Mon Tue Wed Thu Fri Sat

Date: __/__/20__

Applied Physics

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(a)

Change in the magnetic flux ($\Delta\Phi_B$) of one webes (W) per second

Magnitude of EMF

Faraday's law for magnetically induced current :-

$$\mathcal{E} = \frac{d\Phi_B}{dt}$$

$\Phi_B(t) = 6t^2 + 7t$ mW

$= 10^{-3}(6t^2 + 7t)$ W

$\mathcal{E}(t=2) = -10^{-3}(12t + 7)_{t=2}$

$= -31 \times 10^{-3}$ V

$|\mathcal{E}(t=2)| = 31$ mV.

Direction - B out of paper

$= \frac{d\Phi}{dt}$ Growing

(b) Direction of current:-

The green dots are arrowheads and indicate that the B field is moving out of the page" And $\Phi_B = 6t^2 + 7t$ means that is the direction in which the B field is increasing

By lenz's law the induced current will produce a back field opposing that field.

Q2:- Given Data:-

Diameter = d = 11.2cm

Radius = $r = \frac{d}{2} = \frac{11.2}{2}$

$= 5.6cm = 0.056m$

$B = 157 mT/s$

$= 0.001 \times 157 T/s$

$= 0.157 T/s$

Solution:-

$\Phi = BA$

$= B \cdot (\pi r^2)$

$= 0.157(3.14)(0.056)^2$

$= 0.157(3.14)(0.003136)$

$= 0.001549\ V$