Section - A

Q. 1   MCQ (1 Mark Each)   10

i)   (a) 1.82×10^{-23} Am^2

ii)   (b) 0.2mA

iii) (d) $\mu_r = 1 + \chi_m$

iv)   (b) 3741 J

v)   (b) 1:-1

vi)   (d) zero rad

vii) (d) ohm-second

viii) (c) $\dfrac{4 + F}{3 + F}$

ix)   (d) $m v / \omega$

x)   (b) Molten copper

Q.2   i) Given Data:- R=15 ohm ,v=0.6 m/s ,l=0.25 m B=0.35 T

Formula:-Induced emf is e=Blv

$$= 0.35 \times 0.25 \times 0.6$$

$$= 0.0525 \text{ V}$$ 1

ii) Given Data:- $v_{max} = 6.28$ cm/s $= 2\pi$ cm/s

Formula:-, $\omega = \dfrac{2\pi}{T}$,

$A = \dfrac{Path\ Length}{2} = \dfrac{8}{2} = 4$cm

$V_{max} = A\omega$

$2\pi = 4 \times \left(\dfrac{2\pi}{T}\right)$

T= 4 s   1

iii) AND gate   1

iv) Lorentz Force -Def-   1

v) Fluid-Def-   1

vi) Heat- Def-   1

vii) Diathermanous Sub-Def-   1

viii) K=Radius of Gyration   1

Section B

Attempt any EIGHT of the following:

Q.3   Thomson's Atomic model-
½ mark for each Point   2

Q.4   Faraday's First Law of Electromagnetic induction:-   Statement-   1
Faraday's Second Law of Electromagnetic induction:-   Statement-   1

Q.5   R=6 mm, r = 1mm, Number of droplets n = ?

Formula- $n = \dfrac{\frac{4}{3}\pi R^3}{\frac{4}{3}\pi r^3}$ ½

$n = \dfrac{R^3}{r^3}$

Substitution: $n = \dfrac{6^3}{1^3}$ ½

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