

Assignment Sheet
Static Electricity

Objectives

You will be able to:

Static Electricity

- A. Define conductor, insulator, free electron, electrical ground, induced charge, polarization
Give the sign of the charge on the electron and proton.
Explain polarization in insulators
Describe qualitatively how charges within a metal object redistribute when a charged object is brought nearby. Explain how an object can be charged by conduction and by induction.
Describe the charging by induction and conduction with pith balls, electroscopes, and metal spheres
- B. Coulomb's law, electric field lines, electric field strength.
Use Coulomb's law to find the force on a charge due to nearby point charges.
- C. Find the electric field at a point due to several specified point charges.
Sketch the electric field lines in the vicinity of simple charged objects (point charge and parallel plate capacitor)
Use the relationship $F=qE$ in simple situations.
- D. Define electrical potential
Calculate electrical potential in simple situations.
Calculate work done moving a particle across an electric potential
Sketch equipotential lines ("equipots") from field lines or field lines from equipots

Reading

- A. Effects of Electrical Charge, p. 233–236
Conductors and Insulators, p. 236–238
- B. The Electrostatic Force: Coulomb's Law, p. 238–241
- C. The Electric Field, p. 241–243
- D. Electric Potential, p. 243–246

Laboratory

Various demos

Questions:

p. 249: #6, 12, 18, 20, 23, 26, 28

Exercises:

p. 250-251: #3, 4, 6, 12, 15

Synthesis Problems:

p. 251: #1, 4 (add 4c: Would the electric potential be zero at any of the labeled points? Explain.)