PHYS 2326 University Physics II – Class number -49903

9:00 AM – 12:15 PM

HOMEWORK- SET #1
CHAPTERS: 23, 24, 25, 26

(DUE JULY 15, 2013)

Ch. 23.==========

1. A charge (uniform linear density = 9.0 nC/m) is distributed along the x axis from x = 0 to x = 3.0 m. Determine the magnitude of the electric field at a point on the x axis with x = 4.0 m.

   a. 81 N/C
   b. 74 N/C
   c. 61 N/C
   d. 88 N/C
   e. 20 N/C

2. A uniformly charged rod (length = 2.0 m, charge per unit length = 3.0 nC/m) is bent to form a semicircle. What is the magnitude of the electric field at the center of the circle?

   a. 64 N/C
   b. 133 N/C
   c. 48 N/C
   d. 85 N/C
   e. 34 N/C

Ch. 24.==========

3. A long nonconducting cylinder (radius = 6.0 mm) has a nonuniform volume charge density given by αr^2, where α = 6.2 mC/m^5 and r is the distance from the axis of the cylinder. What is the magnitude of the electric field at a point 2.0 mm from the axis?

   a. 1.4 N/C
   b. 1.6 N/C
   c. 1.8 N/C
   d. 2.0 N/C
   e. 5.4 N/C

4. A solid nonconducting sphere (radius = 12 cm) has a charge of uniform density (30 nC/m^3) distributed throughout its volume. Determine the magnitude of the electric field 15 cm from the center of the sphere.

   a. 22 N/C
   b. 49 N/C
   c. 31 N/C
   d. 87 N/C
   e. 26 N/C

Ch. 25==========

5. A particle (q = +5.0 μC) is released from rest when it is 2.0 m from a charged particle which is held at rest. After the positively charged particle has moved 1.0 m toward the fixed particle, it has a kinetic energy of 50 mJ. What is the charge on the fixed particle?

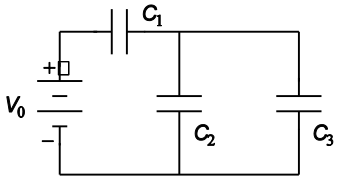
   a. –2.2 μC
   b. +6.7 μC
   c. –2.7 μC
   d. +8.0 μC
   e. –1.1 μC

6. Two large parallel conducting plates are 8.0 cm apart and carry equal but opposite charges on their facing surfaces. The magnitude of the surface charge density on either of the facing surfaces is 2.0 nC/m^2. Determine the magnitude of the electric potential difference between the plates.

a. 36 V
b. 27 V
c. 18 V
d. 45 V
e. 16 V

Ch. 26==========

7. Determine the energy stored in C_2 when C_1 = 15 μF, C_2 = 10 μF, C_3 = 20 μF, and V_0 = 18 V.



a. 0.72 mJ
b. 0.32 mJ
c. 0.50 mJ
d. 0.18 mJ
e. 1.60 mJ

8. A 30-μF capacitor is charged to an unknown potential V_0 and then connected across an initially uncharged 10-μF capacitor. If the final potential difference across the 10-μF capacitor is 20 V, determine V_0.

a. 13 V
b. 27 V
c. 20 V
d. 29 V
e. 60 V