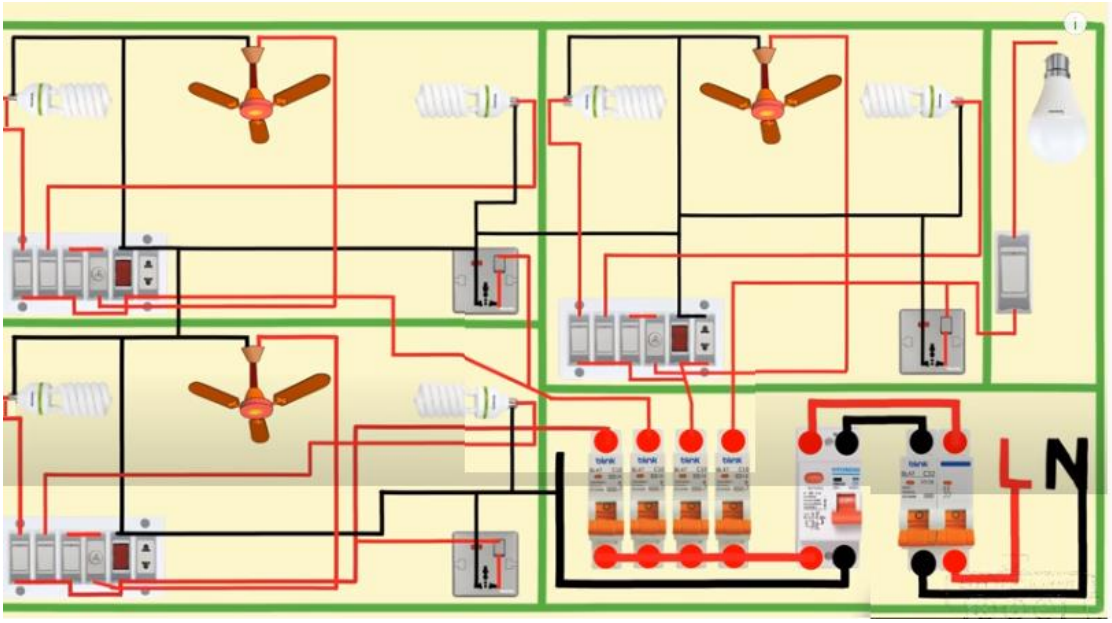
Ministry of high Education and Scientific Research
Middle Technical University
Electrical Engineering Technical College

Training package
in

Workshops
(Electrical establishments)

For

Students of first class
Department of Medical Instrumentation Techniques Engineering



By

Huda Farooq Jameel Baban
Assistant lecturer
Dep. Medical Instrumentation Eng. Tech.
2022


Electrical
establishments
21th & 22th
modular
units

1/ Overview

1 / A –Target population :-

For students of first class

Department of Medical Instrumentation Eng. Techniques

1 / B –Rationale :-

This unit introduces principles of electrical establishments in the workshop

1 / C –Central Idea :-

The major topics discussed in this unit are included in the following outline.

- **Electrical establishments**

2/ Performance Objectives :-

After studying the first modular unit, the student will be able to-

1. Electrical establishments

3/ Pre test :-

Circle the correct answer:-

1. A unit used to measure electric current

a- Ampere

b- voltage

c- watt

d- all above

2. A device that connects and disconnects the flow of electric current in a circuit.

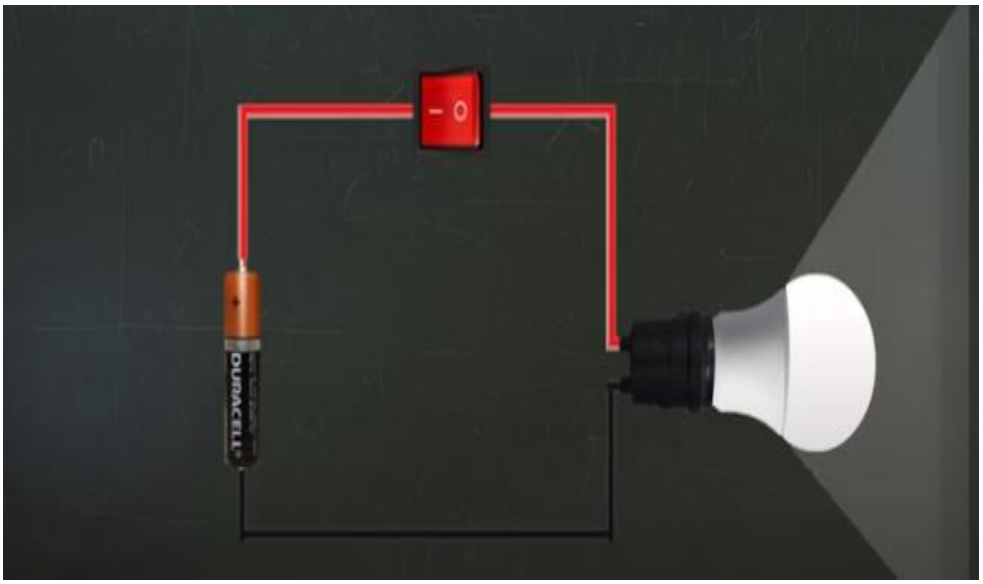
a- holder b- switch c- circuit breaker d- All above

