

Question 92431-03  
0.53-55%

A 400-turn coil of total resistance 6.0 ohm has a cross sectional area of  $30 \text{ cm}^2$ . How rapidly should a magnetic field parallel to the coil axis change in order to induce a current of 0.3 A in the coil?

- (a) 0.67 T/s.
- (b) 1.5 T/s.
- (c) 0.25 T/s.
- (d) 0.04 T/s.
- (e) 2.8 T/s.

Question 92531-03  
0.34-61%

A circular wire loop of area  $0.5 \text{ m}^2$  is perpendicular to a magnetic field of 0.8 T. If the coil is removed completely from the field in 0.1 s, the average emf induced in the loop has a magnitude

- (a) 5.0 V.
- (b) 8.0 V.
- (c) 4.0 V.
- (d) 2.0 V.
- (e) 1.0 V.

Question 92631-03  
0.43-40%

A circular area with a radius of 8.0 cm lies in the xy-plane. What is the magnitude of the magnetic flux through this circle due to a uniform magnetic field of 0.5 T at an angle of  $30^\circ$  degrees from the positive z-axis?

- (a)  $8.7 \times 10^{-3} \text{ Wb}$ .
- (b) zero.
- (c)  $4.3 \times 10^{-3} \text{ Wb}$ .
- (d)  $2.3 \times 10^{-3} \text{ Wb}$ .
- (e)  $1.1 \times 10^{-3} \text{ Wb}$ .

Question 92731-03  
0.45-66%

A circular wire loop, of an area  $0.10 \text{ m}^2$ , is initially oriented so that its plane is perpendicular to a 0.40 T magnetic field. When the loop is rotated so that its plane is parallel to the field, a 25 V average potential difference is induced across the loop. The time (in seconds) required to make this rotation of the loop is

- (a)  $4.5 \times 10^{-3}$ .
- (b)  $1.0 \times 10^{-3}$ .
- (c)  $1.6 \times 10^{-3}$ .
- (d)  $1.2 \times 10^{-3}$ .
- (e)  $3.3 \times 10^{-3}$ .

**31-4 Lenz's Law**Question 928

31-04

A plane loop of wire consisting of a single turn of cross-sectional area  $0.20 \text{ m}^2$  is perpendicular to a magnetic field that increases uniformly in magnitude from 0.25 T to 3.25 T in a time of 2.0 s. What is the resistance of the coil if the induced current has a value of 2.0 A?

- (a) 0.15 Ohm.
- (b) 0.35 Ohm.
- (c) 0.07 Ohm.
- (d) 0.11 Ohm.
- (e) 0.70 Ohm.