

PHYS 1260 | Exam 1 Formulae

Chapter 17: The Electric Field

Coulomb's law (electric force), $F_e = k \frac{|q_1||q_2|}{r^2}$

Coulomb's constant, $k = 8.99\text{E}9 \text{ N}\cdot\text{m}^2/\text{C}^2$

Fundamental unit of charge, $e = 1.60\text{E}-19 \text{ C}$

Chapter 18: Electric Potential

Electrical potential energy, $U_E = q\Delta V$

Electronvolt, $1 \text{ eV} = 1.60\text{E}-19 \text{ J}$

Conservation of mechanical energy, $\text{KE}_i + \text{PE}_i = \text{KE}_f + \text{PE}_f$

Electric potential, $V = k \sum_i \frac{q_i}{r_i}$

Chapter 19: Electric Current

Current, $I \equiv \frac{\Delta Q}{\Delta t}$

Ohm's law, $R \equiv \frac{\Delta V}{I}$

Electrical resistance, $R = \rho \frac{\ell}{A}$

Potential difference of a uniform electric field, $\Delta V = \mathbf{E} \mathbf{d}$