

**CBSE · CLASS 12**

Physics

Senior secondary calculus-based physics curriculum covering electrostatics, current electricity, magnetic effects, electromagnetic induction, alternating currents, optics, dual nature of radiation, atoms, nuclei, and semiconductor electronics.

Board: Central Board of Secondary Education**Theory:** 70 Marks**Internal/Practical:** 30 Marks (Practical)**Exam Duration:** 3 Hours

UNIT-WISE SYLLABUS & MARKS BREAKDOWN

UNIT	CHAPTERS & PRESCRIBED TOPICS	MARKS
Unit I	Electrostatics Electric Charges and Fields (Coulomb's law, electric field, dipole, Gauss's theorem and applications); Electrostatic Potential and Capacitance (Potential due to point charge, equipotential surfaces, capacitance of parallel plate capacitor, dielectrics, energy stored)	16
Unit II	Current Electricity Electric current, drift velocity, mobility, Ohm's law, V-I characteristics, electrical resistance, resistivity, temperature dependence, Kirchhoff's laws, Wheatstone bridge	16
Unit III & IV	Magnetic Effects of Current & EMI/AC Biot-Savart Law, Ampere's Law, force on moving charge in magnetic field, force between parallel currents, torque on current loop, moving coil galvanometer; Faraday's laws of induction, Lenz's law, self and mutual induction; Alternating currents, peak and RMS value, LCR series circuit, resonance, power in AC circuit, wattless current, AC generator and transformer	17
Unit V & VI	Electromagnetic Waves & Optics Electromagnetic spectrum (characteristics and uses); Ray Optics and Optical Instruments (Refraction, TIR, lens maker's formula, prisms, astronomical telescope, compound microscope); Wave Optics (Huygens' principle, interference, Young's double slit experiment, diffraction at single slit)	18
Unit VII & VIII	Dual Nature of Radiation & Atoms/Nuclei Photoelectric effect, Hertz and Lenard's observations, Einstein's photoelectric equation, de Broglie hypothesis; Alpha-particle scattering, Rutherford & Bohr models, hydrogen spectrum; Composition of nucleus, mass defect, binding energy per nucleon, nuclear fission and fusion	12
Unit IX	Electronic Devices Energy bands in conductors, semiconductors and insulators; Intrinsic and extrinsic semiconductors, p-n junction diode: I-V characteristics in forward and reverse bias, application as a rectifier (half-wave and full-wave)	07

INTERNAL / PRACTICAL ASSESSMENT SCHEME (30 MARKS (PRACTICAL))

EVALUATION COMPONENT	MARKS WEIGHTAGE
Two Experiments One from each section (Section A and Section B)	14 Marks
Practical Record & Investigatory Project Laboratory journal and approved investigatory project report	08 Marks
Viva on Experiments & Project External examiner viva voce	08 Marks

RECOMMENDED REFERENCE LITERATURE

Prescribed Textbooks: NCERT Physics Class 12 (Parts I & II), HC Verma Concepts of Physics, SL Arora, Excellence Derivation Compendium

The Excellence Tuition Edge

Every unit in this curriculum is taught with structured conceptual lectures, followed by weekly speed-testing, detailed mistake analysis, and dedicated 1:1 doubt-clearing sessions to build board exam confidence.

Excellence Tuition Centres: Sarsuna (Opp. High School) · Joka · Chatterjee Para (Behala)

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