

## Chapter 15

### Terms

Be able to define or discuss the following terms and ideas, with their SI units if appropriate.

1. net charge (or total charge)
2. conductor
3. insulator
4. static equilibrium
5. polarization of a conductor
6. polarization of a neutral atom
7. induced atomic dipole
8. polarizability
9. surface charge
10. charging by induction
11. conservation of charge

### Equations

Understand the meaning and know the SI units of all symbols in these equations; know how to perform each mathematical operation, such as trig functions; know how to solve for any unknown quantity; understand how changing one quantity affects another quantity (if all other quantities remain constant); be able to apply one or more equations to solve a problem.

- induced dipole moment of a neutral atom

$$\vec{p} = \alpha \vec{E}$$

- Force by a charged particle on a neutral atom

$$|\vec{F}| = \left( \frac{1}{4\pi\epsilon_0} \right)^2 \frac{2\alpha q^2}{r^5}$$

### Skills

1. Describe how a neutral conductor behaves in the presence of an applied electric field.
2. Describe how a neutral insulator behaves in the presence of an applied electric field.
3. Describe what causes a charged object to always attract a neutral object regardless of the charge of the charged object.
4. Describe how an object becomes charged.