

1, 6, 11, 18, 19

1) $B = 0.3 \text{ T}$, $r = 25 \text{ cm} = 0.25 \text{ m}$, $\theta = 0^\circ$

$$\begin{aligned}\Phi &= BA \cos \theta \\ &= 0.3 (\pi (.25)^2) \cos \theta \\ &= 0.059 \text{ T} \cdot \text{m}^2\end{aligned}$$

6) $d = 4 \text{ cm}$, $l = 20 \text{ m}$, $N = 250$, $I = 15 \text{ A}$
 $= .04 \text{ m}$

$$h = \frac{N}{l} *$$

① $B = \mu_0 n I$

$$\begin{aligned}&= 4\pi \times 10^{-7} \left(\frac{250}{20} \right) (15 \text{ A}) \\ &= .024 \text{ T}\end{aligned}$$

② $\Phi = BA \cos \theta = 0.024 (\pi (.04)^2) \cos \theta = 3.016 \times 10^{-5} \text{ T} \cdot \text{m}^2$

11) $B = 1.6 \text{ T}$, $A = 0.2 \text{ m}^2$, $N = 200 \text{ turns}$, $R = 20 \Omega$, $t = 0.02 \text{ s}$

① $\Phi = BA \cos \theta = 1.6 (.2) = 0.32 \text{ T} \cdot \text{m}^2$

② $\mathcal{E} = N \frac{\Delta \Phi}{\Delta t} = \frac{200 (.32)}{.02} = 3200 \text{ V}$

Emf
Volts \rightarrow

③ $V = IR$
 $\mathcal{E} = IR$

$$I = \frac{\mathcal{E}}{R} = \frac{3200}{20} = 160 \text{ A}$$