ELECTRICITY

Close Circuit: If the path between the load and source is continuous, then it is called a closed circuit.

Open Circuit: when the path between the load and source is not complete.

Short Circuit: The live wire comes in contact with the neutral without any load between them.

Fuse: It is the weakest point in an electric circuit. When the current exceed the normal current the fuse melts, disconnecting the supply.

Earthing : Earthing is required to save human life from danger of shock , death in case it comes in contact with the charged frame due to any faults, leakage current etc.

"Earthed" means connected to the general mass of earth through a wire of negligible resistance.

As the earth potential is zero any electrical appliance when connected to earth attains zero potential and is said to be earthed.

Conductors: Those substances which offer such a small resistance that they readily allow electricity to flow through them. **Example**: silver, copper, aluminum etc.

Insulator or non conductor: Those substances which offer such enormous resistance that they allow practically no electricity to flow through them.

Current: The flow of electrons is called current.

Resistance: The property of a substance which opposes the flow of electricity.

P.D.: It is the electric pressure between two points in a circuit which drives the current between them. PD means potential difference.

Ampere: Unit to measure current. One ampere is the current passing through a conductor, if the P.D. between two ends of conductor is one volt and the resistance of the conductor is one OHM.

OHM: Unit to measure resistance. One Ohm is the resistance of a conductor if the current passes through the conductor is one ampere, and the p.d. between the ends of the conductor is one volt.

Volt: Unit to measure potential difference. One volt is the p.d. between two ends of a conductor when the current passes through the conductor is one ampere and the résistance of the conductor is one ohm.

Watt: It is the rate of doing work. One watt is the rate of doing work, when the current passes through the conductor is one ampere; p.d. between two ends of a conductor is one volt and the resistance of the conductor is one ohm.

Types of Fuses:

1. Round type fuse unit is made up of porcelain or Bakelite, having two separated wire terminals for holding the fuse wire in between them.
2. Kit-Kat- This are rewirable fuses. The most commonly used once. It is made up of porcelain. It can be rewired even if the cut-out terminals are energized.
3. Cat ridge Type: Any shape similar to the bullet containing some enclosed materials. This is not rewired.

HRC – It can carry heavy charges for a known time period.

MCB – (Miniature Circuit Breaker): It consists of an electromagnetic strip which breaks the circuit automatically when there is an over-loading of, or, any defect in the circuit.

Comparative features of different light sources used in various applications

Light Source	Avg. efficiency lumens/watt	Advantages	Disadvantages	Applications
1. Incandescent lamp	100 W lamp gives 16.3 lumens/w	• Low energy unit cost. • Very good bright colour radiation • Bulb replacement very easy. • 1000 W burning hrs.	• High as color. • Low life usually 750 hrs to 1000 hrs. • Filling of hot environment.	Living room, study room, general purpose lamp.
2. Florescent tubes	100 W lamp gives 4400 lumens/W	• Smooth cool white light. • 10000 burning hrs.	• High initial cost. • Changes tube needs skilled electrician.	Living room, study room, general purpose lamp.

3. Halogen Lamp	1000W lamp gives 16.7 lumens/W	• Emits whiter light than incandescent bulb. • Burning life 1000*3/4 burning hrs.	• Costlier than the incandescent bulb.	Used as street lamp, car headlight.
4. Sodium Vapour Lamp (low prd)	200 lumens/W	18000 burning hrs.	Low luminosity	Outdoor lights.
5. Sod. vap lamp (High press)	100 lumens/W	20000 burning hrs.	High initial cost	Street light
6. Mercury vap lamp	40-65 lumens/W	Low 24000 burning hrs.	High initial cost	Popular for outdoor lights
7. CFL lamp(Compact Fluorescent Lamp)	20 w lamp gives 50 lumens/ watt	6000 - 15000 burning hrs. Bulb replace easy.	4-10 times costlier than incandescent bulb	Corridor lighting, bed room lighting
8. LED (Light Emiting Diodes)	Very high efficacy of 100 lumens from 1watt device	. Long life . Easy to install . Noise free . Eco-friendly . Life span 50,000 – 60,000 hrs. . very small size	. Higher cost powered by DC supply . need to convert AC to DC	Offices Factories, Mkt place, Houses , Kitchen, Portable desk.

Luminous Flux: It is the light energy part of the radiant flux expressed in some form of effect to the eye. Its unit is lumen/ watt.