SUBJECT:- PHYSICS   CLASS:- XTH   DATE:26/12/XX

SUBJECT TEACHER:- MR. NEEL NIRANJAN

CHAPTER 1. (ELECTRICITY) (BASED ON NCERT PATTERN)

(REVISION)

Question 1. When a 12 V battery is connected across an unknown resistor, there is a current of 2.5 mA in the circuit. Find the value of the resistance of the resistor.
Solution: Here, V = 12 V and I = 2.5 mA = 2.5 x 10^{-3} A
∴ Resistance, R = $\frac{V}{I}$ = $\frac{12V}{2.5 \times 10^3 A}$ = 4,800 Ω = 4.8 x 10^{-3} Ω

Question 2. A battery of 9V is connected in series with resistors of 0.2 O, 0.3 O, 0.4 Q, 0.5 Q and 12 £1, respectively. How much current would flow through the 12 Q resistor?
Solution: Total resistance, R = 0.2 Ω + 0.3 Ω + 0.4 Ω + 0.5 Ω + 12 Ω – 13.4 Ω
Potential difference, V = 9 V
Current through the series circuit, I = $\frac{V}{R}$ = $\frac{12V}{13.4\Omega}$ = 0.67 A
∵ There is no division of current in series. Therefore current through 12 Ω resistor = 0.67 A

Question 3. Will current flow more easily through a thick wire or a thin wire of the same material, when connected to the same source ? Why ?
Answer: The current will flow more easily through a thick wire than a thin wire of the same material. Larger the area of cross-section of a conductor, more is the ease with which the electrons can move through the conductor. Therefore, smaller is the resistance of the conductor.

Question 4. Let the resistance of an electrical component remains constant while the potential difference across the two ends of the component decreases to half of its former value. What change will occur in the current through it ?
Answer: When potential difference is halved, the current through the component also decreases to half of its initial value. This is according to ohm's law i.e., V ∝ I.