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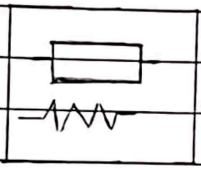
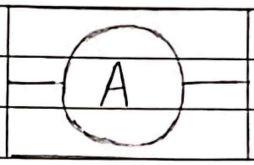
Unit 1 :
Electrical Safety.

Electric Circuit Symbols

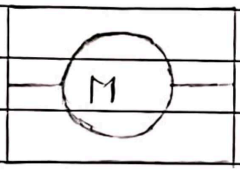


Resistor

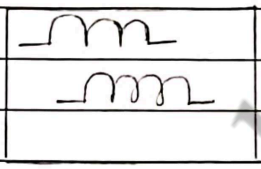


Ammeter

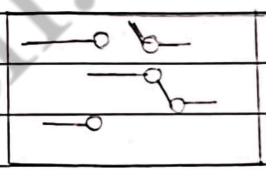
Voltmeter



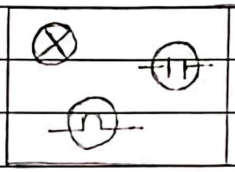
Motor



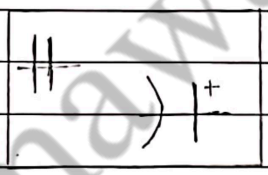
Inductor



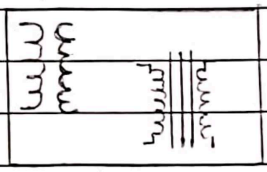
Switch



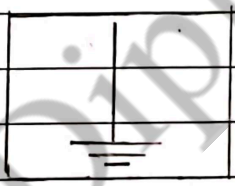
Lamp



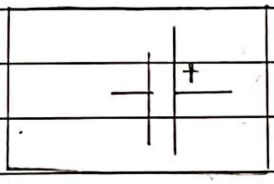
Capacitor



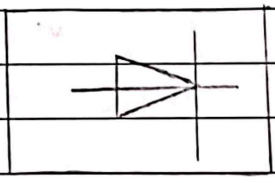
Transformer



Ground

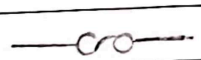
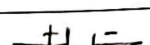
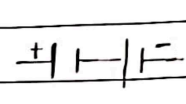
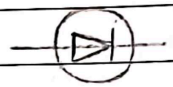
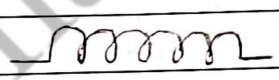
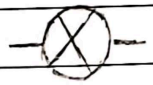
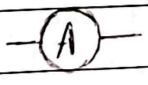
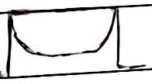


DC Voltage Source



Diode

Electrical Circuit Symbols.

- Switch (open) → 
- Switch closed → 
- Cell → 
- Battery → 
- Diode → 
- Resistor → 
- Variable Resistor → 
- LED → 
- Inductor → 
- Lamp → 
- Fuse → 
- Voltmeter → 
- Ammeter → 
- Thermistor → 
- Buzzer → 

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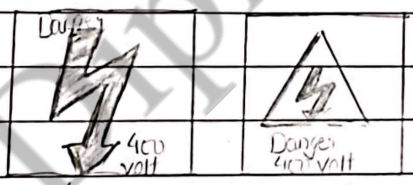
Safety :- Safety is a state of being protected from potential harm or something that has been designed to protect and prevent harm. Safety equipment is designed to protect and prevent harm.

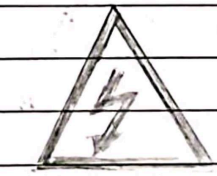
Safety Sign and Symbols

:- Electrical safety symbols are used to warn people that serious injuries can occur from burn, electric shocks and hazards.
They also remind them to take the necessary steps to safe.

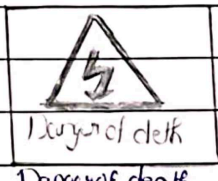
- Prohibition Sign :- Indicate certain behaviour is not allowed. (Red colour).
- Warning Signs :- Give warning about a specific hazard. Cyclone.
- Mandatory action Signs : Indicates that a particular action must be taken. (blue)
- Fire Safety Signed : Provide information about fire safety.



Voltage Warning labels

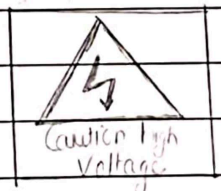


Electrical Voltage Symbol

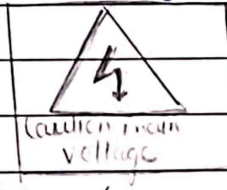


Danger of death from electricity Warning

Buried Cable Warning



High Voltage warning



Main Voltage Warning

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AIM: To Study the use of personal protective Equipment (PPE)

To ensure electrical workmen from electrical hazards while working on Electrical equipment / System, PPE is used. PPE is selected based on, the voltage to which the employee may be exposed during work.

PPE types and their purpose

a) Hand Protection: Rubber insulating gloves are used to prevent energy to the arm due to contact with live electric wires or burns due to electric arc.

b) Foot protection: Electrical Workers should wear leather footwear to protect their feet from electrical hazards.

c) Hearing protection: Hearing protective inserts are used to protect the ears of the employee from high sound levels of arc blast.

d) Face and Eye Protection: Face shields with safety glasses or goggles must be worn to protect face and eye from flash injury.

e) Head protection: Non-conductive helmets should be worn whenever there is a danger of head injury from electric shock or burns.

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Demonstrate How to free a person from electrocution and first aid for electric shock.

- Step 1 :- • Turn off the power at the mains.
• If this is not possible, stand on dry insulated material such as wooden stool, newspaper, books or rubber matting.

• Push the casualty away from the source using non-conductive items.

Step 2:
Checking the casualty response if they respond by answering or moving, provided they are on no further danger, leave them in the position you found them.
Check for visible injuries and call for an ambulance.

Step 3:
If the casuality does not respond, open the airway by tilting their head back and lifting their chin. Check the air way and remove any obvious obstruction from his/her mouth.

Step 4 :
Check for signs of breathing by looking for the chest movements. Listen at the mouth for breathe sounds and feel for air on your check. look, listen and feel for 5 seconds.

Step 5:
Feel the pulse for 5 second if the pulse and breathing are present, place in the recovery position. If pulse is present and breathing is absent start rescue breaths.

- If pulse and breathing are absent, Commence CPR (Cardiopulmonary resuscitation), Whilst waiting for the ambulance, Give 30 chest compression and step. Continue this after 2 breath time and continue till ambulance arrives or the casualty recovers.

⇒ To free a person from electrocution in first aid for electric shock follows these steps:-

Step1:
Ensure Safety :- Before approaching the Victim, make sure such they are no longer in contact with the electrical source. If possible switch off the power.

Step2:
Use insulating objects :- If you can't turn off the power, Wear rubber gloves and boots or stand on an insulating surface before touching the Victim. Use non-metal object like a wooden pole to remove any entangled electrical lines.

Step3:
Check Vital Signs :- Immediately check for breathing and heart beat. If the victim is not breathing, perform artificial respiration. If there's no heartbeat, apply chest Compression.

Step4
Cool burns :- If the victim has burns, cool the affected areas with cold water and cover them with a clean, dry, non fluffy dressing.

Remember Electrical shocks can be serious, so seek medical assistance if the victim shows any concerning symptoms or signs of injury.

Administer appropriate first aid to victims, bandaging, heart attack CPR etc.