



- **WSNS COLLEGE OF TECHNOLOGY**
 - **(An Autonomous Institution)**
 - **COIMBATORE-35**
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 - **Approved by AICTE, New Delhi & Affiliated to Anna University,**
 - **Chennai. ELECTRICAL WIRING AND SAFETY**

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Course Code/Name: 23EET103 / ELECTRONIC CIRCUITS AND DEVICES

UNIT-III

ELECTRICAL WIRING AND SAFETY



ELECTRICAL WIRING AND SAFETY



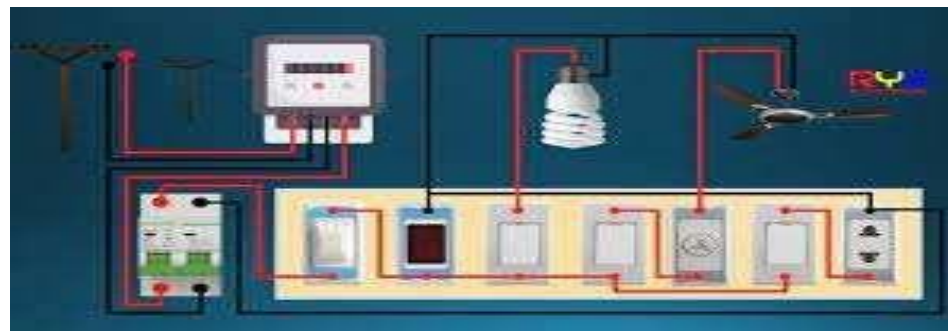
- **WIRUNIT-IIING AND SAFETYELECTRICAL WIRING AND SAFETY**
- **Wiring:** General Rules, materials and accessories, Types of wiring - Conduit wiring –Wiring layout of Residential building, Grounding: Importance of grounding, Types of grounding - Safety: Causes of accidents, Accident prevention. Circuit Breakers (MCB & ELCB),Electronic Fuses



ELECTRICAL WIRING



- Electrical wiring is process of connecting cables and wires to the related devices such as Fuse, sockets, fans, lights ect.. to the main distribution boards is a specific structure for continues supply.
- **House wiring deals with the distribution within the domestic premises.** House wiring is generally done for consumption of electrical energy at 230V- single phase or at 400V - Three phase.



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RULES OF ELECTRICAL WIRING



- The total lighting load in a sub circuit should not be more than 100W.
- Every fitting or appliance must be controlled by switch.
- Every socket outlet must be controlled by switch.
- The switch should be on the line conductor.
- The incandescent lamp should be hanged at least 2.5 m above the floor level.
- All the metal coverings, frames etc. should be earthed.
- Every sub circuit must have a separated distribution fuse.



WIRING ACCESSORIES AND MATERIALS

- All the wiring systems and electrical installations needs the following accessories:
 - Cables
 - Flexible wires
 - Switches
 - Fuses
 - Ceiling rose
 - Lamp holders
 - Plugs
 - Socket outlets
 - Junction boxes





CABLES

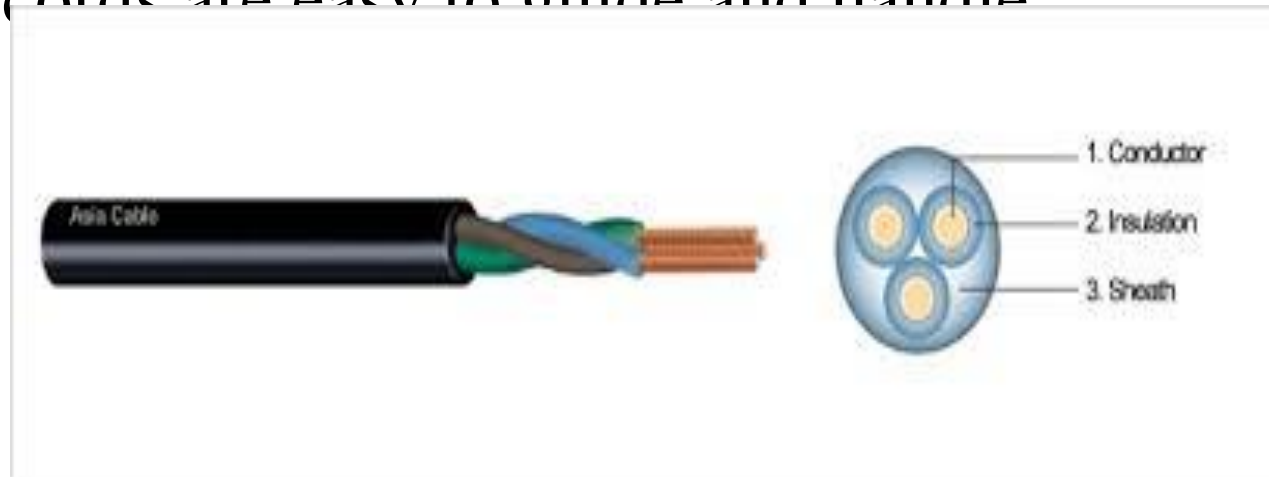
- A cable is made of some conducting material such as copper or aluminium. It is surrounded by insulation and a sheath for mechanical protection.
- The cables are generally classified according to the insulation used. Different types of cables are as follows:
 - Weather- proof cables
 - Polyvinyl chloride insulated cables (PVC)
 - Lead sheathed cables
 - Cab tyre sheathed cables (CTS)





FLEXIBLE CORD

- In the flexible cord, a large number of fine wires are used to form the conductor. These are insulated by plastic insulation.
- The flexible cords are used as connecting wires to connect the portable domestic appliances and light fittings etc.
- These cords are easy to guide and handle





SWITCHES

- A switch is supposed to carry out the make (connect) and break (disconnect) of electrical connection to the load.
- Switches should be connected to the live (L) wire in the circuit.
- The switches can be classified into two types as follows:
 1. Tumbler switch
 2. Flush switch





RFACE OR TUMBLER SWITCH

- Mounted on the mounting block directly connected to the surface of the wall. It is projected out of the surface of the wall.

