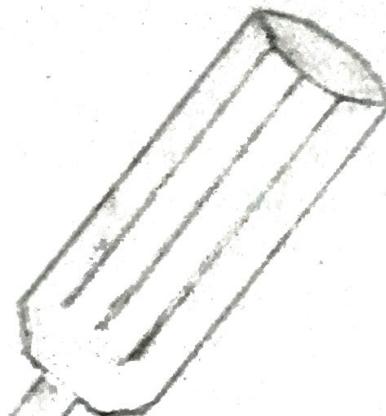


ASSIGNMENT No.1

Draw/sketch the listed tools and wiring accessories in the spaces given below and explain their working and uses as well.

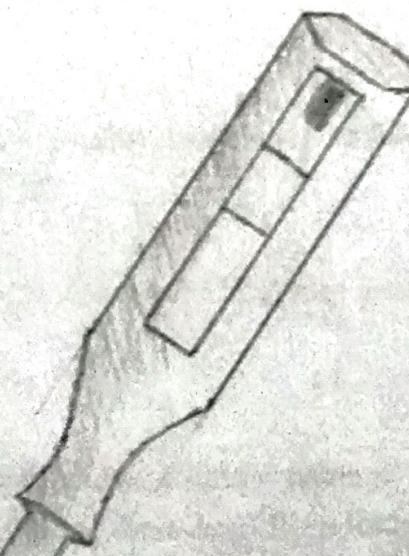
Screw Driver



Description

Function of screwdriver is to turn screw with slotted heads. Screws that have a single slot require the use of a flat head or slot-head screwdriver.

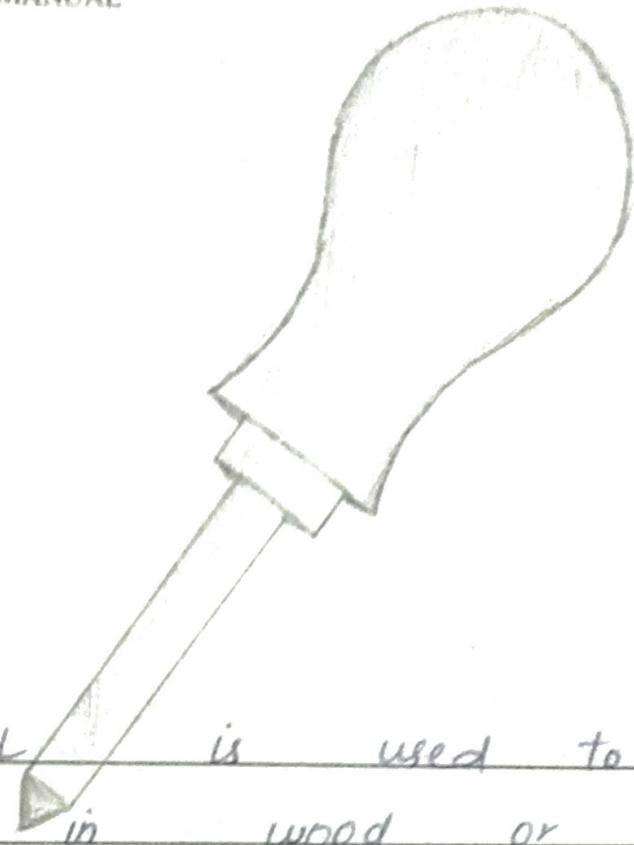
Phase Tester



Description

PHASE TESTER is a device that is used to test or check the phase of current i.e. live and neutral.

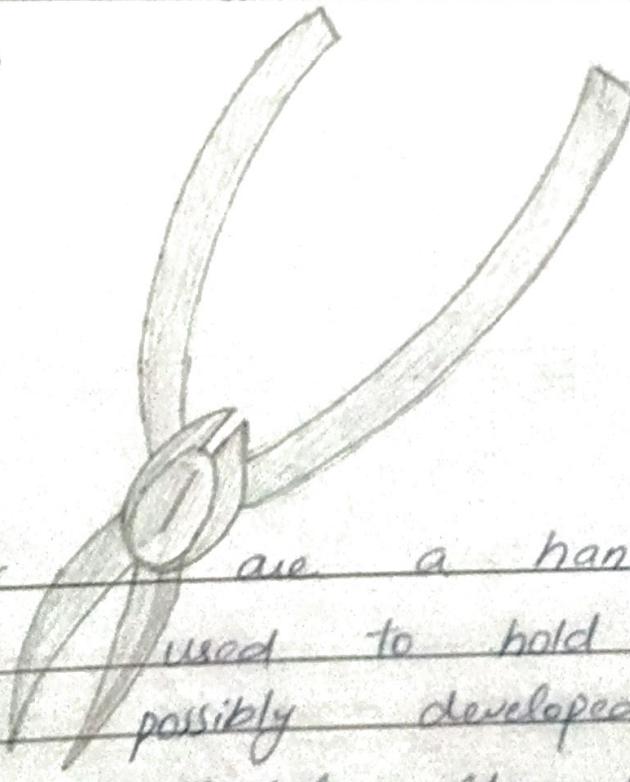
Bradawl



Description

BRADAWL is used to make a hole in wood or other materials in order to insert the nails or screws.

Pair of pliers



Description

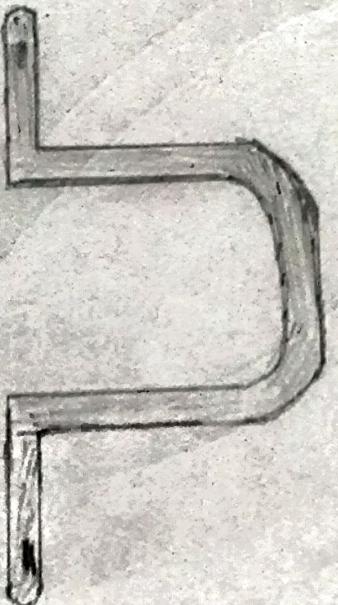
PILERS are a hand tool that are used to hold objects firmly, possibly developed to hold materials. Also used to squeezing.

Wire Cutter

Description

WIRE CUTTER or diagonal cutting pliers are intended for the cutting of wire. The plane defined by cutting edge intersects joint at an angle.

PVC Saddle



Description

PVC saddle is used to hold the PVC pipe firmly on the wooden or other frame.

Description

PVC

CONDUIT is a tube that is used to project and give a route to electrical wires via

a building. May be of plastic, rubber.

PVC Tee



Description

It is used to connect straight

pipes or tubing sections. adapt
to different size and shape

. Also used to regulate fluid flow.

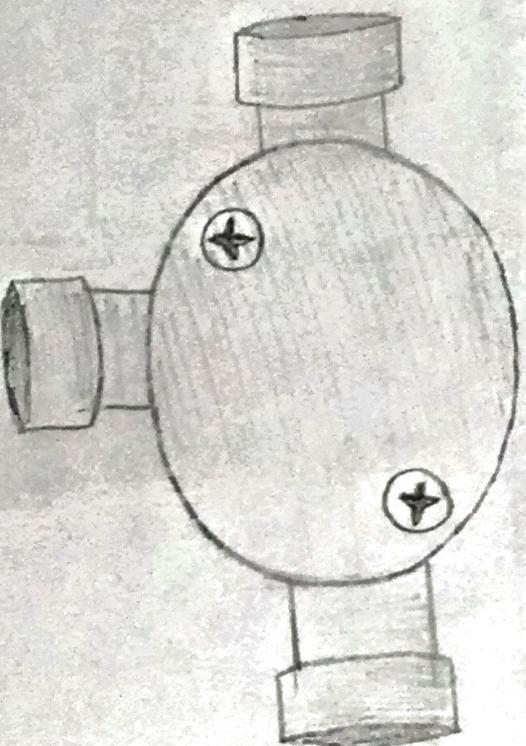


ELECTRIC SHOP MANUAL
PVC Bend



Description
PVC BEND behave like pvc condu
they are used as bend for
long pipes to transfer or to
connect with whole system to other

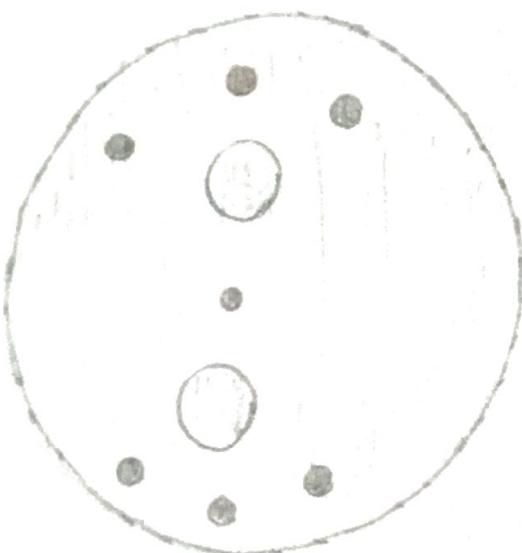
Three way PVC Inspection



Description

It is also made of pvc
and it has three opening
in three different dimension
to give three different way
of pass of wiring.

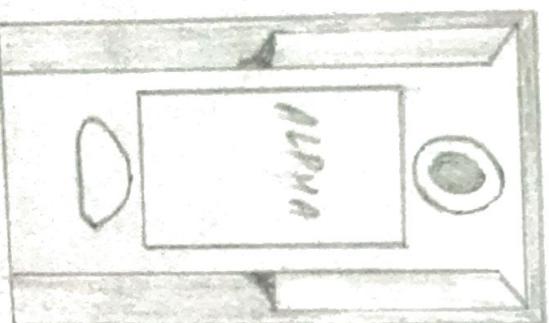
PVC Round Block



Description

They are used where pvc conduits terminals and cables are then passed through it. It is intended to conceal electrical connection.

