ACTIVITY- 1(Household Circuit)

AIM:

To assemble the household circuit comprising three bulbs, three switches, a fuse and a power source.

APPARATUS:

Three bulbs (40 W, 220 V each), three (on/off) switches, socket, a fuse of 1.0 A, plug, flexible connecting wire, main switch.

PRINCIPLE:

If P_1,P_2,P_3,P_4,P_5 ...be the power consumed by different domestic electrical appliances in a circuit then the total power consumption, P at any instant is given by P = $P_1+P_2+P_3+P_4+P_5$+....

If electric potential is V, then current I drawn from the mains is given by

$$I=\frac{P}{V}$$

where P is in watt, V in volt and I in ampere.

In order to protect the appliances from damage, when accidentally a high current is drawn (e.g. when the terminals of the appliance get accidentally connected), a fuse of rating little higher (10 to 20 per cent higher than the current normally drawn) is connected in series with the set of appliances

PROCEDURE:

1. Take the bulbs B1 , B2 , B3 and connect them in series with switches S1 , S2 and S3 respectively. Connect B1 , B2 , B3 alongwith S1 , S2 , S3 in parallel with each other as shown in Figure.

2. Connect fuse F in series with the set up as shown in Figure. Connect a plug and the socket at the end of two leads. Connect a wire from the earth pin of the plug.
3. Insert the plug in socket provided in the main electric board.
4. Press the switches S1 , S2 , S3 one by one and observe the bulb that is switched on and off independently of the other bulb.
5. Press all the switches simultaneously and observe what happens. Record your observations.

RESULT:

Household circuit assembly is complete and installed with safety.

PRECAUTIONS:

1. Care should be taken while working with mains.
2. Carefully determine the rating of the fuse by calculating the maximum current drawn by the circuit.

CIRCUIT DIAGRAM