
Rotating loop in a dynamic magnetic field. If the loop in Fig.Q6.9 uniformly rotates in a low-frequency time-harmonic uniform magnetic field of flux density $B(t) = B_0 \cos \omega t$ ($B_0 > 0$), the induced emf in the loop, with $\mathcal{E}_0 > 0$, can be represented as

- (A) $e_{\text{ind}}(t) = \mathcal{E}_0 \cos \omega t$.
- (B) $e_{\text{ind}}(t) = \mathcal{E}_0 \sin 2\omega t$.
- (C) $e_{\text{ind}}(t) = -\mathcal{E}_0$.
- (D) $e_{\text{ind}}(t) = \mathcal{E}_0 \sin \omega t$.
- (E) $e_{\text{ind}}(t) = 0$.

Solution: (B)

Answer: (B)