

Physics 112
Quiz #6
September 13, 1999

Name: _____

$$e = 1.60 \times 10^{-19} \text{ C}$$
$$k = 9 \times 10^9 \text{ N m}^2/\text{C}^2$$

1. Which of these statements about the electric field due to an isolated point charge is not true?
 - A. The magnitude of the electric field is inversely proportional to the square of the distance from the charge.
 - B. The electric field due to the charge exists at every point in space (although its magnitude and direction are not uniform).
 - C. The direction of the field due to this isolated charge — i.e., toward or away from the charge — depends on the sign of this charge.
 - D. Any charged particle — of any sign or magnitude — placed anywhere in the electric field would experience some electrical force.
 - E. At a certain distance from the charge the electric field completely disappears; a test charge placed beyond this point will not experience an electrical force.

2. An isolated charge is located at (0 m, 0 m). At (+8 m, 0 m), $|E| = 16 \text{ N/C}$. At (0 m, -2 m), $|E| = ?$
 - A. 1 N/C
 - B. 4 N/C
 - C. 16 N/C
 - D. 64 N/C
 - E. 256 N/C

3. Two parallel metal plates are charged by connecting them to a battery; one plate is charged positive, the other negative. This creates a uniform electric field between the plates. An electron is released from rest somewhere between the plates, and allowed to move. As it moves, the electron's:
 - A. kinetic energy increases and potential energy increases.
 - B. kinetic energy increases and potential energy decreases.
 - C. kinetic energy increases and potential energy remains constant.
 - D. kinetic energy decreases and potential energy increases.
 - E. kinetic energy decreases and potential energy decreases.
 - F. kinetic energy decreases and potential energy remains constant.

4. At a particular point in otherwise empty space, a 6-C charge is placed and it experiences an electrical force of 18 N. If this charge is removed, and instead a 2-C charge is placed at that point, what will be the magnitude of the **force** that *it* will experience?
 - A. 2 N
 - B. 3 N
 - C. 4 N
 - D. 6 N
 - E. 8 N
 - F. 9 N
 - G. 12 N
 - H. 16 N
 - I. 24 N
 - J. 36 N