Model Question Paper

Current Electricity - Part II

12th Standard

Physics

Reg.No. : | | | | | | |

I.Answer all the Questions.

II.Use blue pen only.

Time : 02:00:00 Hrs

Total Marks : 60

Section-A

4 x 1 = 4

1) When two 2Ω resistance are in parallel, the effective resistance is

(a) $2\ \Omega$ (b) $4\ \Omega$ (c) $1\ \Omega$ (d) $0.5\ \Omega$

2) In the case of insulators, as the temperature decreases, resistivity

(a) decreases (b) increases (c) remains constant (d) becomes zero

3) If the resistance of a coil is $2\ \Omega$ at 0^oc and α = and 0.004 $/^o$C, than its resistance at 100^o C is

(a) $1.4\ \Omega$ (b) $0\ \Omega$ (c) $4\ \Omega$ (d) $2.8\ \Omega$

4) According to Faraday's law of electrolysis, when a current is passed, the mass of ions deposited at the cathode is independent of

(a) current (b) charge (c) time (d) resistance

Section-B

5 x 3 = 15

5) Define drift valocity.

6) Define mobility of electrons. Write its unit.

7) Define current density.

8) What is resistance of a conductor? (or) Define resistance.

9) What are called super conductors?

Section-C

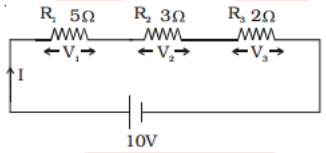
4 x 5 = 20

10) A copper wire of $10^{-6}\ m^2$ area of cross section, carries a current of 2 A. If the number of electrons per cubic metre is 8×10^{28} , calculate the current density and average drift velocity.

11) If a copper wire is stretched to make it 0.1% longer, What is the percentage change in resistance?

12) An iron box of 400 w power is used daily for 30 minutes. If the cost per unit is 75 paise, find the weekly expenses on using the iron box.

13) a) Three resistors are connected in series with 10 V supply as shown in the figure. Find the voltage drop across each resistor, and effective resistance of series combination



(OR)

b) Find the current flowing across three resistors 3Ω, 5Ω and 2Ω connected in parallel to a 15 V supply. Also find the effective resistance and total current drawn from the supply.

Section-D

4 x 5 = 20

14) Define drift velocity. Establish a relation between drift velocity and mobility.

15) State Ohm's law. Derive the relation between the current and potential difference.

16) Derive expression for Wheatstone's bridge balance.

17) Explain the principle of a potentiometer.

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