ACTIVITY- 3 (Correction of Circuit)

AIM:

To draw the diagram of a given open circuit comprising at least a battery, resistor/rheostat, key, ammeter and voltmeter. Mark the components that are not connected in proper order and correct the circuit and also the circuit diagram.

APPARATUS:

A given open circuit comprising at least a cell or a battery, plug key, resistor, rheostat, ammeter, voltmeter, connecting wires and sandpaper.

PRINCIPLE:

An electrical circuit is functional only if all the components of the circuit are connected in proper order, assuming that all circuit components/devices are in working condition and the key is closed.

An open circuit means a break in some part of a circuit which could be deliberate such as a key in open position or a fault such as broken wire or burnt out component(s) or loose connection. Some of such circuits are given in Figure.

PROCEDURE:

1. Draw the correct circuit diagram and check whether all the connections are correct.
2. Here we find two errors.
    a. Voltmeter is connected in series and ammeter in parallel.
    b. Current enters from the negative terminal in meters.
3. Rearrange the circuit components in accordance with the corrected circuit.
4. Plug in the key and check the ammeter and voltmeter showing the readings.
5. Move the rheostat and check that the readings in ammeter and voltmeter change with the change in circuit resistance.

RESULT:

The electrical circuit assembled as per the corrected circuit diagram is functional.

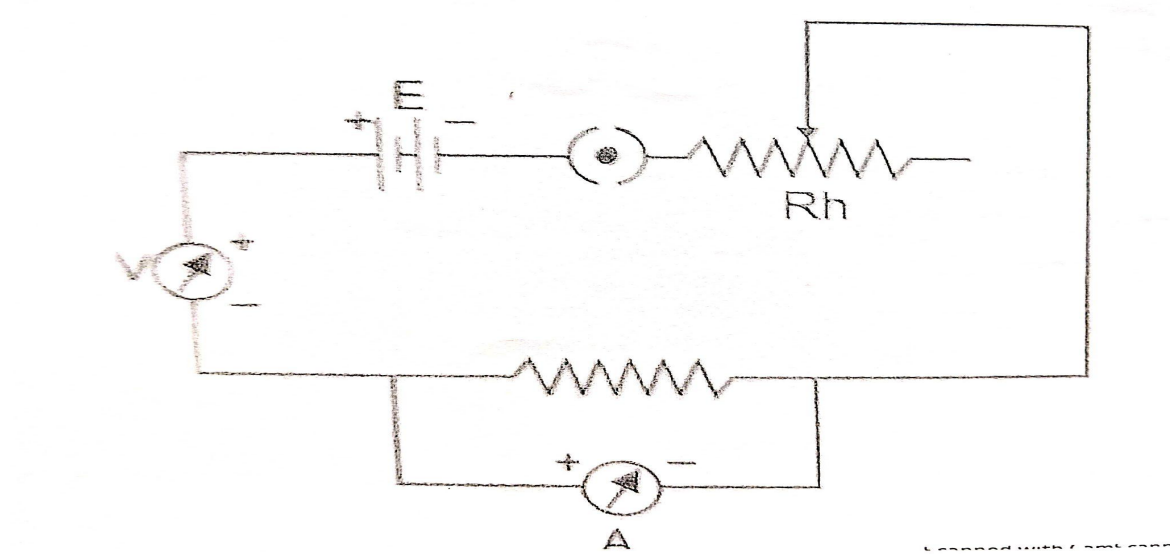
PRECAUTIONS:

1. Ends of the connecting wires should be cleaned with sand paper before making connections.
2. The positive terminal of the battery should be connected to the positive terminal of the voltmeter and positive terminal of the ammeter.
3. The ammeter should be connected in series with the resistor and the voltmeter should be connected in parallel with it.

SOURCES OF ERROR:

1. Voltmeter/Ammeter may not be connected with correct polarity in the circuit.
2. Ammeter may be connected in parallel.
3. Voltmeter may be connected in series.

WRONG CIRCUIT DIAGRAM:



CORRECT CIRCUIT DIAGRAM: