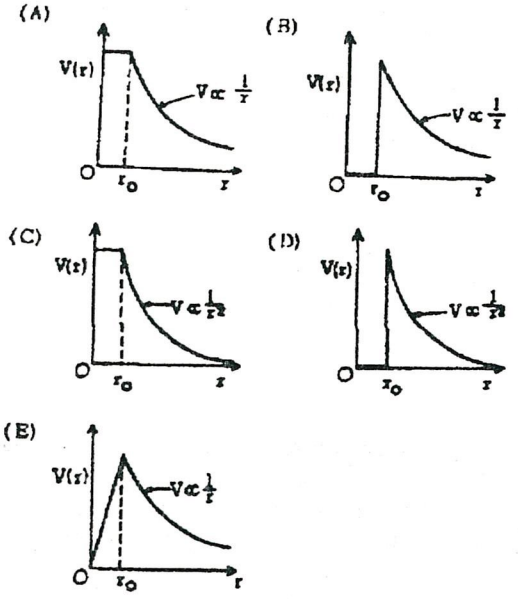
No. 49

Which graph best represents the plot of electric potential as a function of x ?

(A) A (B) B (C) C (D) D (E) E

No. 50

An insulated spherical conductor of radius r_0 carries a charge q. The electric potential due to this system varies as a function of the distance r from the center of the sphere in which of the following ways?
(The potential is taken to be zero at $r = \infty$.)

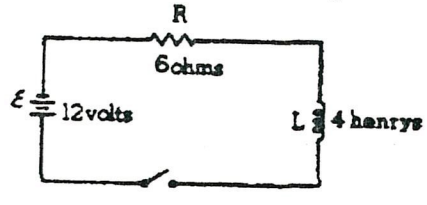


No. 51

A closed circular loop of wire of resistivity ρ is situated in a uniform magnetic field with the field perpendicular to the plane of the loop. When the field increases linearly with time, the current in the wire is I. If the radius of the loop had been one-third as great, the current in the loop would have been

(A) 9I (B) 3I (C) I (D) $\frac{I}{3}$ (E) $\frac{I}{9}$

Questions 52-54 relate to the following circuit.



No. 52

The instantaneous current immediately after the switch is closed is

(A) 0 A (B) $\frac{5}{6}$ A (C) 2 A

(D) 3 A (E) 12 A

No. 53

The instantaneous rate of change of current immediately after the switch is closed is

(A) 0 A/s (B) $\frac{5}{6}$ A/s (C) 2 A/s

(D) 3 A/s (E) 12 A/s

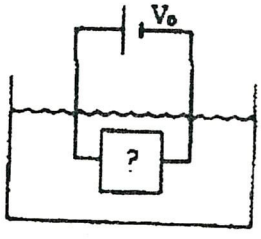
No. 54

The final current after the switch has been closed a long time is

(A) 0 A (B) $\frac{5}{6}$ A (C) 2 A

(D) 3 A (E) 12 A

No. 55



Suppose you are given a constant voltage source V_0 and three resistors R_1, R_2, and R_3 with $R_1 > R_2 > R_3$. If you wish to heat water in a pail, which of the following combinations of resistors will give the most rapid heating?