Physics 102 (S15) **Q3D**

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

1. A +18 μC point charge **A** is fixed in the space.
(1) A positively charged particle **B** with 6 μC starts to move toward charge **A** with an intial speed 98 m/s and could come as close as 1 mm from charge **A**. The mass of particle **B** is 150 g. What is the initial distance between these two charges? [5]

(2) When charge **B** comes to a halt 1mm from charge **A**, you wish to push charge **B** further to a point P that is 0.5 mm away from charge **A**. What work should you do? [5]

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

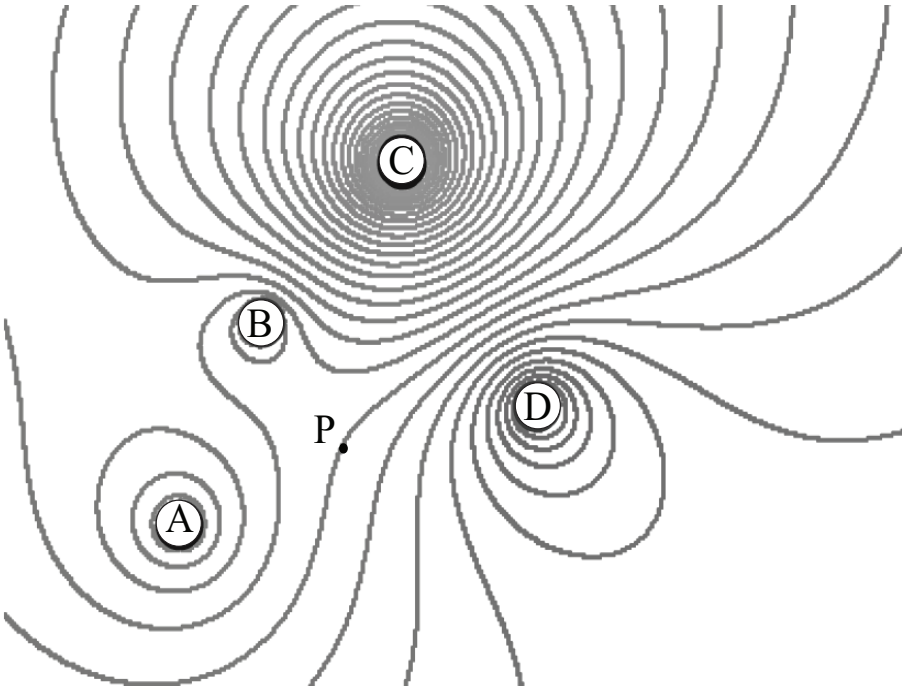

Figure 1:

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

(2) Which charge has the largest magnitude? You must explain your answer succinctly.

(3) Indicate the direction of the electric field at P.