4/ the text :-

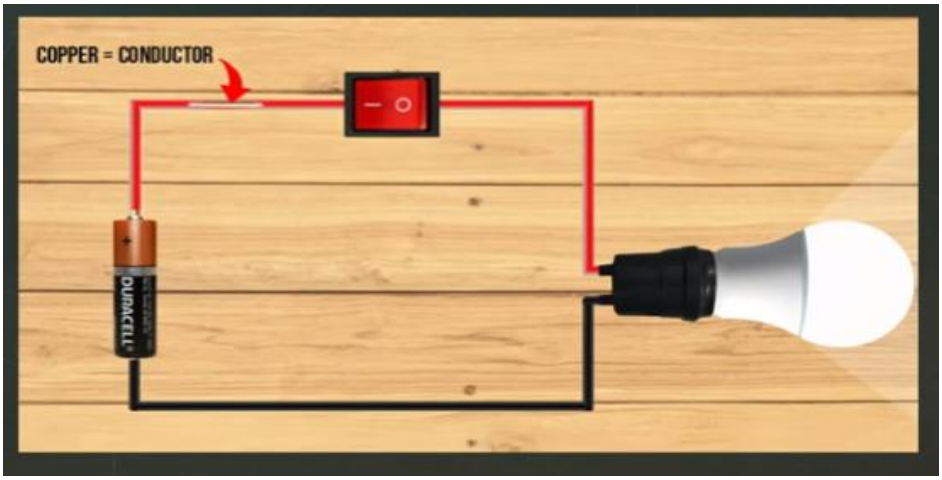
- **Electrical establishments**

I. **Ampere: a unit of measure of electric current.**

II. **Circuit: the path of electric current flow from the source to the components and goes back to the source.**



III. **Conductor: a wire or a cord that provides path for current flow.**



Tools

a- Convenience outlet

A device that acts as a convenient source of electrical energy for current consuming appliances. It is where the plug of an appliance is inserted and usually fastened on the wall or connected in an extension cord. It may be single, duplex, triplex or multiplex. As shown in figure below.

b- Male plug

A device inserted to a convenience outlet to conduct electric current. A flat cord is attached to it on one end and the other end is connected to a current cinsuming instrument or appliance.

c- Lamp holders

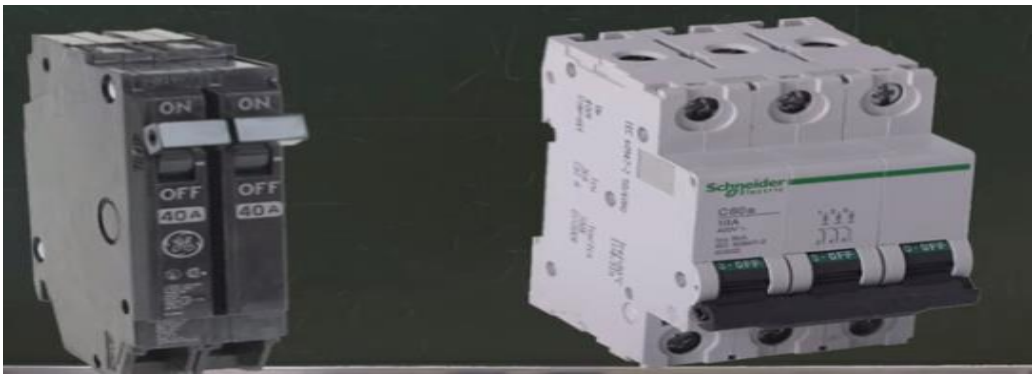
Devices that hold and product the lamp and also called as lamp socket/receptacles. These comes in many designs and sizes.

d- Switch

A device that connects and disconnects the flow of electric current in a circuit. There are many shapes, designs, and types. Also, they are classified as hanging, flush, and surface types.

