Worksheet 6.06 Uniform Electric Field

1) Two parallel plates are connected to a 12.0 V battery. If the plates are 9.00×10^{-2} m apart, what is the electric field strength between them?   (1.33×10^2 N/C)

2) The electric field between two parallel plates is 5.0×10^3 N/C. If the potential difference between the plates is 2.0×10^2 V, how far apart are the plates?   (4.0×10^{-2} m)

3) Two parallel plates are 7.3 cm apart. If the electric field strength between the plates is 2.0×10^3 V/m, what is the potential difference between the plates?

4) An alpha particle gains 1.5×10^{-15} J of kinetic energy. Through what potential difference was it accelerated?
                                    (4.69×10^3 V)

5) A proton is accelerated by a potential difference of 7.20×10^2 V. What is the change in its kinetic energy?
                                    (1.15×10^{-16} J)

6) What maximum speed will an alpha particle reach if it moves from rest through a potential difference of -7.50×10^3 V?   (8.50×10^5 m/s)

7) A proton is placed in an electric field between two parallel plates. If the plates are 6.0 cm apart and have a potential difference of 75 V, how much work is done against the electric field when the proton is moved 3.0 cm parallel to the plates?   (0J)

8) In question 7, how much work is done against the electric field in moving the proton 3.0 cm perpendicular to the plates?   (6.0×10^{-18} J)