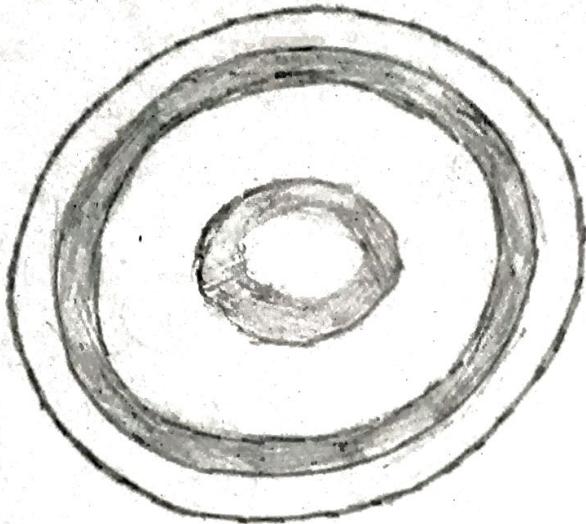
Kit Kat Fuse



Description

Fuse is nothing more than a short piece of wire designed to melt or separate to event of excessive current. We connected in series always.

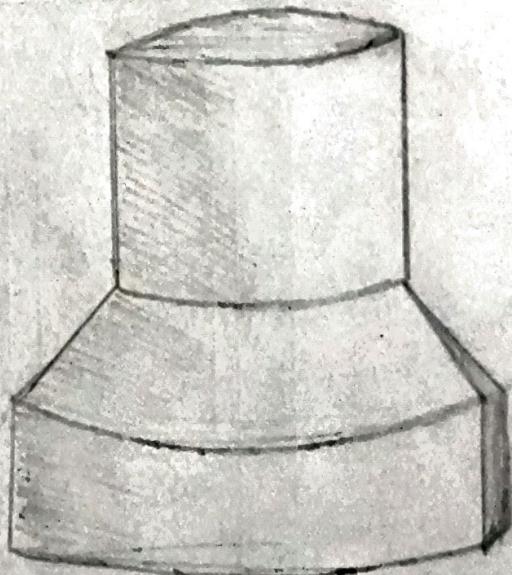
Ceiling Rose



Description

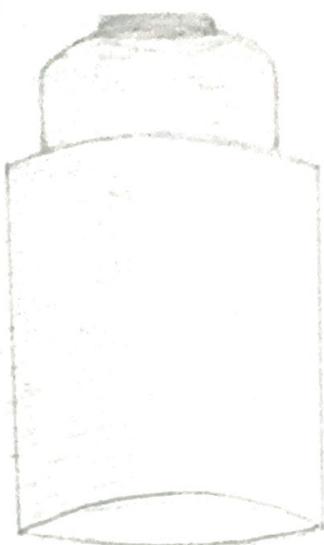
It is circular mounting on
a ceiling through which
wire of appliances passes used
for decoration.

Batten Type Lamp Holder

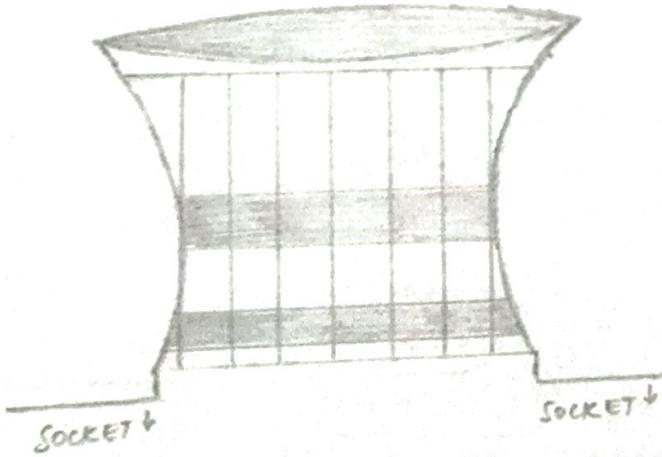


Description

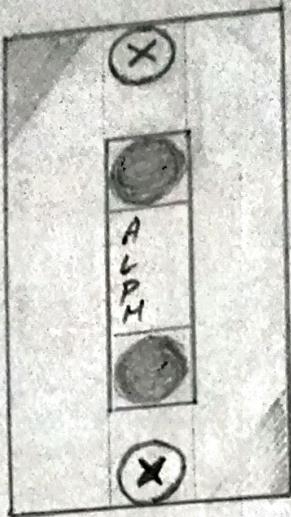
BATTEN LAMP HOLDERS are used for
ceiling lamps and lightening
fixtures. They are also used
for surface wiring.

Pendant Type Lamp Holder**Description**

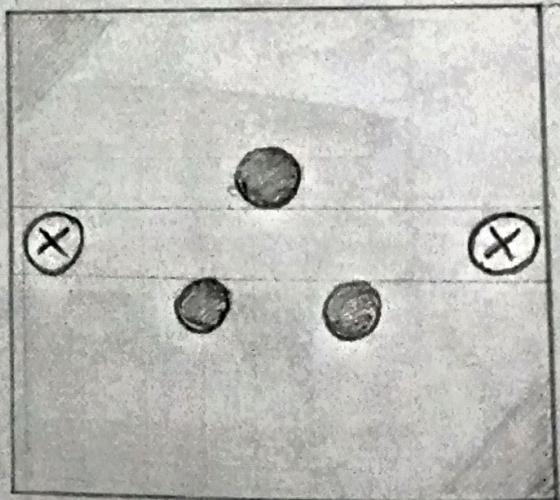
They are used to hold
hang lamps either in
vertical or horizontal direction
on wall or on ceiling.

Bracket Holder**Description**

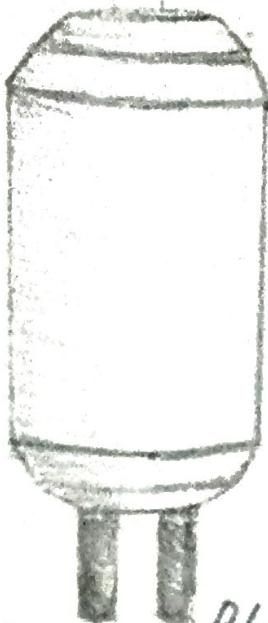
They are used as pendant
as well as batten type holder
as required. It covers lamp
it is used to send lamp
anywhere

Two Pin Socket**Description**

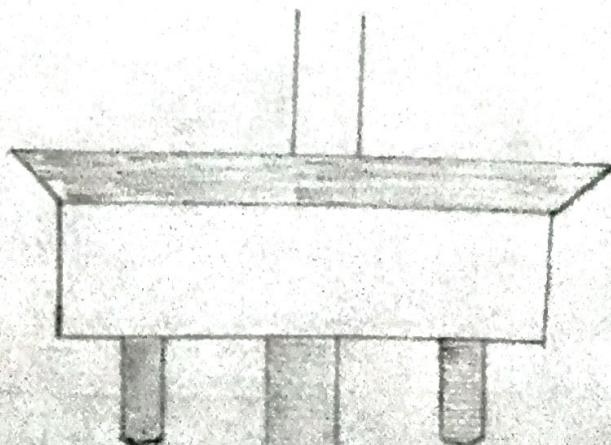
Two pin socket are made of PVC and used for electrical purpose specially for connection of one switch (single) on board.

Three Pin Socket**Description**

THREE PIN SOCKET are used for pin switches, grills, refrigerators, air-conditioners mostly three pin sockets.

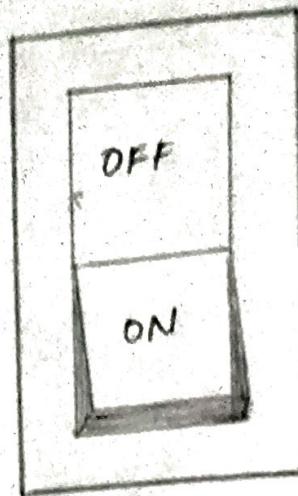
Two Pin Plug**Description**

Two PIN PLUGS are used to supply the single phase electricity from main supply to the electrical equipments.

Three Pin Plug**Description**

They are made of PVC.
It has earth, live and neutral wire. Each wire is used to prevent metal bodies from short.

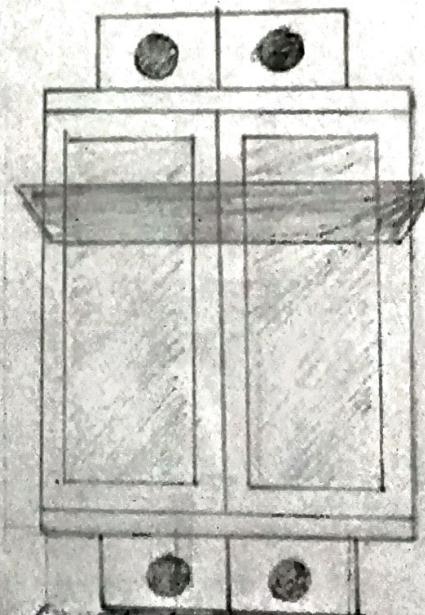
One way Switch (SPST):



Description

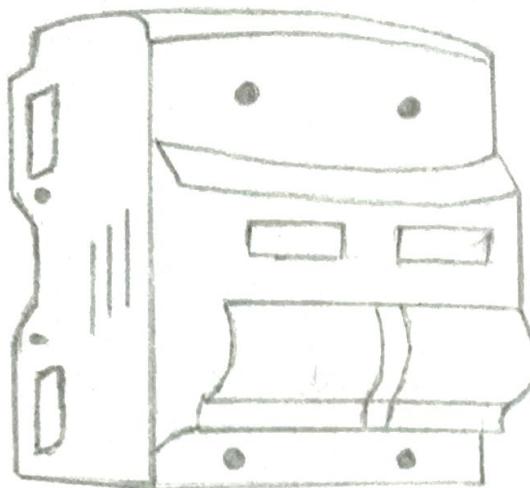
ONE WAY SWITCH is a single pole switch. One way switch is used to turn off and on lights from one location. It basically operate as make break.