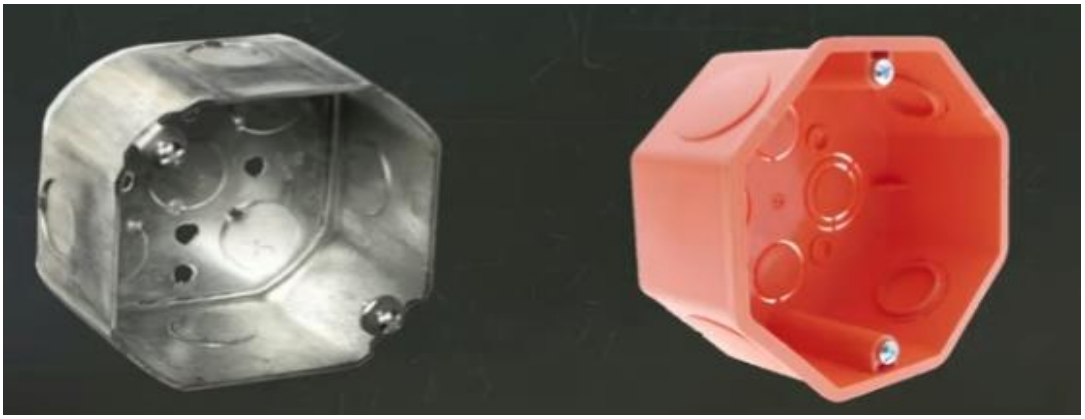
e- Circuit breaker

A protective device used to automatically blows and cuts the current when trouble in the circuit such as short circuit or overload occurs.



f- Junction box

An octagonal shaped electrical material where the connections or jonits of wires are being done. This could be made of matel or plastic (pvc) polyninylchloride.



g- Utility box

A rectangular shaped metallic or plastic (pvc) material in which flush type convenience outlet and switch are attached.

h- Flat cord

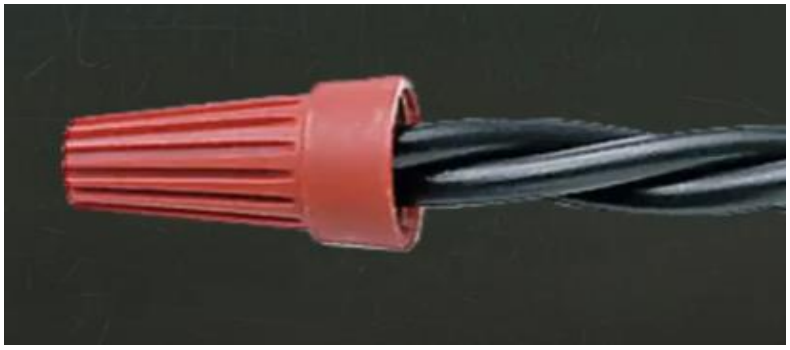
Is a duplex standard wire used for temporary installation and commonly used in extension cord assembly.

i- Electrical tape

Is used to protect and cover live or open wires.

j- Insulator

material used to cover electric wire which may be made from plastic.



k- Wire connection

Wire connection or electrical connector is an electrical device used to join electrical conductors and creates an electrical circuit.

l- Clamps

Is an electrical materials used to hold and anchor electrical conduits in its proper position.

m- Tools

are implements used to modify tow materials for human use

5/ Post test :-

Circle the correct answer:-

1- Material used to cover electric wire, which may be made from plastic.

a- insulator
b- switch
c- holder
d- all above

2- Is used to protect and cover live or open wires.

a- Electrical tape
b- Switch
c- holder
d- insulator

3- Used to connect and disconnects the flow of electric current in a circuit.

a- switch
b- holder
c- a and b
d- circuit breaker

6/ key answer :-

1- Pre test :-

1. **a**
2. **b**

2- Post test :-

1. **a**
2. **a**
3. **a**

7/References :-

1. Encyclopedia of Electronic Components Volume 1 (Charles Platt).
2. https://www.electricaltechnology.org/2013/03/how-to-remember-direction-of-pnp-and.html