National University of Computer and Emerging Sciences

Department of Computer Science — Chiniot-Faisalabad Campus

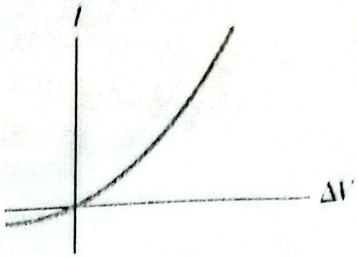
QUIZ 7

Name..... Roll no. ..... Date .....

Semester ..... Class ..... Section.....

CLO 4	explain the interaction between electric & magnetic fields with different applications.

Q1: In Figure, as the applied voltage increases, does the resistance of the diode (a) increase, (b) decrease, or (c) remain the same? Reasoning? [4 Marks]



Sol: The Resistance will increase. As diode is the non-ohmic conductor. ~~so the resis~~. It does obey ohm's law.

Q2: Suppose you wish to fabricate a uniform wire from 1.00 g of copper. If the wire is to have a resistance of R = 0.500 Ω and all the copper is to be used.

(A) What must be the length of this wire?

(B) Find the diameter of the fabricated wire. [6 Marks]

Sol: $m = 1 \times 10^{-3}$ kg

$R = 0.5\ \Omega$

density $= 8960$ kg/m^3

$\rho = 1.72 \times 10^{-8}\ \Omega$m

$V = \frac{m}{\text{density}} = \frac{1 \times 10^{-3}}{8960} \Rightarrow 1.16 \times 10^{-4}$

$R = \frac{\rho L}{A} \Rightarrow R = \frac{\rho L}{\frac{V}{L}} \Rightarrow R = \frac{\rho L^2}{V}$

$L = \sqrt{\frac{RV}{\rho}} \Rightarrow 1.82$ m

(B) $R = \rho \frac{L}{A}$

$r^2 = \frac{\rho L}{\pi R}$ — 4

$r = 1.4 \times 10^{-4}$

$d = 2.8 \times 10^{-4}$ m