Two way Switch (SPDT)

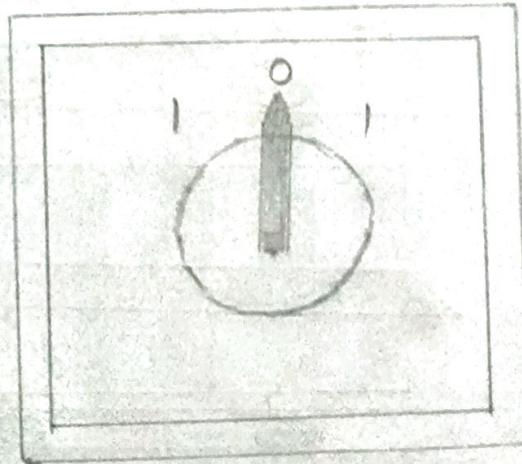


Description

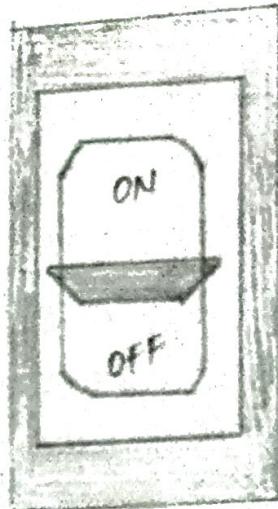
Two way switch is basically one way switch connected in series. It is used in long hall. It allows single device to control two appliances.

Two Pole Main Switch**Description**

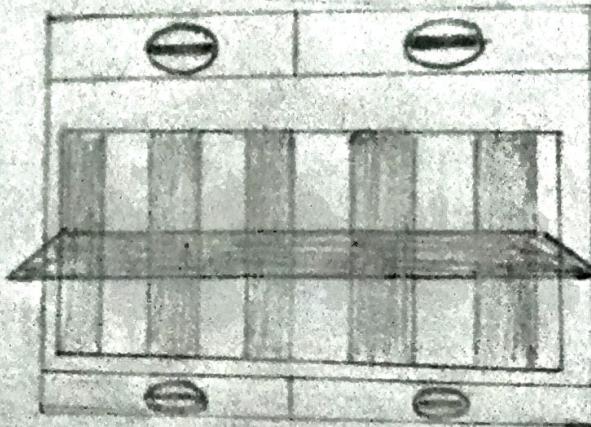
It is used to connect home with main supply and can be connected with two circuits at a time.

Two Pole Changeover switch**Description**

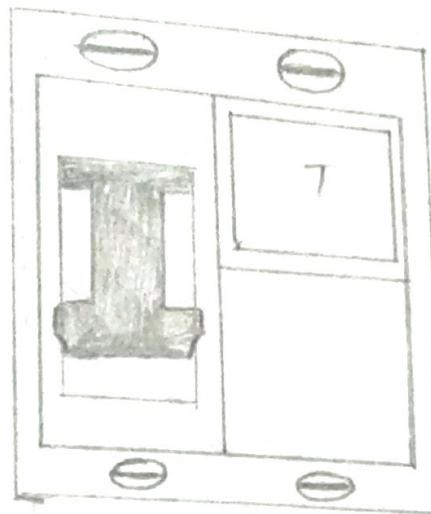
TWO POLE CHANGEOVER SWITCH is used to operate two different electrical circuits. These are used in homes where generators and A.C Main both are used.

Single Pole circuit breaker**Description**

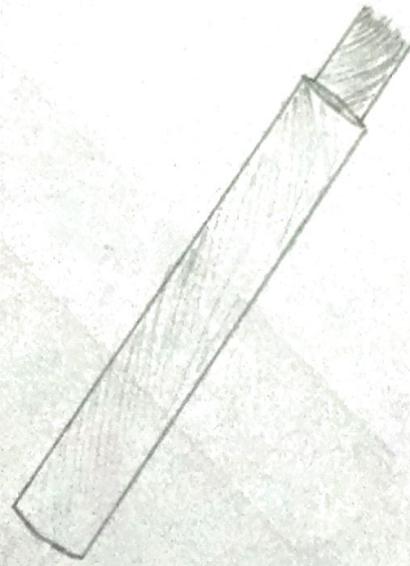
A SINGLE POLE CIRCUIT BREAKER is used to work with a typical volt of 120V circuit having one hot wire and one neutral.

Two Pole circuit breaker**Description**

Two pole circuit breaker is used with typical 220V having two hot wires. If both will trip together.

Earth leakage circuit breaker**Description**

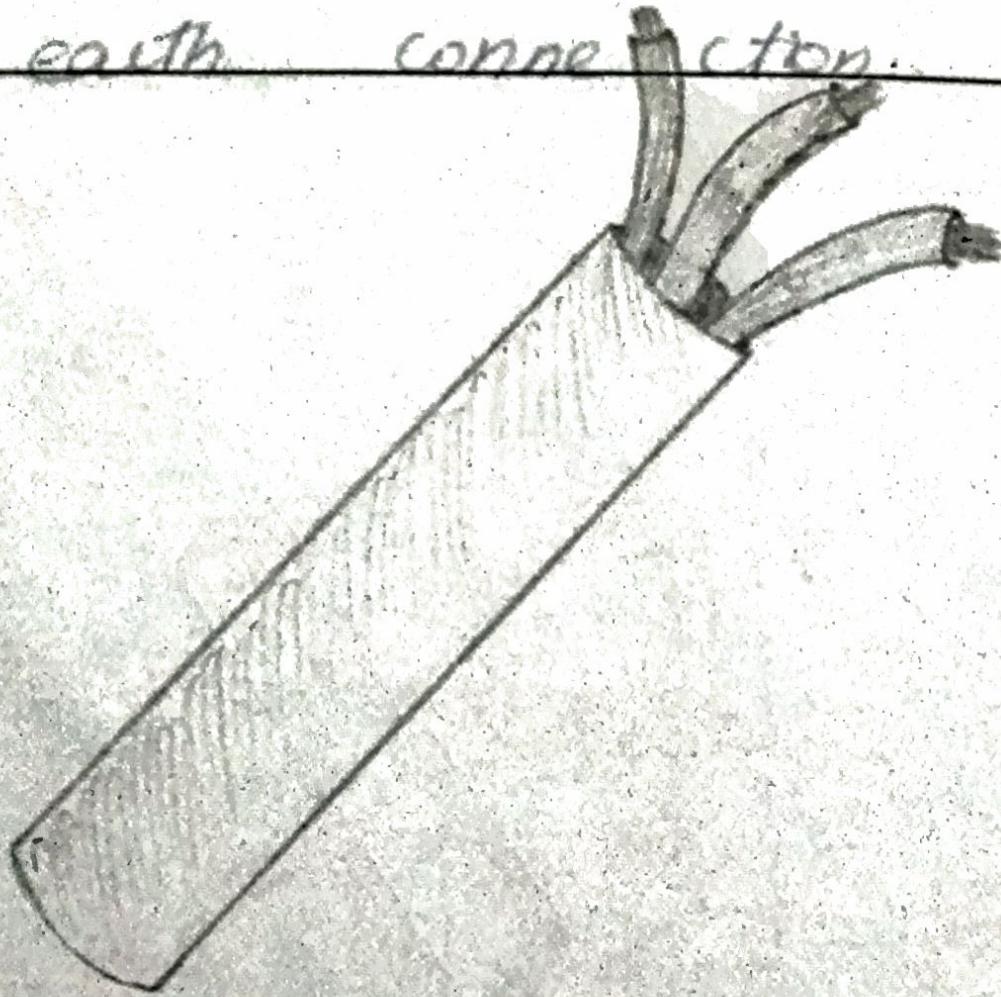
It is a device used in electrical installation with high earth impedance to prevent shock. Main purpose is prevent injury.

Single Core Cable**Description**

A cable is two or more wires twisted or bounded side by side to form a single core. Carrying current purpose.

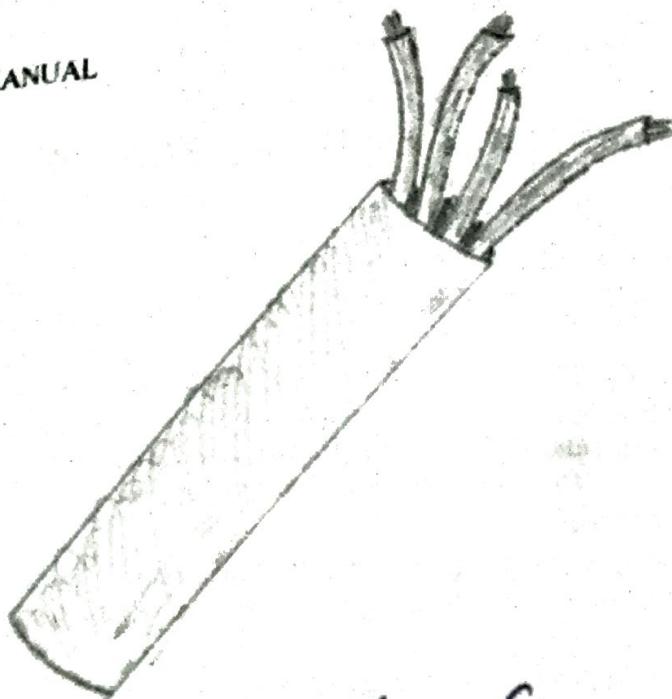
insulated appliances which do
not require earth connection.