- Single-way switch

- Two-way switch





PULL SWITCHES OR CEILING SWITCH

- The Pull switches are fixed on the ceiling and all live parts are out of reach of the operator
- The switch has strong mechanical action. It is operated with a single pull.





ROTARY SNAP SWITCH





PUSH BUTTON SWITCH

- This type of switch consists of one blade only.
- The blade is given a rocking action by press button and movement is controlled by a cam and spring.





FUSES

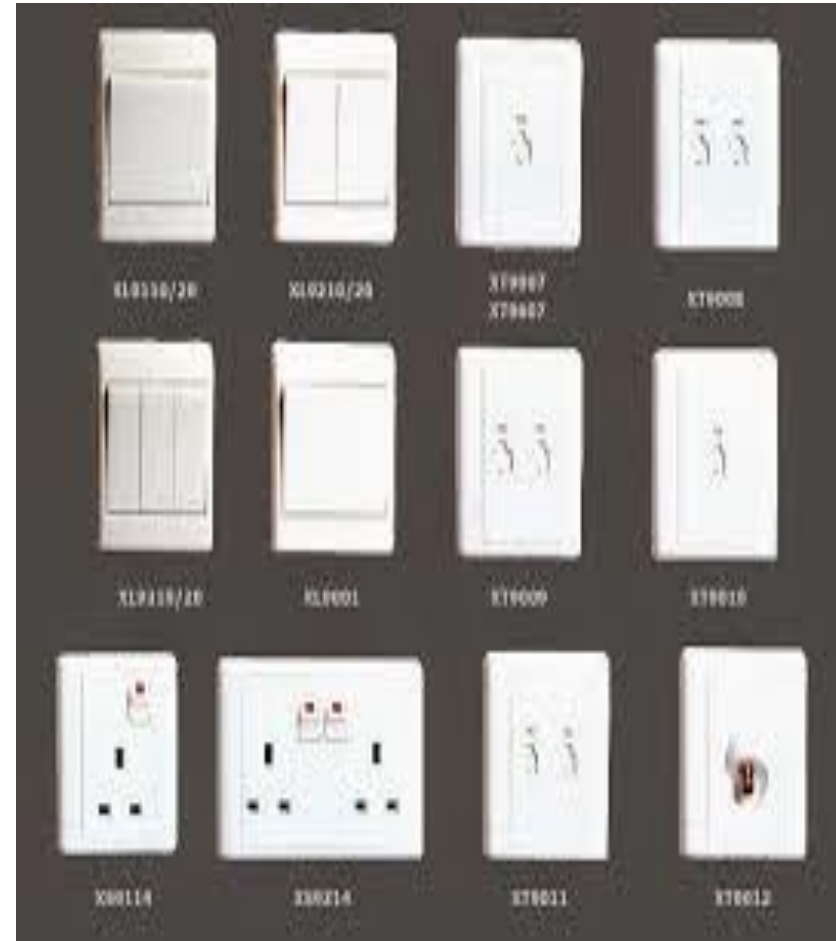
- In any electrical installation, **fuse is used for protecting the appliances against over current.** Fuse is used in different stages of the wiring.
- A fuse can be made of the following conducting materials:
 - 1.Copper
 - 2.Lead
 - 3.Aluminium
 - 4.Alloys of lead
 - 5.Zinc
 - 6.Tin





SHOCKET OUTLETS

- The socket outlets are provided for temporary electrical connections such as table lamps, table fans, radio, TV, mobile chargers etc.
- The socket outlet can be of the following two types:
 - Two pin type (Live, Neutral)
 - Three pin type (Live, Neutral, Earth)





PLUGS

- The plugs along with flexible cords are used for providing the electrical supply to the portable appliances like table fan, table lamps, radio etc.
- The plugs are available in two types, similar to the sockets:
 1. Two pin plugs
 2. Three pin plugs





LAMP HOLDER

- A lamp holder supports the lamp and connects it to the supply system as well
- The lamp holders are classified into following different types:
 1. Batten holders
 2. Angle holder
 3. Pendant holder
 4. Water tight bracket holders
 5. Bracket holders





CEILING ROSE

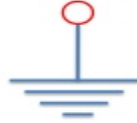



- The ceiling rose is used for connecting the ceiling fans, pendant lamps etc to the supply system.
- Ceiling rose is made of the following two parts:
 1. Base
 2. Cover





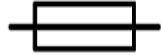

SYMBOLS USED IN ELECTRICAL WIRING

- Following are the conventional symbols to be used for wiring accessories in wiring plans and drawing of electrical installations.

Sr. No.	Description	Symbol
1.	Earthing	
2.	Single pole one way switch	
3.	Single pole double throw switch (S.P.D.T.)	
4.	Double pole double throw switch (D.P.D.T.)	



SYMBOLS USED IN ELECTRICAL WIRING

Sr. No.	Description	symbol
5.	Fuse	
6.	Circuit breaker	
7.	Two way switch	