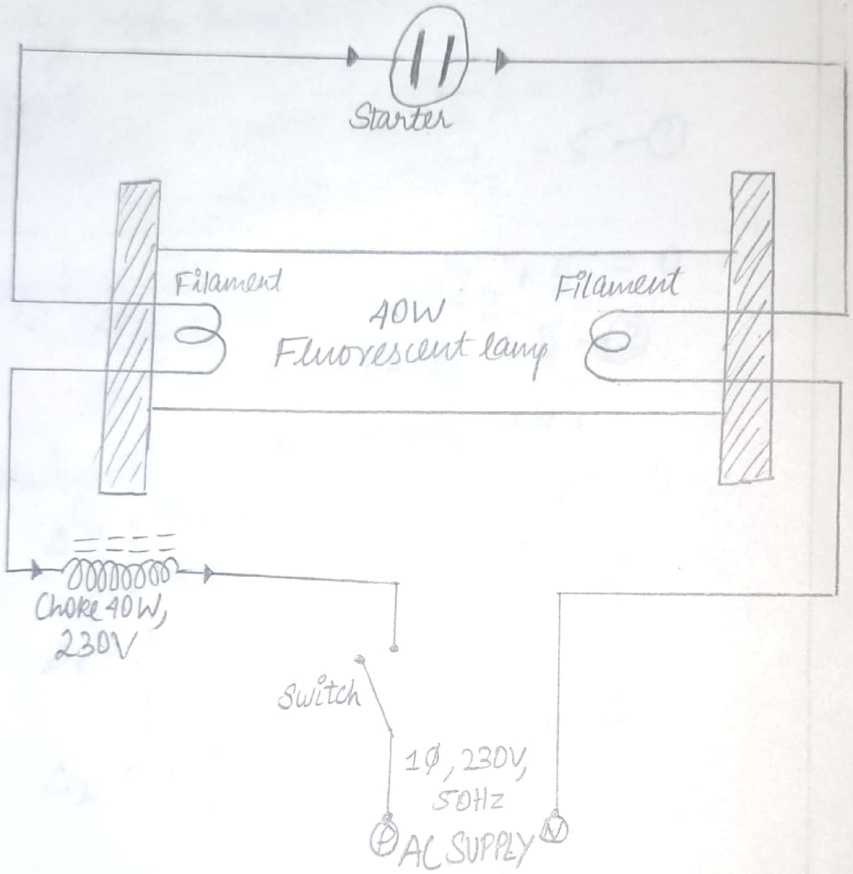
☆ CIRCUIT DIAGRAM:



Expt 2(a)

FLUORESCENT LAMP WIRING

AIM:

To make connections of a fluorescent lamp wiring and to study the accessories of the same.

APPARATUS:

S.NO	COMPONENTS	RANGE/TYPE	QUALITY
1)	Fluorescent lamp fixture	Agt	1
2)	Fluorescent lamp	40W	1
3)	Choke	40W, 230V	1
4)	Starter	-	1
5)	Connecting wires	-	As Required

TOOLS REQUIRED:-

Wire man's tool kit - 1NO.

THEORY:-

1) the electrode of the starter which is enclosed in a glass bulb filled with argon gas, cause discharge in the argon gas with consequent heating.
2) Due to heating, the bimetallic strip bends and causes it in the starter to close. After this, the choke, the filaments to tube and starter becomes connected in series.
3) When the current flows through the tube end filaments the heat is produced. During the process the discharge in the starter tube disappears and the contacts in the starter move apart.
4) When sudden break in the circuit occur due to moving apart of starter terminals, this causes a high value of emf to be Induced in the choke.
5) According to Lenz's law, the direction of induced emf in the choke will try to oppose the fall of current in the circuit.
6) The voltage thus acting across the tube ends will be high enough to cause a discharge to

occur in the gas inside the tube. thus the tube starts giving light.