Three Core Cable



Description

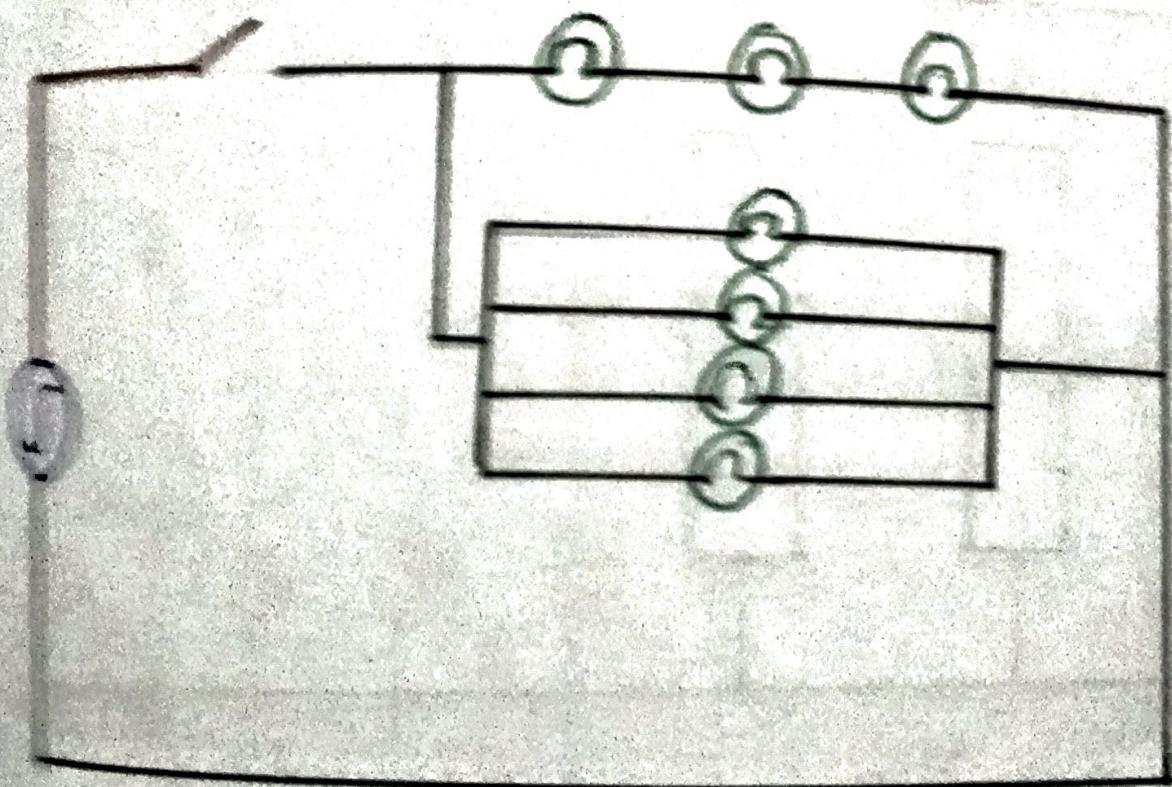
3 - CORE CABLE (live
- neutral, earthed) are used

Description

They are used for heavy industry appliances. where the danger of imbalance of current lies in ground depth for deep well.

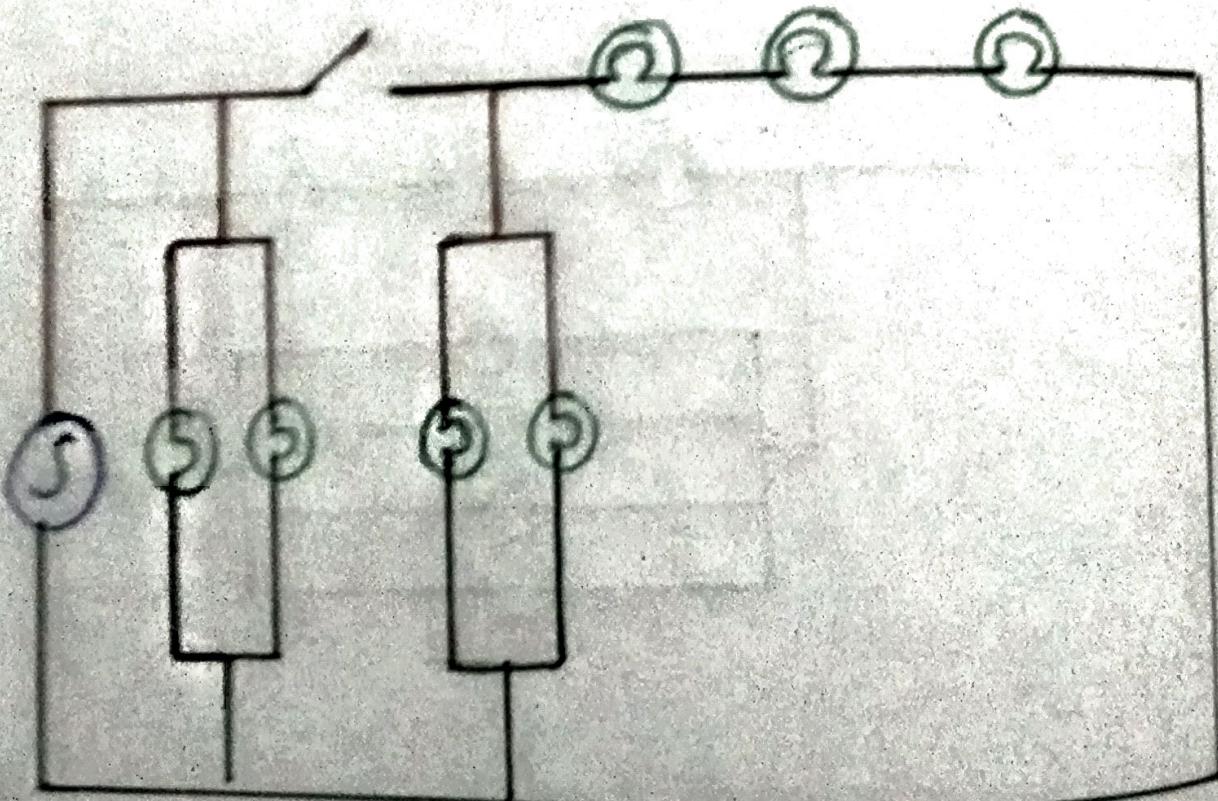
ASSIGNMENT No.2

- Q. Draw the schematic diagram of seven Electric lamps controlled by single 1-way switch such a way that whenever:
- Which 2 open one of Electric lamp should glow
 - Which is close three of them should glow in series fashion whereas four should glow separately.



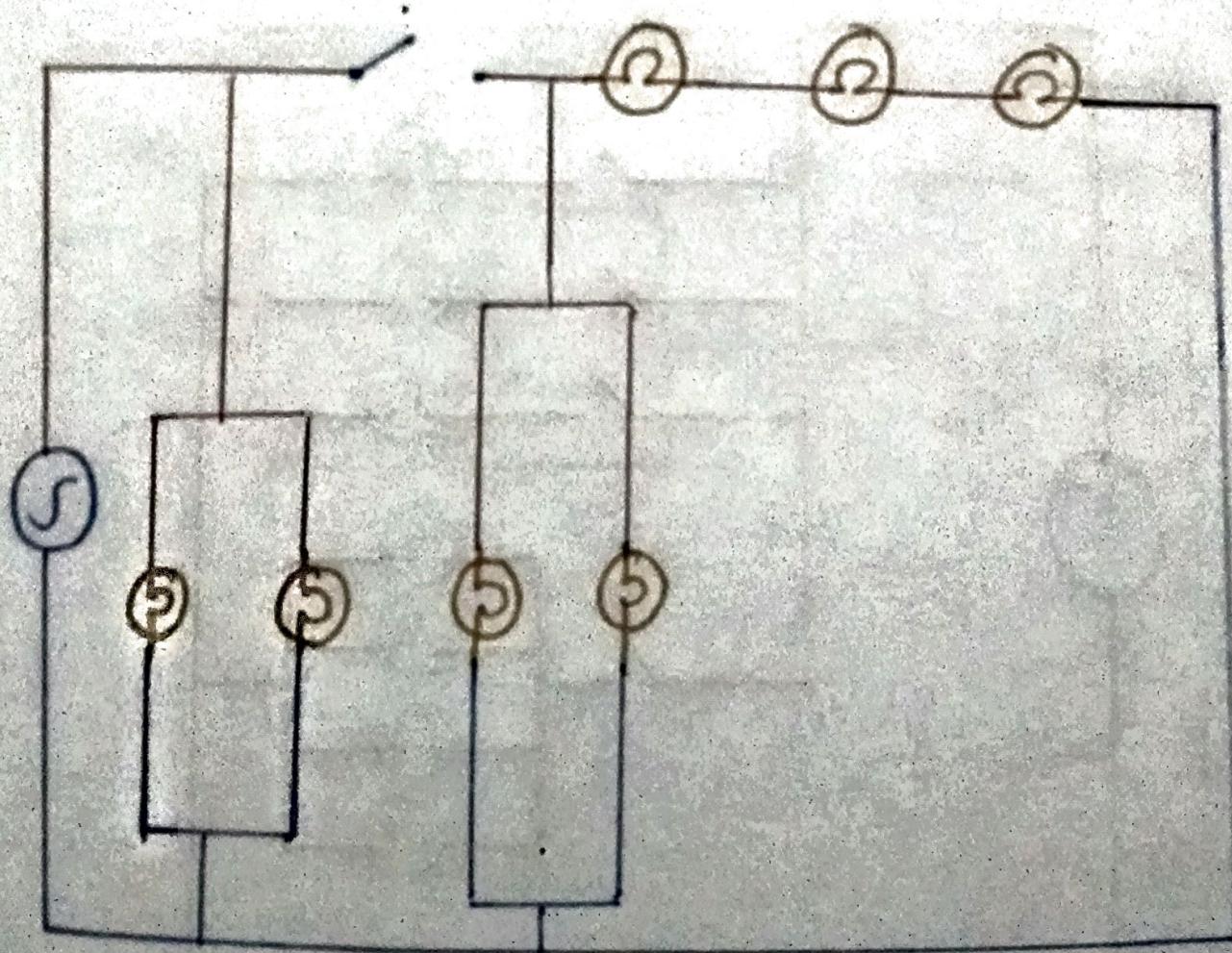
Q2. Draw the schematic diagram of seven Electric lamps controlled by single long switch in such a way that whenever:

- Switch is open two of Electric lamps should glow in parallel fashion
- Switch is close three of them should glow in series fashion whereas four should be in parallel fashion.



