



1.

(a) Define Ampere.

(b) Calculate the current flowing in ampere, if a charge of 5000 C flows through a circuit in 20 minutes.

(3)

2.

(a) Define Volt.

(b) 4000 J of work is done in bringing 1600 C of charge from infinity to a given point A in an electric field. Calculate the potential at point A.

(3)

3.

(a) What do you understand by the term specific resistance ?

(b) What is the effect on specific resistance with the change in temperature ?

(c) State the SI unit of specific resistance.

(3)

4.

(a) What do you understand by terms : (i) Electric circuit, (ii) Series circuit?

(b) State three characteristics of series circuit.

What do you understand by the term parallel circuit ? State its three characteristics.

(4)

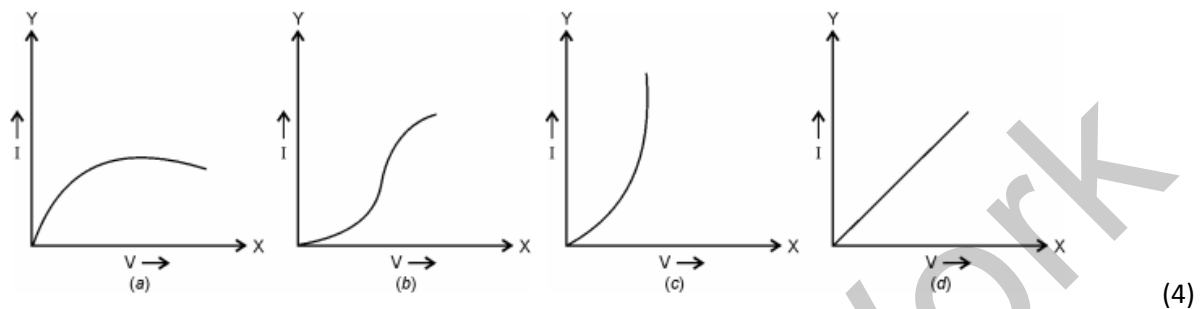
5.

State Ohm's law.

Draw a neat circuit diagram for the verification of Ohm's law by voltmeter-ammeter method. By another diagram show the relation between p.d. and current.

(4)

Figures (a), (b), (c) and (d) below shows  $I$ - $V$  characteristic curves for same resistors. Identify the ohmic and non-ohmic resistors and give a reason for your answer.



7.

Differentiate between *e.m.f.* and terminal voltage of a cell.

A **high resistance** voltmeter is connected in parallel to the terminals of cell which shows *emf*  $E$ . The cell is connected to an external circuit through a switch and reostat. When the current in the external circuit is gradually increased, the reading of voltmeter drops. Explain.

(4)

8.

(a) What do you understand by the term internal resistance of cell ?

(b) How is internal resistance of cell affected with change in

(i) surface area of electrodes in contact with electrolyte ?

(ii) distance between the electrodes ?

(iii) concentration of electrolyte ?

(iv) temperature of electrolyte ?

(5)

SECTION B - NUMERICALS --- 20 MARKS

1.

A conductor of length 85 cm has a resistance of  $3.75 \Omega$ . Calculate the resistance of a similar conductor of length 540 cm. (2)

2.

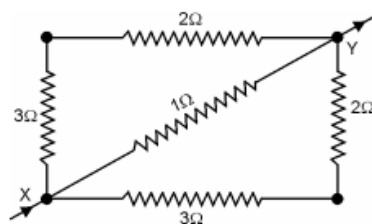
A resistance wire made of German silver has resistance of  $4.25 \Omega$ . Calculate the resistance of another wire made from the same material, such that its length increases four times and the area of cross-section decreases three times. (3)

3.

Three resistors of  $6 \Omega$ ,  $3 \Omega$  and  $2 \Omega$  are connected together, such that their total resistance is greater than  $6 \Omega$ , but less than  $8 \Omega$ . Draw a diagram to show this arrangement and calculate total resistance. (3)

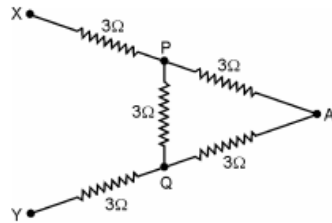
4.

Diagram below shows a network of five resistances. Calculate the resistance between points X and Y.



(4)

The diagram below shows resistors of  $3\Omega$ , in a network. Calculate the equivalent resistance :



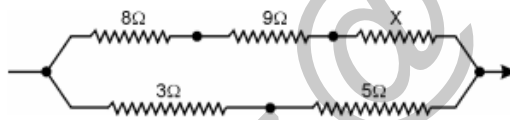
i) Between points P and Q.

ii) Between points X and Y.

(4)

6.

. Equivalent resistance of circuit diagram is  $6\Omega$ . Calculate the value of  $x$ .



(4)