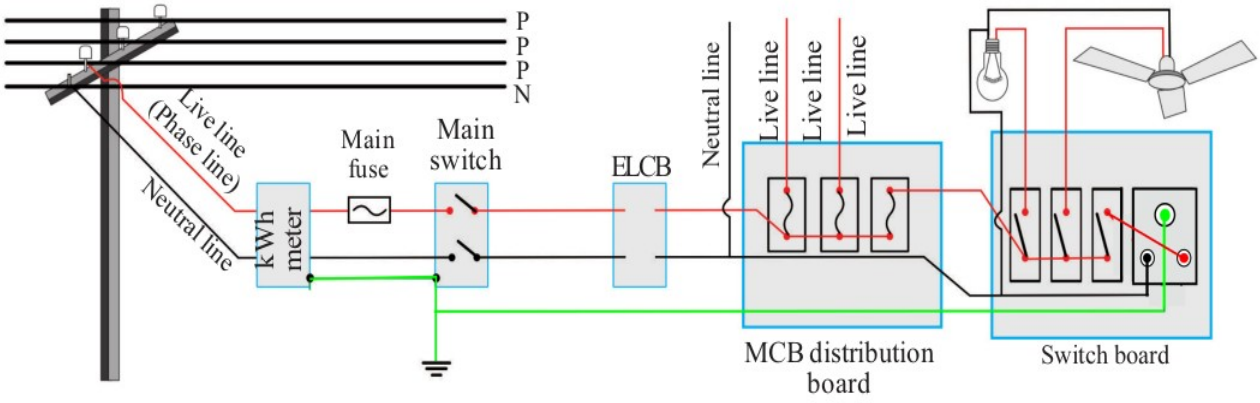
KITE VICTERS ONLINE CLASS 26-10-2021

PHYSICS - X-PART-12 CLASS 30

Household Electrification



- To which device is the electric line reaching our home connected first?
  * Watt - hour meter

- From where does the earth line start?
  * From the Main switch

- What is the use of a watt - hour meter?
  * The electricity used is measured using a Watt- hour meter

- In which line are the fuses connected?
  * Phase line

- What is the function of the main switch? Where is its position in the circuit?
  * The electricity reaches the electrical appliances through the main switch. Therefore instead of turning each switch off, the main switch can be switched off. The main switch is placed just after the Watt - hour metre.
- In the household electrical circuit, which is the third line, other than the phase and the neutral?
  * Earth line

- What are the colours used for wires in phase, neutral and earth lines?
  Phase line – Red
  Neutral line – Black
  Earth line – Green

- Where is the earth wire connected in a three pin socket?
  * Pin E

- How are the household devices connected? Series/parallel
  * Parallel

- What are the advantages of connecting devices in parallel?
  * Devices work according to the marked power
  * Devices can be controlled using switches as per need.
  * The same voltage is available for all the devices.

Watt -Hour Meter

- Watt - hour meter is a device that is used to measure electrical energy. Electrical energy is measured using the unit kilowatt hour. This is also known as a unit.

Safety measures in household electrification

1. Safety Fuse

- Which are the circumstances that lead to the flow of excess current in a household circuit?
  * Short circuits and Overloading
- What happens to the circuit when there is an excess current in a circuit?
  * More heat is generated. So appliances and circuit will get damaged.
- How does a safety fuse protect a circuit?
  * During the entire time of the passing of current through a circuit, a small amount of heat is generated in the fuse wire. But this heat will be transmitted to the surroundings. When the current that flows into the circuit exceeds the permissible limit, the heat generated becomes excessive. Since more heat is generated in unit time than the heat transmitted, the fuse wire melts.

2. MCB (Miniature Circuit Breaker), ELCB (Earth Leakage Circuit Breaker)

- MCB is a device that is used in the place of a fuse wire branch circuits.

- MCB automatically breaks the circuit whenever there is an excess flow of current due to short circuit or overloading
- MCB works making use of heating and magnetic effects of electricity.
- What are the differences between ordinary fuse and MCB?

Ordinary fuse	MCB
works making use of heating effects of electricity.	works making use of heating and magnetic effects of electricity.
Requires replacement after every operation	No replacement after operation

- What is the advantage of MCB over a safety fuse?
  * MCB is more sensitive to current than fuses. They immediately detect any abnormality and switch off the electrical circuit automatically. This prevents any permanent damage to electrical appliances and human beings. The MCB detects any excess current and breaks the circuit
- What is the function of ELCB/RCCB in the circuit?
  * ELCB helps to break the circuit automatically whenever there is a current leak due to insulation failure or any other reason. Hence a person touching the electric circuit or a device does not get an electric shock. Nowadays RCCB, which ensures more safety than ELCB is made use of.

Assignment

I) 1. In which line is the switches and fuses connected ?

2. What are the specialities observed by you in connecting devices in a household circuit ?

3. Give the reasons for connecting devices in parallel.

II) Fuse, MCB and ELCB are some safety devices used in electric circuits.

1. What are the differences between MCB and an elecric fuse?

2. What is the advantage of MCB over an electric fuse?