

Chapter 20

(5) B (6) B (7) C

The induced current will create a field coming out of the page; counter-clockwise current.

(8) B (9) D

(14) D (15) A (16) B (17) A

(19) C $\mathcal{E} = -\frac{\Delta\Phi}{\Delta t}$ $\mathcal{E} = V = IR$

$$I = \frac{-\Delta\Phi}{R\Delta t} = \frac{-(10-0)}{10(1)} = -1 \text{ A}$$

(20) C $\mathcal{E} = -N \frac{\Delta\Phi}{\Delta t}$ $\Phi = BA \cos\theta$
 Φ goes from max (BA) to zero in 10 ms.
 $= \frac{-(1000)(0 - 5 \times 10^{-5} \cdot \pi \cdot (10 \times 10^{-2})^2)}{10 \times 10^{-3}}$
 $= .16 \text{ V}$

(27) C (28) D (30) A (31) A (32) C

(33) B (34) B (41) A (42) D (44) D

(45) A (uniform field)

(46) C

$$\mathcal{E} = -N \frac{\Delta \Phi}{\Delta t} = \frac{-NBA \cos \theta}{\Delta t} \quad \mathcal{E} = IR$$

$$|I| = \left| \frac{-NBA \cos \theta}{R \Delta t} \right| = \frac{(0.25)(.04)^2 \cos 45}{(.02)(4 \times .04)(2.5)}$$

$$I = 3.5 \times 10^{-3} \text{ A} =$$

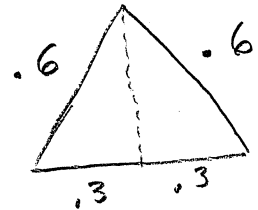
(47) A

(48) A

$$\Phi = BA \cos \theta$$

$$= (0.33)(.1588) \cos 30$$

$$= 0.045$$



$$(.6)^2 = (.3)^2 + h^2$$

$$h = .52$$

$$A = \frac{1}{2} bh$$

$$= \frac{1}{2} (.6)(.52)$$

$$= .15588$$