Q3. Draw the schematic diagram of seven Electric lamps controlled by single switch in such a way that whenever:

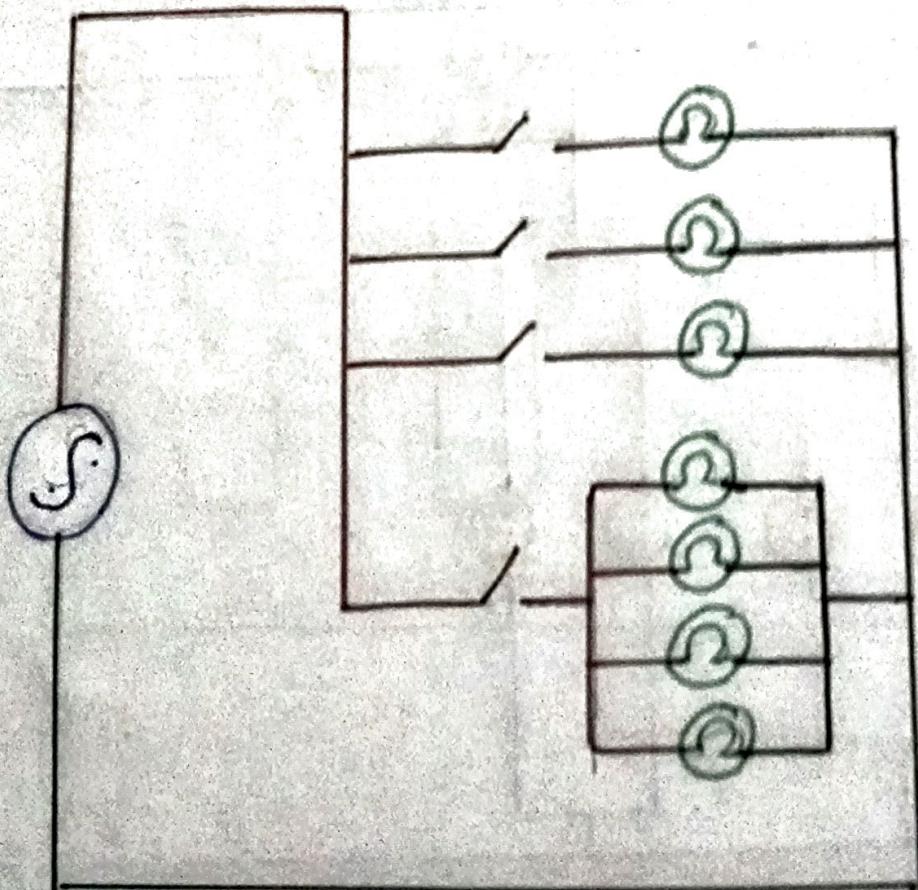
- Switch is upward two of Electric lamp should glow in parallel fashion
- Switch is downward three of them should glow in series fashion whereas four should glow in parallel fashion



ELECTRIC SHOP MANUAL

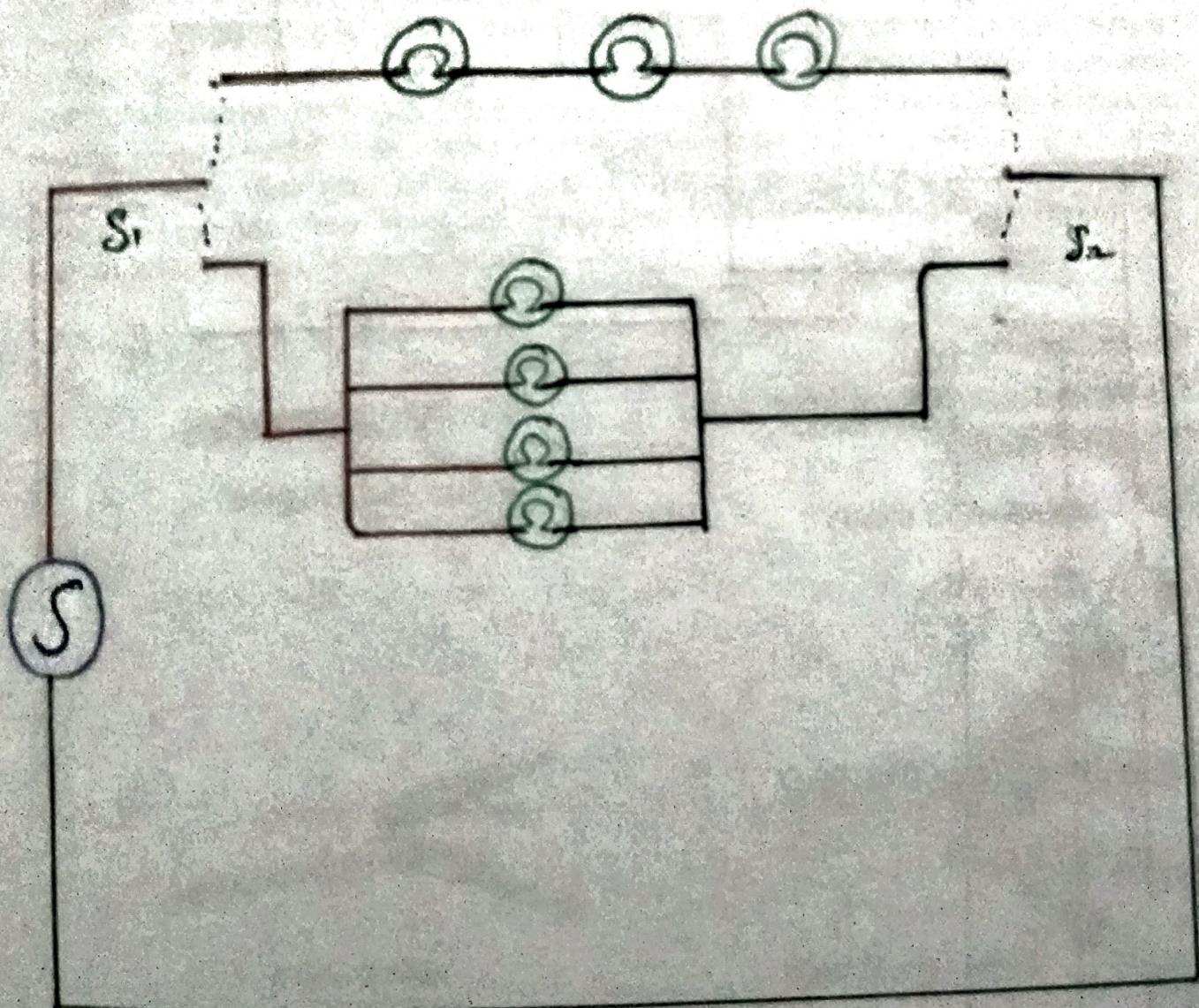
Q4. Draw the schematic diagram of seven Electric lamps controlled by four switches in such a way that:

- Three of electric lamps should control separately
- Rest of them should control from 4th switch in parallel fashion



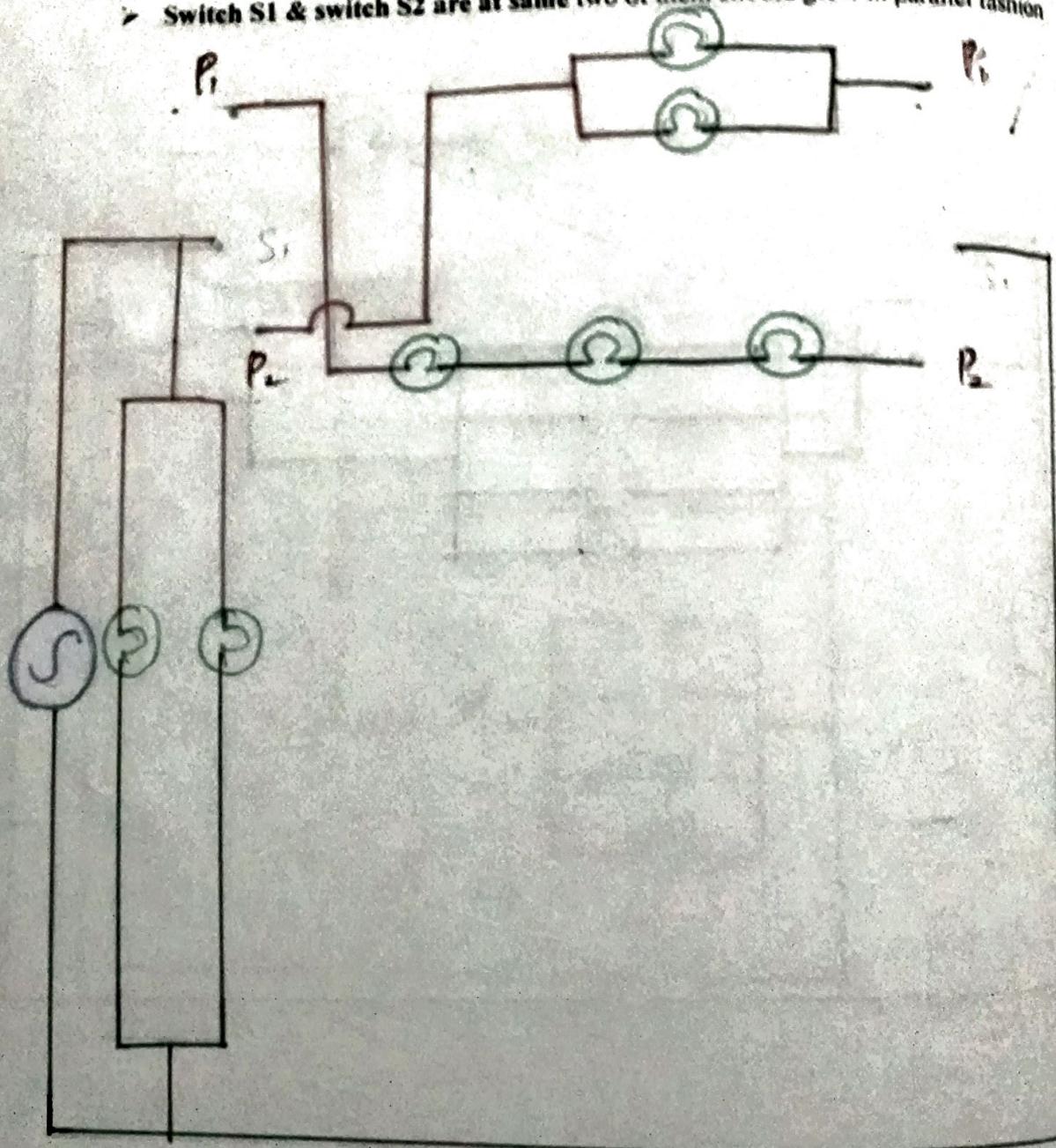
Q5. Draw the schematic diagram of seven Electric lamps controlled by two switches in such a way that whenever:

- Switch S1 & switch S2 are upward three of the electric lamps should glow in series fashion
- Switch S1 & switch S2 are downward four of the electric lamps should glow in parallel fashion
- Switch S1 & switch S2 are at alternate state none of lamp should glow



