Physics 102 (S15)   **Q3A**

Name: _____ **Section:** _____ **Score:** _____/**20**

1. A 12 μC positive point charge **A** is fixed in the space.
(1) You bring another positive charge **B** of 8 μC from infinity to a point P which is 0.3 m away from charge **A**. What is the work you have to do? (Assume there are only these two charges.) [5]

(2) Now, charge **B** is gently released from P and moves to a point 1.2 m away from the fixed **A**. Its speed is 5.2 m/s. What is the mass of the charged particle **B**? (Assume there are only these two charges.) [5]

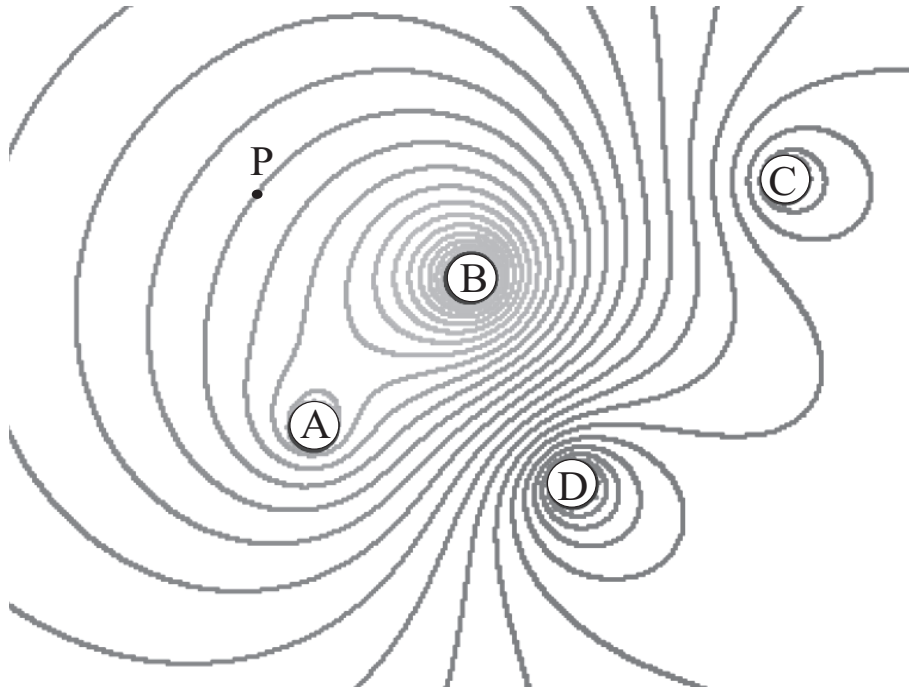**2**. There are four charges A - D on the plane. The equipotential curves are described in the following figure.

Figure 1:

(1) Suppose A is negatively charged. State the signs of all the remaining charges B - D.

(2) Which charge has the largest magnitude?

(3) Indicate the direction of the electric field at P. You must explain your choice succinctly.