

Model Question Paper
Current Electricity - Part V
12th Standard

Physics

Reg.No. :

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I. Answer all the Questions.

II. Use blue pen only.

Time : 01:00:00 Hrs

Total Marks : 50

Section-A

4 x 1 = 4

- 1) A circuit consists of two resistances R_1 & R_2 connected parallel to each other. When a current 1 flows through the circuit, then the amount of current flowing through R_1 is
(a) $I_1 = I \left(\frac{R_2}{R_1 + R_2} \right)$ (b) $I_1 = I \left(\frac{R_1}{R_1 + R_2} \right)$ (c) $I_1 = I \left(\frac{R_2}{R_1 - R_2} \right)$ (d) $I_1 = I \left(\frac{R_1}{R_1 - R_2} \right)$
- 2) The resistivity of a conductor is $40 \times 10^{-6} \Omega m$. Then its conductivity is
(a) $25 \times 10^5 \Omega m^{-1}$ (b) $2.5 \times 10^4 \Omega m^{-1}$ (c) $25 \times 10^{-5} \Omega m^{-1}$ (d) $25 \times 10^{-4} \Omega m^{-1}$
- 3) Two 2Ω resistances are connected in parallel and in series. What is ratio of their effective resistances
(a) 2:1 (b) 1:2 (c) 1:4 (d) 4:1
- 4) Electrolytes are
(a) The liquids which allow the ions to move through them (b) The liquids wherein charged ions can be dissociated in opposite direction (c) both (a), (b) are correct
(d) (a) is correct, (b) is wrong

Section-B

4 x 3 = 12

- 5) Define temperature coefficient of resistance.
- 6) Distinguish between electromotive force and potential difference.
- 7) Is emf a force? Explain
- 8) Define electrical resistivity of a material and give the expression and unit of it.

Section-C

2 x 5 = 10

- 9) A cell has a potential difference of 6 V in an open circuit, but it falls to 4 V when current of 2 A is drawn from it. Find the internal resistance of the cell.
- 10) In a Wheatstone's bridge, if the galvanometer shows zero deflections, find the unknown resistance. Given $P = 1000\Omega$, $Q = 1000\Omega$ and $R = 20\Omega$

Section-D

5 x 5 = 25

- 11) How will you compare the emf's of two cells using a potentiometer?
- 12) Write any five applications of superconductors.
- 13) Derive an expression for the effective resistance of a series with a neat diagram.
- 14) Derive an expression for the effective resistance of resistors in parallel network with a neat diagram.
- 15) a) An electric iron of resistance 80Ω is operated at 200 V for two hours. Find the electrical energy consumed.
b) In a house, electric kettle of 1500 W is used everyday for 45 minutes, to boil water. Find the amount payable per month (30 days) for usage of this, if cost per unit is Rs. 3.25
