Name: Electricity and Magnetism Assignment

1. Find the electric force between a 32µC and a 45µC when they are 41.0cm apart? Please include the direction of the force. (4 marks)
2. What is the distance between 17µC and -21µC if the force between them is 314000N? (3 marks)
3. An electric force of 3.2 x 102N exist between a positive charge of 8.3 x 10-5C and a positive charge of 4.0 x 10-5C. What is the distance between the charges? (3 marks)
4. What is the force on an electron as it travels West through an electric field of 175N/C that is directed downward? (2marks)
5. Please draw the electric field line for the following diagram. (1 mark each)
6. b.

- - -

1. Charges q1 =10.0µC, q2 =-2.0µC, q3 =5.0µC are arranged in the following situation. What is the net force on q2? Include the direction. (7 marks)

q1 q2 q3

45cmm

65cmm

1. A wire that is 0.75m long and carrying a current of 11.0A to the right experiences a force of 0.56N upward. What is the magnetic field strength? (Please include direction) (3 marks)
2. A thin copper rod 2.0m long has a mass of 0.075kg and is in a magnetic field of 0.20T. What is the minimum current in the rod needed in order for the magnetic force to cancel the weight of the rod? (3 marks) **Hint:** Draw a free body diagram.
3. An electron moving at 6.2 x 104m/s to the right enters a region where a magnetic field of 0.34T is present and directed vertically upward. What force acts on the electron? (3 marks)
4. a) What is the voltage drop between two parallel plates that are 2.0mm apart and can generate an Electric Field of 560N/C? (Hint: V=ED) (2 marks)

b) Draw the electric field lines in between these plates keeping in mind that the bottom plate is positive. (1 mark)

c) What force does a proton feel in this electric field and direction? (2 marks)

1. What is the net force on q3 given the following configuration and q1= 8.5µC, q2= -6.2µC, and q3= -7.5µC. (5 marks)

q3

13.0cm

5.0cm

q2

q1

12.0cm