**Units: Formulae**

**point charges only**

Electrostatic Force: Newtons: N =

Vectors

Electric Field :

Electric Potential Energy: *PE* Joules: J = N m = V C *PE = qV = -qEx*

Scalars

Electrostatic potential: *V* Volts: V = *V = -Ex*

Scalars

Change in Potential Energy = *PE*

Potential Difference *= V* (units areV)

Charge: *Q* Coulomb: C

Capacitance: *C* Farad: F

*CQV C = o**A/d E = ½ QV = ½ C(V)2 = ½ Q2/C*

*ke* = 8.99 x 109 Nm2/C2 *o*= = 8.85 x 10-12 C2/Nm2 Electron charge:qe = – 1.6 x 10-19 C

= micro = 10-6  n = nano = 10-9 p = pico = 10-12