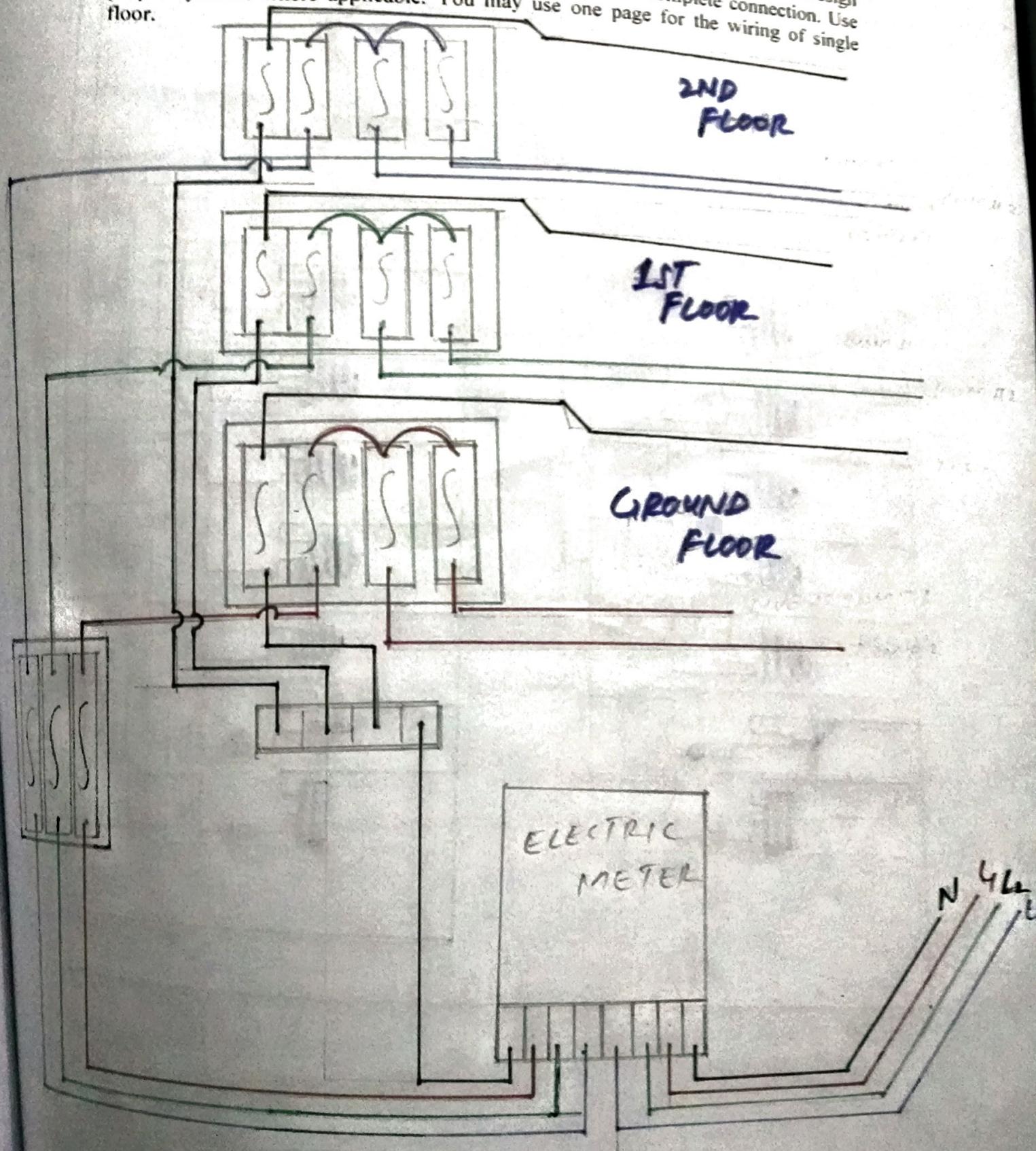
Q6. Draw the schematic diagram of seven Electric lamps controlled by two switches in such a way that whenever:

- **Switch S1 is upward & switch S2 is downward** three of the electric lamps should glow in series fashion and two of them should glow in parallel fashion
- **Switch S1 is downward & switch S2 are upward** four of the electric lamps should glow in parallel fashion
- **Switch S1 & switch S2 are at same** two of them should glow in parallel fashion



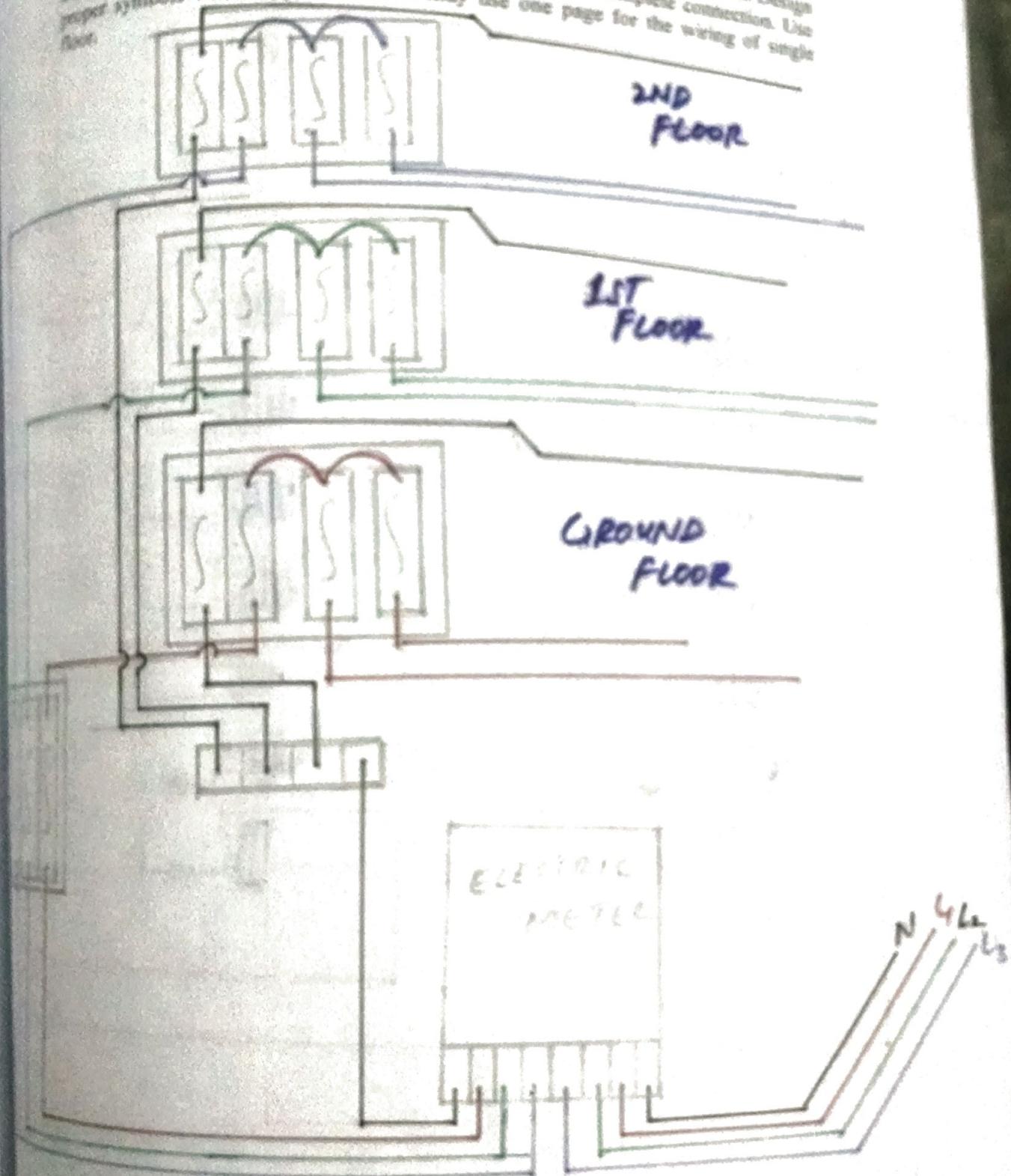
ASSIGNMENT No.3

Draw the wiring diagram of a triple storey building containing 2 rooms in each floor.
 Power consumption capacity of the floors is 4KW, 3KW and 2KW respectively. Each room is furnished with 05 electric lights, a ceiling fan and an air conditioner.
 Note: Use red, yellow and blue ink for live and black for neutral connections. Design the wiring diagram from Service mains to appliance with complete connection. Use proper symbols where applicable. You may use one page for the wiring of single floor.

