Parishram (2025)

Physics

Current Electricity

DPP: 6

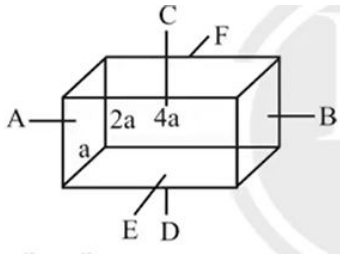
Q1 Twenty million electrons reaches from point X to point Y in two micro second. Direction and magnitude of the current is
(A) 1.5×10^{-10} A from X to Y
(B) 1.6×10^{-6} A from Y to X
(C) 1.5×10^{-13} A from Y to X
(D) 1.6×10^{-4} A from X to Y

Q2 In which conductors, positive and negative charges both can move?
(A) Non-electrolytic solution
(B) Electrolytic solution
(C) Both (1) and (2)
(D) Neither (1) and (2)

Q3 The amount of charge Q passing in time t through a cross-section of a wire is $Q = 5t^2 + 3t + 1$. The value of current at time $t = 5$ s is
(A) 9 A
(B) 49 A
(C) 53 A
(D) None of these

Q4 A wire is stretched so as to change its diameter by 0.25%. The percentage change in resistance is
(A) 4.0% (B) 2.0%
(C) 1.0% (D) 0.5%

Q5 A conductor with rectangular cross-section has dimensions $(a \times 2a \times 4a)$ as shown in figure. Resistance across AB is R_1, across CD is R_2 and across EF is R_3. Then



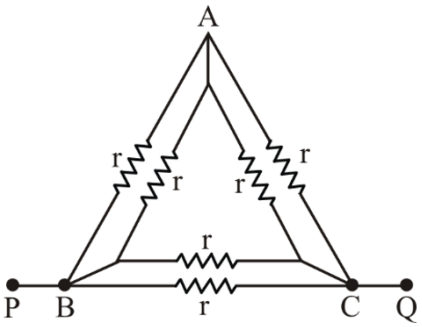
(A) $\mathrm{R}_1 = \mathrm{R}_2 = \mathrm{R}_3$
(B) $\mathrm{R}_1 > \mathrm{R}_2 > \mathrm{R}_3$
(C) $\mathrm{R}_2 > \mathrm{R}_3 > \mathrm{R}_1$
(D) $\mathrm{R}_1 > \mathrm{R}_3 > \mathrm{R}_2$

Q6 A steady current flow in a metallic conductor of non-uniform cross-section. The quantity/ quantities constant along the length of conductor is/are
(A) current, electric field and drift speed
(B) only drift speed
(C) current and drift speed
(D) only current

Q7 If resistivity of copper conductor is $1.7 \times 10^{-8} \Omega\mathrm{m}$ and electric fields is $100 \mathrm{Vm}^{-1}$, then current density will be
(A) $6 \times 10^{9} \mathrm{Am}^{-2}$
(B) $1.7 \times 10^{-6} \mathrm{Am}^{-2}$
(C) $1.7 \times 10^{-10} \mathrm{Am}^{-2}$
(D) $6 \times 10^{7} \mathrm{Am}^{-2}$

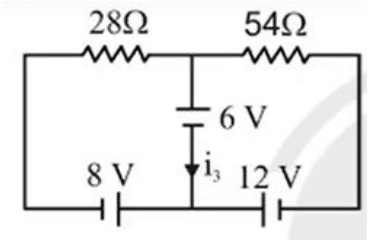
Q8 Resistance of wire at 20°C is 20Ω and at 500°C is 60Ω. At what temperature its resistance is 25Ω?
(A) 160°C (B) 250°C
(C) 100°C (D) 80°C

Q9 The resistance across P and Q in the figure is



(A) $r/3$ (B) $r/2$
(C) $2r$ (D) $6r$

Q10 Consider the circuit shown in the figure. The current i_3 is equal to



(A) 5amp
(B) 3amp
(C) -3amp
(D) $-5/6\text{amp}$

Answer Key

Q1	(B)
Q2	(B)
Q3	(C)
Q4	(C)
Q5	(B)
Q6	(D)
Q7	(A)
Q8	(D)
Q9	(A)
Q10	(D)