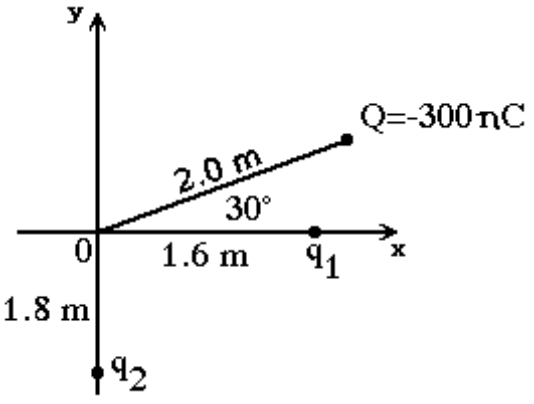
Exam PHYSICS 2B SPRING 2010 QUIZ 1

Name__Professor S.K. Sinha_____

k = 9.0 x 10^9 Nm2/C2 electron charge = 1.6 x 10^19 C electron mass = 9.11 x 10^-31 1 μC = 10^-6 C 1 nC = 10^-9 C
MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Figure 22.1



A point charge Q = -300 nC and two unknown point charges, q_1 and q_2, are placed as shown. The electric field at the origin O, due to charges Q, q_1 and q_2, is equal to zero.

1) In Figure 22.1, the charge q_1, in nC, is closest to:

A) +120 B) -160 C) -120 D) +160 E) +240

2) In Figure 22.1, the charge q_2, in nC, is closest to:

A) -160 B) +160 C) -120 D) +120 E) +240

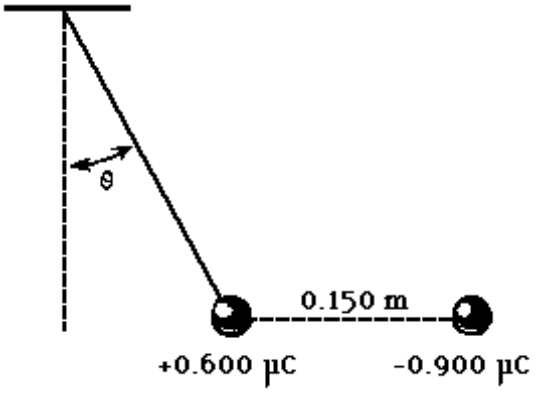
Situation 22.1

Two identical small conducting spheres are separated by 0.60m. The spheres carry different amounts of charge and each sphere experiences an attractive electric force of 10.8N. The total charge on the two spheres is -24 μC.

3) In Situation 22.1, the positive charge on one of the spheres, in μC, is closest to:

A) 30 B) 12 C) 36 D) 18 E) 24

Figure 22.8



4) In Figure 22.8, a small spherical insulator of mass 12 x 10^{-2} kg and charge +0.600 μC is hung by a thin wire of negligible mass. A charge of -0.900 μC is held 0.150 m away from the sphere and directly to the right of it, so the wire makes an angle theta with the vertical (see drawing). What is the angle theta?

A) 11.7° B) 10.4° C) 21.2° D) 15.6° E) 18.0°