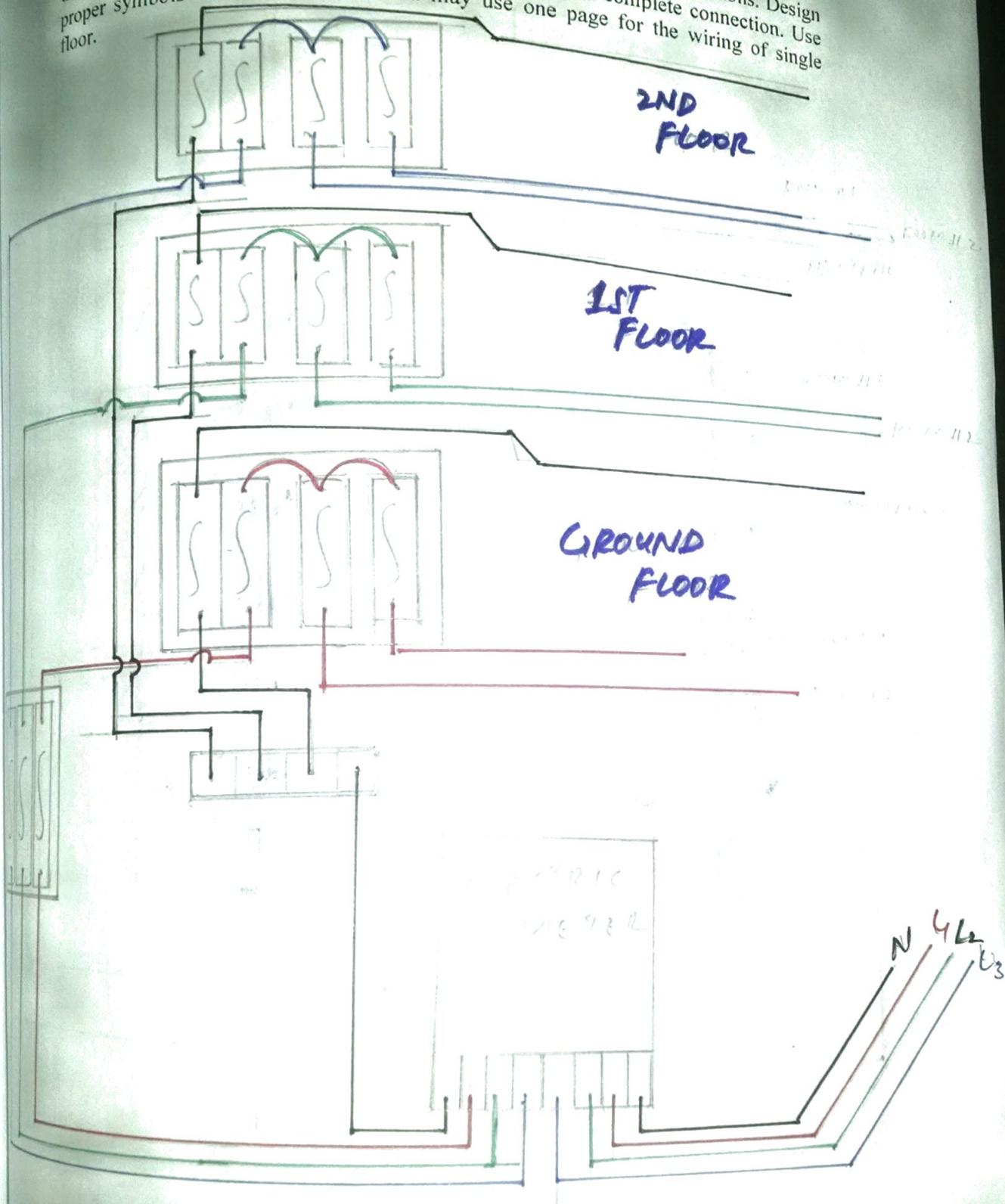


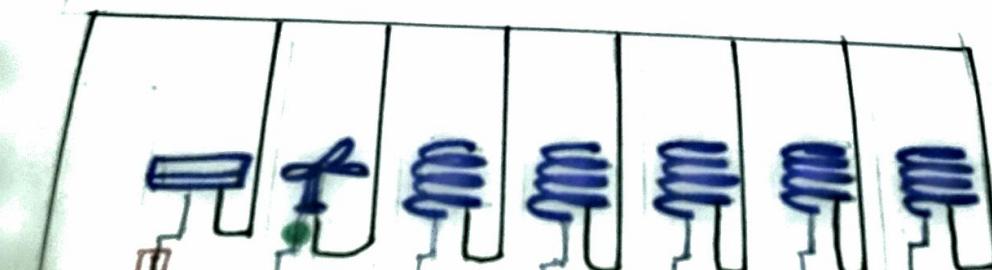
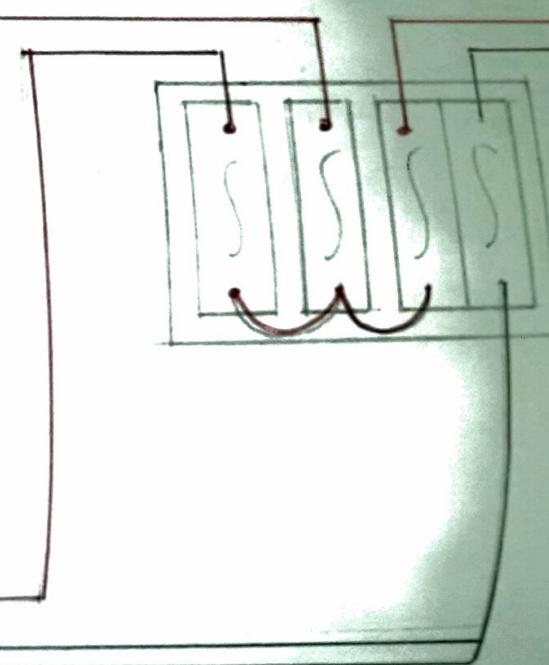
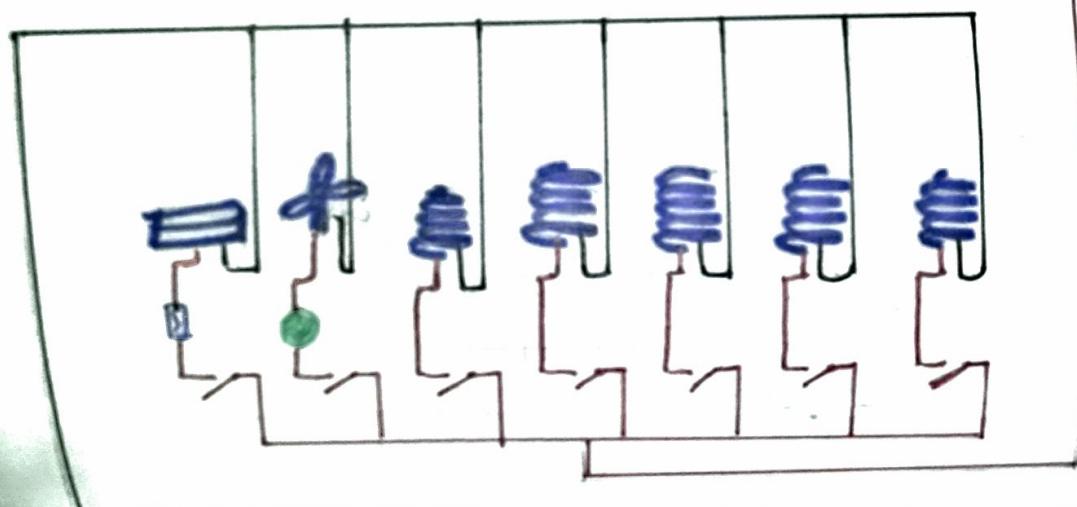
ASSIGNMENT No.3

Draw the wiring diagram of a triple storey building containing 2 rooms in each floor. Power consumption capacity of the floors is 4KW, 3KW and 2KW respectively. Each room is furnished with 05 electric lights, a ceiling fan and an air conditioner. Note: Use red, yellow and blue ink for live and black for neutral connections. Design the wiring diagram from Service mains to appliance with complete connection. Use proper symbols where applicable. You may use one page for the wiring of single floor.



QUESTION NO.3
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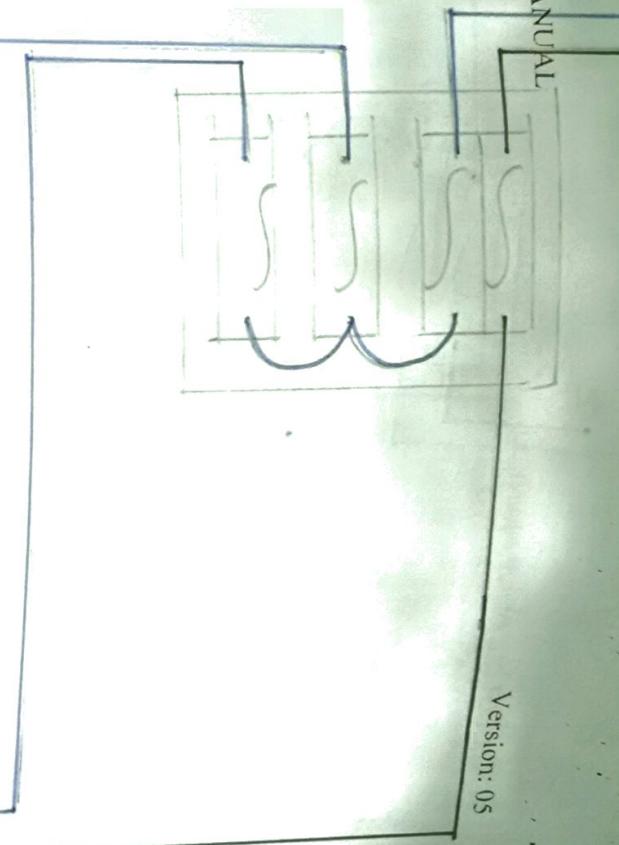
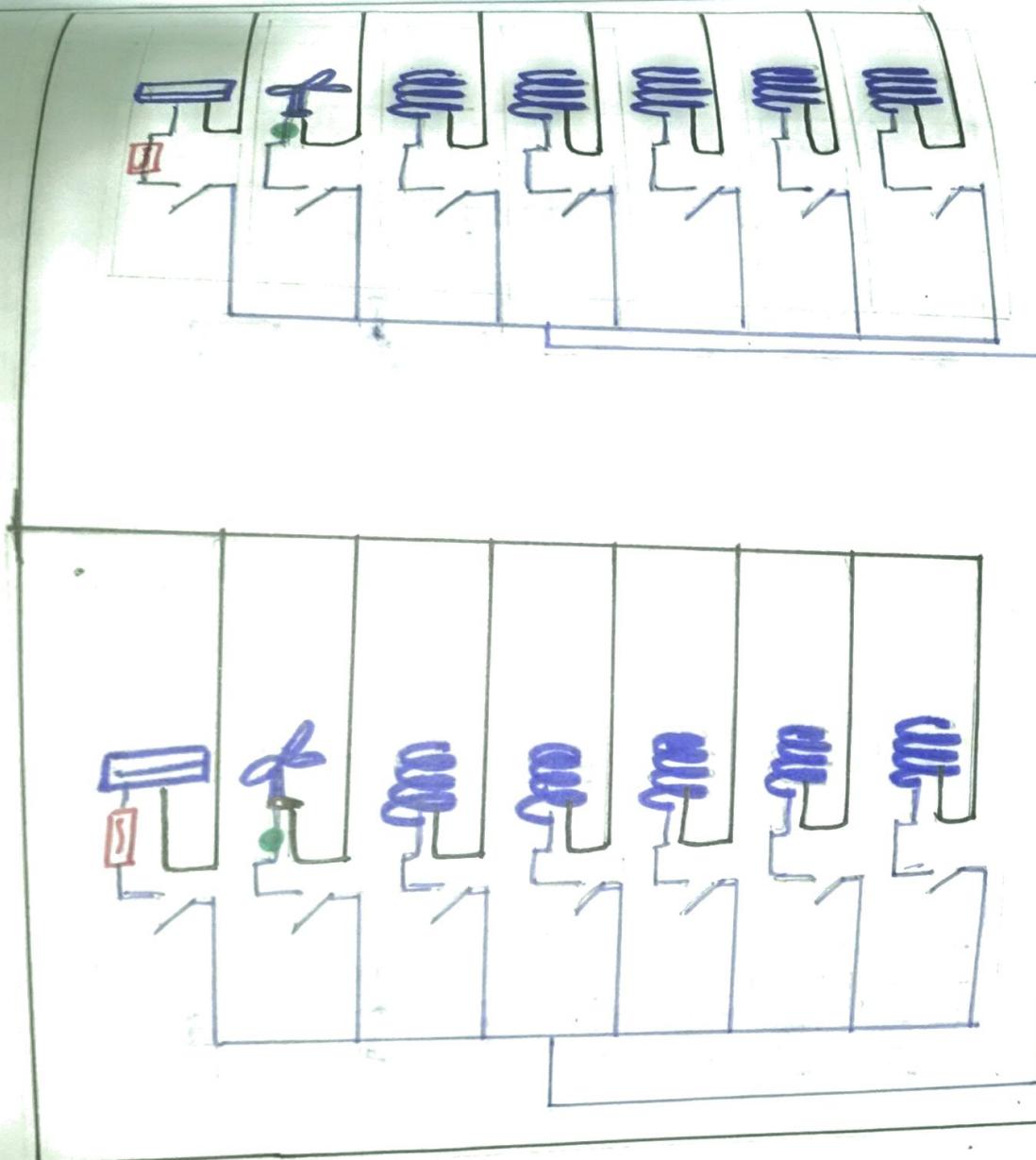




