PHYS 202 Test #1 Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***Do NOT cheat!!!*** Do NOT copy from someone sitting next to you … they have a different test.

Before starting the test, verify that your test has *TEN questions* (make sure there isn’t a page missing or misprinted).

Each of the ***TEN*** multiple-choice questions is worth 2 points (unless you select “k”). Use your “Blue Book” to solve the problems. Circle ***ONE*** choice for each multiple-choice question.

1. An electrically charged particle is placed in an external electric field. The external field is \_\_\_\_\_\_\_ N/C in the \_\_\_\_\_\_\_\_\_-direction. The particle is observed to accelerate \_\_\_\_\_\_\_\_\_\_\_\_. The particle is known to have a mass of \_\_\_\_\_\_\_\_\_\_ kg. Based upon this information, \_\_\_\_\_\_\_\_\_

Questions 2 and 3 use the following situation:

Three identical particles are located at the following positions along the x-axis: x1 = \_\_\_\_\_\_ mm, x2 = \_\_\_\_\_ mm, and x3 = \_\_\_\_\_\_ mm. Each of the particles has an electric charge of \_\_\_\_\_e.

1. What net electric \_\_\_\_\_\_\_
2. What is the magnitude of the net electric \_\_\_\_\_\_\_\_

Questions 4 and 5 use the following situation:

An infinitely large sheet of charge lies in the yz-plane such that x = 0 everywhere on the sheet. The sheet of charge has an area charge density of \_\_\_\_\_\_\_ C/m2.

1. Location “A” is at x = \_\_\_\_\_ cm on the x-axis. Location “B” is at x = \_\_\_\_\_\_ cm of the x-axis.
2. An electric dipole consisting of an electron and a proton is place on the x-axis. The electron and proton are separated by a distance of \_\_\_\_\_ nm.

Questions 6, 7 and 8 use the following situation:

A hollow conducting sphere has an inner radius of \_\_\_\_\_ cm and an outer radius of \_\_\_\_\_ cm. The sphere has a net electric charge of \_\_\_\_\_ nC. The sphere is centered at the origin. At the center of the sphere is an electric charge of \_\_\_\_\_\_\_ nC.

1. What is the \_\_\_\_\_\_\_\_\_
2. Taking electric potential to be zero infinitely far from the sphere, \_\_\_\_\_\_\_\_\_
3. What is the magnitude of the electric \_\_\_\_\_\_\_
4. Two point charges are located \_\_\_\_\_\_ mm apart. One of the point charges has an electric charge of \_\_\_\_\_\_\_ C and feels a force of \_\_\_\_\_\_ N \_\_\_\_\_\_\_\_\_\_
5. Two infinitely long lines of charge are parallel to the y-axis. Line #1 crosses the x-axis at x = \_\_\_\_\_\_ cm and has a linear charge density of \_\_\_\_\_\_\_ C/m. Line #2 crosses the x-axis at x = \_\_\_\_\_\_ cm. The net electric field at the origin is \_\_\_\_\_\_ N/C in the \_\_\_\_\_\_ x-direction.