Coulomb's law/Electric Field/ Capacitance Test Review

1. The potential difference between two plates is 50V. Plate A is positive and B is negative. Which plate is at the higher potential?

b. How much work must be done to carry a +6C from B to A?

c. What direction does the field run?

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d. If the distance of separation is 10mm, What is the value of E?

2. How much electric potential energy does a proton lose as it falls through a potential drop of 5kV?

3. How much work is required to carry an electron from the positive terminal of a 12V battery to the negative one?

4.An e- starts from rest and falls through a potential rise of 80V. What is its final speed

5. The following charges are placed on the x axis.  $+2\mu$ C at x=20cm,  $-3\mu$ C at x=30cm,  $-4\mu$ C at x=40cm. Find the voltage on the axis at x=0

 $6.A \ 1.2 \mu F$  capacitor is charged to 3 k V. What is the energy stored in the capacitor?

7. What is the charge on a 300pF capacitor when it is charged to 1kV?

<sup>8.</sup> A potential difference of 24kV maintains a downward directed electric field between two horizontal plates separated by 1.8cm. Find the charge on an oil drop of mass 2.2 E-13kg that remains stationary between the plates.

<sup>9.</sup> An e- guns shoots e- at a metal plate 4mm away. The plate is 5V lower in potential than the gun. How fast must e- be moving as they leave the gun if they are to reach the plate?

10. How many e- are in 2 C of charge. What mass of e- would be present?

\_\_\_\_\_e-

\_\_\_\_\_ kg

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11. Find the force between two e- 1 E -10m apart.

12. Find the electric field value at a distance of 30cm from q1=5E-9C

b. the force on a charge q2=4 E - 10C that is 30cm from q1

c. the force on a charge q3 = -4 E - 10 C placed 30cm from q1(q2 not present)