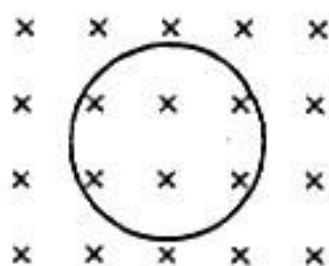


B (into page)



68. A wire loop of area A is placed in a time-varying but spatially uniform magnetic field that is perpendicular to the plane of the loop, as shown above. The induced emf in the loop is given by $\mathcal{E} = bAt^{1/2}$, where b is a constant. The time-varying magnetic field could be given by

- (A) $\frac{1}{2} bAt^{-1/2}$
(B) $\frac{1}{2} bt^{-1/2}$
(C) $\frac{1}{2} bt^{1/2}$
(D) $\frac{2}{3} bAt^{3/2}$
(E) $\frac{2}{3} bt^{3/2}$

Questions 69-70

A capacitor is constructed of two identical conducting plates parallel to each other and separated by a distance d . The capacitor is charged to a potential difference of V_0 by a battery, which is then disconnected.

69. If any edge effects are negligible, what is the magnitude of the electric field between the plates?
- (A) V_0d
(B) V_0/d
(C) d/V_0
(D) V_0/d^2
(E) V_0^2/d
70. A sheet of insulating plastic material is inserted between the plates without otherwise disturbing the system. What effect does this have on the capacitance?
- (A) It causes the capacitance to increase.
(B) It causes the capacitance to decrease.
(C) None; the capacitance does not change.
(D) Nothing can be said about the effect without knowing the dielectric constant of the plastic.
(E) Nothing can be said about the effect without knowing the thickness of the sheet.