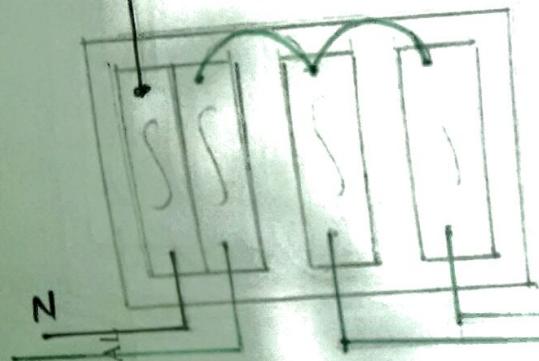
Chassis Assembly

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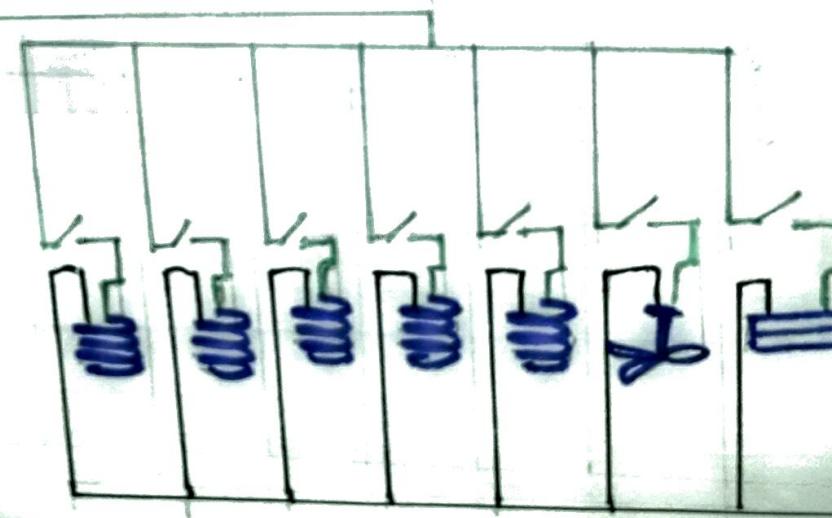
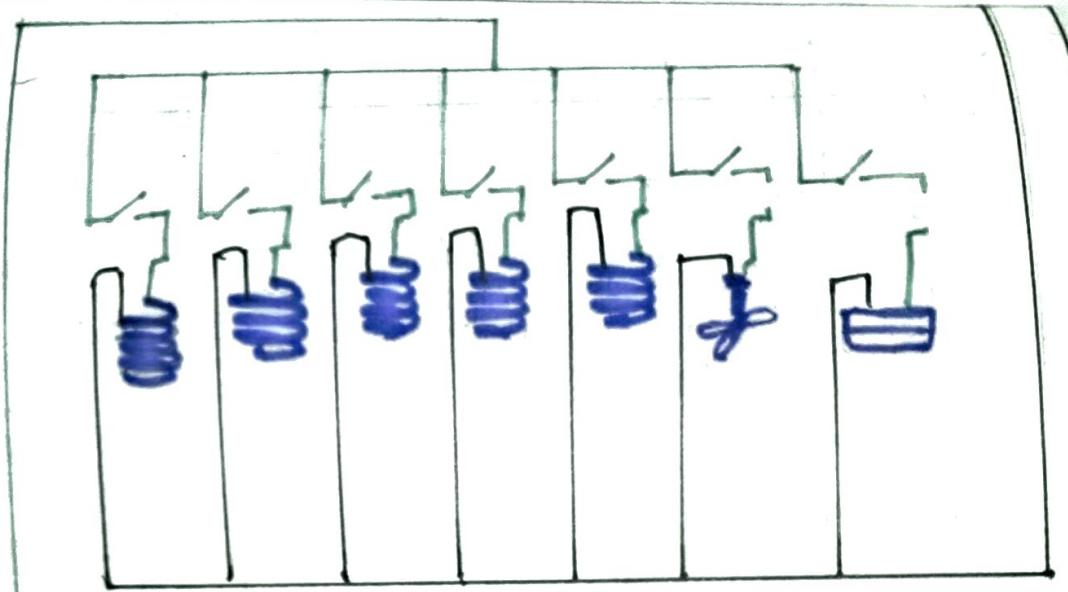
Version: 05



Version: 0.5



ELECTRIC SHOP MANUAL

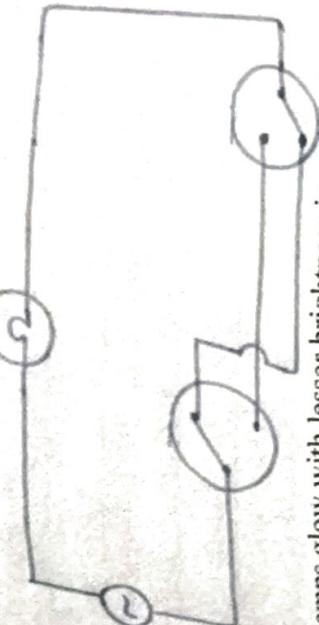


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FL01

Q5. It is to use connected live to any terminal than common and neutral with any terminal than

Q4. Draw circuit diagram of staircase circuit in such a way that when both of left terminal SPDT switches are at same states electric lamp must be off and it must glow only at alternate states of connected switches

Ans:



Q5. Why electric lamps glow with lesser brightness in series circuit?

Ans: The brightness of the electrical lamp is depend upon the voltage applied. In series the voltage is divided and thus the brightness is also become lesser.

Q6. Explain the working of 2 lamps having different wattage in series and parallel connections.

Ans: If we have two bulbs with different (wattage) or power then if connected in parallel would glow with full brightness and in series with less brightness.

Q7. Explain the behavior of the circuit when one of lamp connected in parallel fashion is short.

Ans: If one of lamp connect in parallel is short then the all bulb will off. Because circuit is shorted and whole current will pass through low resistance path.

Q8. Explain the behavior of the circuit when one of lamp connected in series fashion is short.

Ans: If one of bulb is short in the series fashion then circuit is not complete and no remaining bulb will be once brighter.

Q9. what may the condition which causes short-circuit?

Ans: A short circuit is an abnormal connection of two nodes of circuit that

SELF ASSESSMENT

- Q1. What is difference between short circuit and over current?
 Ans: Short circuit is current flowing in parallel conductor for safety circuit against surge or overload.
Over current is less current than normal
 Q2. How do we measure 1 pin voltage?
 Ans: The connection of pin voltmeter need to be connected
with pin 1 and pin 2.
Pin 1 is marked with black stripe and Pin 2 is marked with red stripe.
Pin 1 is positive terminal and Pin 2 is negative terminal.
 Q3. Why may we see common line potentiometer with more of slippage, instead of single potentiometer?
 Ans: In one common potentiometer both leads will be subjected to slippage resistance and may cause the short circuit.
- Q4. Define Single Phase Alternating Voltage and also describe the specifications of some source used in Pakistan.
 Ans: A single phase alternating voltage is simply produced by alternating current electromagnetic force which is about 100 sample volt on face area.
 Q5. Differentiate SPDT and SPST Switch
 Ans: SPST switch is used to control a single electrical circuit and one output while SPDT has three terminals at last and it can be set and un set to two positions.
- Q6. How may we use an SPDT Switch as an SPST?
 Ans: To use one terminal it connected all the out pin with medium terminal where

are at different voltages.

Q10- what is difference among single, double and three pole circuit breaker? Also explain their way of connection.
Ans: Single pole breakers is used to 120V having one neutral wire
Double pole breaker is used for 220V voltage that has 2 - live wires. And three pole breaker are used for 3 - live wires and all are connected in series.

Q11- what is recommendation of IEE for the connection single pole safety devices and control devices within the circuit?

Ans: The IEE recommended rule for safety pole devices is that all devices must be connected to live through switch and breaker where neutral is connected without any switch.

Q12- How single phase alternating voltage differs from three phase source.

Ans: Single phase voltage are usually for the residential use while three phase are for the heavy industrial loads. In single phase $\phi = 180^\circ$ while in three phase $\phi = 120^\circ$ and In single phase voltage is 220V while in three phase Y is 440V while in 3-phase S phase it varies b/w 11 KV to 420 KV.

Q No 9: Internal Effects :- Breakdown of equipment
Degeneration of insulation.

External Effects : Insulation failure due to
lightning surges in loading.