Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) Two conductors are joined by a long copper wire. Thus
    A) the potential on the wire is the average of the potential of each conductor.
    B) each carries the same free charge.
    C) each conductor must be at the same potential.
    D) no free charge can be present on either conductor.
    E) the electric field at the surface of each conductor is the same.

Figure 25.3
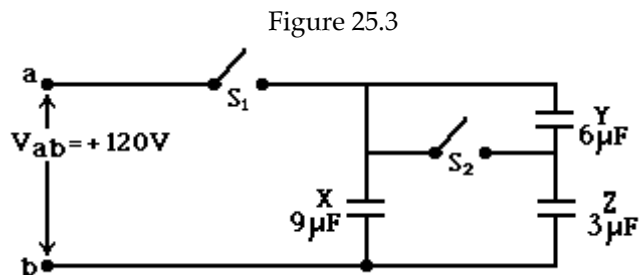
The network shown is assembled with uncharged capacitors X, Y, and Z, and open switches, S_1 and S_2. A potential difference V_{ab} = +120 V is applied between points a and b. After the network is assembled, switch S1 is closed, but switch S_2 is kept open.

2) In Figure 25.3, the energy stored in capacitor X, in mJ, is closest to:
    A) 7   B) 22   C) 12   D) 37   E) 65

3) In Figure 25.3, the charge on capacitor Y, in µC, is closest to:
    A) 120   B) 360   C) 180   D) 480   E) 240

Figure 24.4
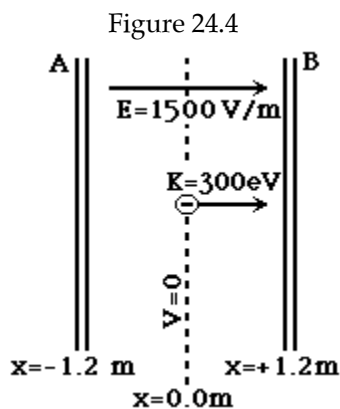
Two large conducting parallel plates A and B are separated by 2.4 m. A uniform field of 1500 V/m, in the positive x–direction, is produced by charges on the plates. The center plane at x = 0.0 m is an equipotential surface on which V = 0. An electron is projected from x= 0.0 m, with an initial kinetic energy K = 300 eV, in the positive x–direction, as shown.

4) In Figure 24.4, the electric potential difference V_A − V_B is closest to:
    A) +3600 V   B) −1800 V   C) −3600 V   D) +1800 V   E) +1200 V

5) In Figure 24.4, at a certain point the electron stops momentarily and it reverses its motion. The electric potential at that point is closest to:
    A) +600 V   B) −900 V   C) −600 V   D) +300 V   E) −300 V

6) In Figure 24.4, the kinetic energy of the electron as it reaches plate A is closest to:
   A) –2.9 x 10^{-16} J
   B) +2.4 x 10^{-16} J
   C) +3.4 x 10^{-16} J
   D) –2.4 x 10^{-16} J
   E) –3.4 x 10^{-16} J

7) An electron is released from rest at a distance of 9 cm from a proton. How fast will the electron be moving when it is 3 cm from the proton?
   A) 1.06 x 10^3 m/s
   B) 130 m/s
   C) 106 m/s
   D) 75 m/s
   E) 4.64 x 10^5 m/s

1) C
2) E
3) E
4) A
5) E
6) C
7) C