

Physics 112
Quiz #8
September 24, 1999

Name: _____

1. When a charged particle is moving along an equipotential line at constant speed, its:
 - 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 remains constant and potential energy increases.
 - E. kinetic energy remains constant and potential energy decreases.
 - F. kinetic energy remains constant and potential energy remains constant.
 - G. kinetic energy decreases and potential energy increases.
 - H. kinetic energy decreases and potential energy decreases.
 - I. kinetic energy decreases and potential energy remains constant.

2. A 5-C charge is fixed at the origin. A 2- μC charge is initially held at position "A," where it has potential energy PE_A . Then it is released, and it drifts out to position "B," where you grab it, and push it back to position "A," holding it motionless again. The final value of its potential energy is:
 - A. 0 J
 - B. less than PE_A , but not zero.
 - C. PE_A .
 - D. greater than PE_A .
 - E. need to know how much work was done in pushing, to answer the question.

3. Two parallel metal plates are connected to a battery. A positively charged particle is released from rest on the positive plate and it drifts toward the negative plate, speeding up as it goes. As it moves, the magnitude of the force acting on it will:
 - A. decrease as it moves toward the midpoint, then increase as it approaches the negative plate.
 - B. increase as it moves toward the midpoint, then decrease as it approaches the negative plate.
 - C. steadily decrease as it moves away from the positive plate.
 - D. steadily increase as it approaches the negative plate.
 - E. neither increase nor decrease as it moves from one plate to the other.
 - F. decrease as it approaches the midpoint, remain constant for a while, then increase again as it approaches the negative plate.

4. A positive charge q is shot into a region in which there is a uniform electric field. First, it is shot along path #1; then it is shot in again along path #2. **CIRCLE TWO CORRECT STATEMENTS (half credit for each).**
 - A. It gains kinetic energy while traveling inside this region.
 - B. It loses kinetic energy while traveling inside this region.
 - C. Its kinetic energy is constant while traveling inside this region.
 - D. The kinetic energy change from [A to B] is *greater than* the kinetic energy change from [A to C].
 - E. The kinetic energy change from [A to B] is *less than* the kinetic energy change from [A to C].
 - F. The kinetic energy change from [A to B] is *the same as* the kinetic energy change from [A to C].

