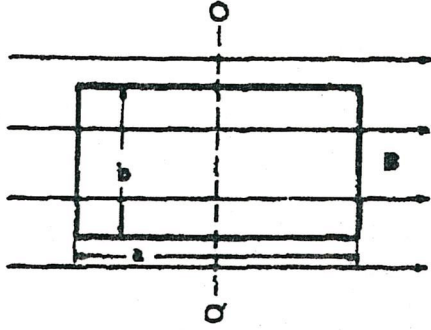


No. 42

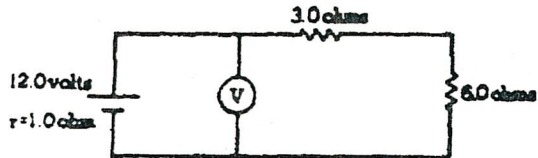


A rectangular wire loop with length a and width b is in a uniform magnetic field as shown above.

The loop rotates around the axis $O-O'$ with a constant angular velocity ω . Let the time $t = 0$ when the loop is in the plane of the paper. The induced emf is

- (A) ωabB
- (B) $2abB \cos \omega t$
- (C) $\frac{\omega abB}{2} \cos \omega t$
- (D) $\omega abB \cos \omega t$
- (E) $2\omega abB \cos \omega t$

No. 43



In the circuit above the voltmeter V draws negligible current and the internal resistance of the battery is 1.0 ohm. The reading of the voltmeter is

- (A) 10.5 V
- (B) 10.8 V
- (C) 11.6 V
- (D) 12.0 V
- (E) 13.0 V

No. 44

Two small spheres having charges of $+2Q$ and $-Q$ are located 12 centimeters apart. The potential of points lying on a line joining the charges is best represented as a function of the distance x from the positive charge by which of the following?

