

Class 12 CBSE Physics – Complete Formula Sheet (2026)

Formulas Only | Quick Revision PDF

1. Electrostatics

- Coulomb's Law: $F = (1/4\pi\epsilon_0) \cdot (q_1q_2 / r^2)$
- Electric Field: $E = F/q = (1/4\pi\epsilon_0)(Q / r^2)$
- Electric Flux: $\Phi = E \cdot A$
- Gauss's Law: $\Phi = Q/\epsilon_0$
- Electric Potential: $V = W/q$
- Potential due to point charge: $V = (1/4\pi\epsilon_0)(Q / r)$
- Capacitance: $C = Q/V$
- Parallel Plate Capacitor: $C = \epsilon_0 A/d$
- Energy of Capacitor: $U = \frac{1}{2}CV^2$

2. Current Electricity

- Current: $I = Q/t$
- Ohm's Law: $V = IR$
- Resistance: $R = \rho l/A$
- Electrical Power: $P = VI = I^2R = V^2/R$
- Drift Velocity: $v_d = I/(nqA)$
- Kirchhoff's Current Law: $\sum I = 0$
- Kirchhoff's Voltage Law: $\sum V = 0$

3. Magnetic Effects of Current & Magnetism

- Biot-Savart Law: $dB = (\mu_0/4\pi)(Idl \times r/r^2)$
- Magnetic Force: $F = q(v \times B)$
- Force on Current Carrying Conductor: $F = BIL \sin\theta$
- Magnetic Moment: $\mu = IA$
- Torque: $\tau = \mu B \sin\theta$
- Cyclotron Radius: $r = mv/(qB)$

4. Electromagnetic Induction & AC

- Magnetic Flux: $\Phi = BA \cos\theta$
- Faraday's Law: $\epsilon = -d\Phi/dt$
- Self Inductance: $\epsilon = -L(dI/dt)$
- Energy in Inductor: $U = \frac{1}{2}LI^2$
- AC Voltage: $V = V_m \sin\omega t$
- RMS Voltage: $V_{rms} = V_m/\sqrt{2}$
- RMS Current: $I_{rms} = I_m/\sqrt{2}$

5. Electromagnetic Waves

- Speed of EM Wave: $c = 1/\sqrt{\mu_0\epsilon_0}$

- Relation: $c = f\lambda$
- Energy Density: $u = \epsilon_0 E^2$

6. Optics

- Mirror Formula: $1/f = 1/v + 1/u$
- Magnification (Mirror): $m = -v/u$
- Lens Formula: $1/f = 1/v - 1/u$
- Magnification (Lens): $m = v/u$
- Power of Lens: $P = 1/f$ (diopetre)
- Snell's Law: $n_1 \sin\theta_1 = n_2 \sin\theta_2$
- Critical Angle: $\sin C = 1/n$
- Young's Fringe Width: $\beta = \lambda D/d$

7. Dual Nature of Radiation & Matter

- Photon Energy: $E = h\nu$
- de Broglie Wavelength: $\lambda = h/p$
- Photoelectric Equation: $h\nu = \phi + K_{\max}$
- Stopping Potential: $eV_{\max} = K_{\max}$

8. Atoms

- Bohr Radius: $r_n = n^2 a_0$
- Energy of Electron: $E_n = -13.6/n^2$ eV
- Rydberg Formula: $1/\lambda = R(1/n_1^2 - 1/n_2^2)$

9. Nuclei

- Radius of Nucleus: $R = R_0 A^{1/3}$
- Mass–Energy Relation: $E = mc^2$
- Radioactive Decay Law: $N = N_0 e^{-\lambda t}$
- Half-life: $T_{1/2} = 0.693/\lambda$
- Binding Energy: $BE = \Delta mc^2$

10. Semiconductor Electronics

- Drift Current Density: $J = nqv_d$
- Diode Equation (Ideal): $I \approx I_0 (e^{(V/\eta V_T)} - 1)$
- Transistor Gain: $\beta = I_C/I_B$
- Logic Gates: AND, OR, NOT (Boolean Laws)