7) The fluorescent lamp is a low pressure lamp (mercury) and is a long evacuated tube. It contains a small amount of mercury and argon gas at 2.5mm pressure. At the time of switching in the gas tube, mercury is in the form of small drops. therefore, to start the tube, filling up of argon gas is necessary. so, in the beginning, argon gas starts burning at the ends of the tube, the mercury is heated and controls the current and the tube starts giving light. At each end of the tube, there is a tungsten electrode which is coated with the fast electron emitting material. Inside of the tube is coated with phosphor according to the type of light.

8) A starter helps to start the tube and break the circuit.

9) The choke coil is also called blast. It has a laminated core over which enameled wire is wound. the function of the choke is to increase the voltage to almost twice at the time of switching on the tube and when the tube starts working. it reduces the voltage across the tube and keeps the current constant.

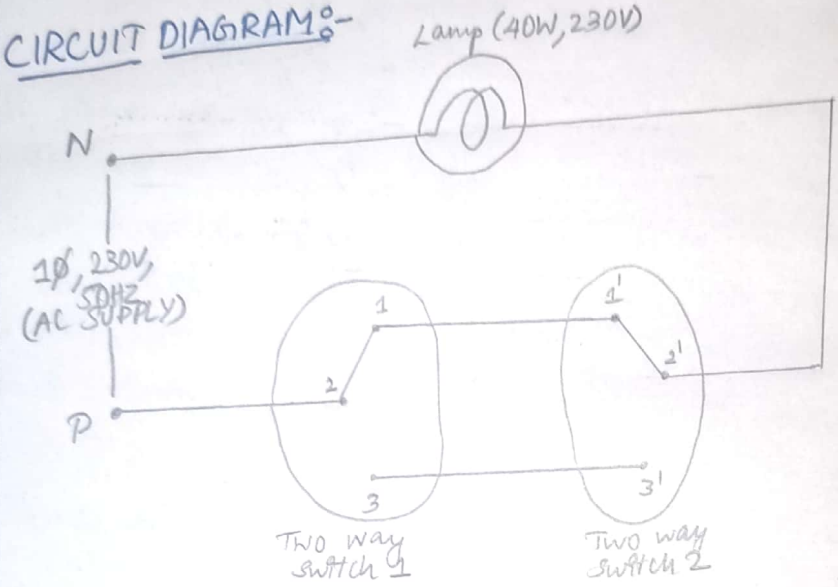
PROCEDURE:-

1) Give the connections as per the circuit diagram.
2) Fix the tube holder and the choke in the tube.
3) the phase wire is connected to the choke and neutral directly to the tube.
4) Connect the starter in series with the tube.
5) Switch on the supply and check the fluorescent lamp lighting.

RESULT:

Thus the wiring for the fluorescent lamp is completed and tested.

★ CIRCUIT DIAGRAM:-



Expt 2(b)

STAIRCASE WIRING

AIM:-

To control a single lamp from two different place.

APPARATUS REQUIRED:-

S.NO	Components	Quality/ Range
1)	Incandescent lamp	1(230V, 40W)
2)	lamp holder	1
3)	Two way switches	2(230V, 5A)
4)	Connecting wires	As Required

TOOLS REQUIRED:-

Wireman's toolkit - 1NO.

THEORY:-

1) A two way switch is installed near the first step of the stairs. the other two way switch is installed at the upper part where the stair ends.
2) The light point is provided between first and last stair at an adequate location and height if the light is switched on by the lower switch. It can be switched off by the switch at the top or vice versa.
3) The circuit can be used at the places like bed room where the person may not have to travel for switching off the light to the place from where the light is switched on.
4) two numbers of Two way switches are used for the purpose. the supply is given to the switch at the short circuited terminals.
5) the connection to the light point is taken from the similar short circuited terminal of the second switch. other two independent terminals of each circuit are connected through cables.

★ TABULATION :-

Position of Switches		Condition of Lamp
S1	S2	
2 - 1	2' - 1'	ON
2 - 3	2' - 3'	ON
2 - 1	2' - 3'	OFF
2 - 3	2' - 1'	OFF

PROCEDURE:

1) Give the connections as per the circuit diagram.
2) Verify the connections.
3) Switch on the supply.
4) Verify the conditions.

RESULT:

Thus the staircase wiring is completed and tested.