

NEET CURRENT ELECTRICITY — DRIFT OF ELECTRONS AND ORIGIN OF RESISTIVITY, MOBILITY — PYQS

Max. Marks: 28

Questions: 7

Section A (MCQ) — 7 questions

- Q.1** A uniform wire of diameter d carries a current of 100 mA when the mean drift velocity of electrons in the wire is v . For a wire of diameter $\frac{d}{2}$ of the same material to carry a current of 200 mA, the mean drift velocity of electrons in the wire is

[RE-NEET (UG) 2024]

- (1) $4v$ (2) $8v$ (3) v (4) $2v$

Scan or tap for the full solution 

- Q.2** A copper wire of length 10 m and radius $\left(\frac{10^{-2}}{\sqrt{\pi}}\right)$ m has electrical resistance of 10Ω . The current density in the wire for an electric field strength of 10 (V/m) is

[NEET (UG) 2022]

- (1) 10^4 A/m^2 (2) 10^6 A/m^2
(3) 10^{-5} A/m^2 (4) 10^5 A/m^2

Scan or tap for the full solution 

- Q.3** **Column - I** gives certain physical terms associated with flow of current through a metallic conductor. **Column-II** gives some mathematical relations involving electrical quantities. Match **column-I** and **column-II** with appropriate relations.

[NEET (UG) 2021]

Column - I		Column - II	
A.	Drift Velocity	P.	$\frac{m}{ne^2\rho}$
B.	Electrical Resistivity	Q.	nev_d
C.	Relaxation Period	R.	$\frac{eE}{m}\tau$
D.	Current Density	S.	$\frac{E}{J}$

- (1) (A)-(R); (B)-(Q); (C)-(S); (D)-(P)
(2) (A)-(R); (B)-(S); (C)-(P); (D)-(Q)
(3) (A)-(R); (B)-(S); (C)-(Q); (D)-(P)
(4) (A)-(R); (B)-(P); (C)-(S); (D)-(Q)

Scan or tap for the full solution 

- Q.4** A charged particle having drift velocity $7.5 \times 10^{-4} \text{ m s}^{-1}$ in an electric field of $3 \times 10^{-10} \text{ V m}^{-1}$ has a mobility in $\text{m}^2 \text{ V}^{-1} \text{ s}^{-1}$ of :

[NEET (UG) 2020]

- (1) 2.5×10^6 (2) 2.5×10^{-6}
(3) 2.25×10^{-15} (4) 2.25×10^{15}

Scan or tap for the full solution 

- Q.5** The resistance of a wire is 'R' ohm. If it is melted and stretched to 'n' times its original length, its new resistance will be

[NEET 2017]

- (1) $\frac{R}{n}$ (2) n^2R (3) $\frac{R}{n^2}$ (4) nR

Scan or tap for the full solution 

- Q.6** The mean free path of electrons in a metal is $4 \times 10^{-8} \text{ m}$. The electric field which can give on an average 2 eV energy to an electron in the metal will be in units V/m

[AIPMT 2009]

- (1) 5×10^{-11} (2) 8×10^{-11}
(3) 5×10^7 (4) 8×10^7

Scan or tap for the full solution 

- Q.7** A wire of a certain material is stretched slowly by ten percent. Its new resistance and specific resistance become respectively

[AIPMT 2008]

- (1) both remain the same (2) 1.1 times, 1.1 times
(3) 1.2 times, 1.1 times (4) 1.21 times, same

Scan or tap for the full solution 

ANSWER KEY

Ques.	1	2	3	4	5	6	7				
Ans.	2	4	2	1	2	3	4				