Practice – 18.4 Electric Field

1. What is the magnitude and direction of an electric field that exerts a 2.00×10^{-5} N upward force on a –1.75 μC charge?

2. What is the magnitude and direction of the force exerted on a 3.50 μC charge by a 250 N/C electric field that points due east?

3. Calculate the magnitude of the electric field 2.00 m from a point charge of 5.00 mC (such as found on the terminal of a Van de Graaff).

4. What magnitude point charge creates a 10,000 N/C electric field at a distance of 0.250 m?

5. Calculate the initial (from rest) acceleration of a proton in a 5.00×10^{6} N/C electric field. $m_p = 1.67 \times 10^{-27}$ kg

Solutions:

1. 11.4 N/C downward
2. 8.75×10^{-4} N east
3. 1.12×10^{7} N/C
4. 6.95×10^{-8} C
5. 4.79×10^{14} m/s^2