

BIHAR BOARD PHYSICS SYLLABUS WITH MARKS WEIGHTAGE

Unit-wise Distribution of Marks

Unit Name	Marks Weightage
Unit 1: Electrostatics	08
Unit 2: Current Electricity	07
Unit 3: Magnetic effect of current and Magnetism	08
Unit 4: Electromagnetic Induction and Alternating Current	08
Unit 5: Electromotive Waves	03
Unit 6: Optics	14
Unit 7: Dual Nature of Matter	04
Unit 8: Atoms and Nuclei	06
Unit 9: Electronic Devices	07
Unit 10: Communication Systems	07
Total	70

Detailed Syllabus for Physics Class 12th

Unit-1

Electrostatics

Electric Charges: Law of Conservation of charge, Coulomb's Law (i) force between two point charges (ii) forces between multiple charges, Superposition Principle and Charge Distribution.

Electric field: (i) Electric field due to a point charge, (ii) electric field due to a dipole, (iii) torque on a dipole in uniform electric field, (iv) Electric Field Lines

Electric flux: Gauss's theorem and its applications

Electric field (i) due to an infinitely long straight wire (ii) uniformly charged infinite plane sheet and (iii) uniformly charged thin spherical shell (field inside and outside).

Electric potential: Potential difference, System of Charges and Dipole, Equipotential surfaces

Conductors and Insulators: Charges Inside a Conductor, Polarisation, Capacitors and Capacitance, Series and Parallel combination of Capacitor, Parallel plate Capacitor, Energy stored in a Capacitor.

Van de Graaff generator: Working Principle, concept and Construction of Generator.



Download eSaral app for
IIT-JEE, NEET, Foundation Preparation



Unit-2

Current Electricity

- Ohm's law
- Resistance: Electrical resistance, V-I characteristics (linear and nonlinear), electrical energy, electrical resistivity, power and conductivity, temperature dependence of resistance.
- Carbon resistors: colour code, combinations of resistors.
- Cell: Internal resistance, potential difference, combination of cells.
- Kirchhoff's laws its applications.
- Wheatstone Bridge: Principle and its application
- Metre Bridge: Principle and its application.
- Potentiometer: Principle and its application

Unit-3

Magnetic effect of current and Magnetism

- Oersted's experiment.
- Biot – Savart law and its application.
- Ampere's law and its applications.
- Straight and toroidal solenoid, Cyclotron.
- Moving Coil Galvanometer, Ammeter, Voltmeter
- Torque on a magnetic dipole
- Earth's magnetic field and magnetic elements.
- Electromagnets and factors affecting their strengths.
- Permanent magnets.

Unit-4

Electromagnetic Induction and Alternating Current

- Electromagnetic induction; Faraday's law, induced emf and current; Lenz's Law, Eddy currents.
- Self and mutual induction, Need for replacement current.
- Alternating currents, peak and rms value of alternating current/voltage; reactance and impedance; LC oscillations (qualitative treatment only), LCR series circuit, resonance; power in AC circuits, wattless current.
- AC generator and transformer.

Unit-5

Electromagnetic Waves

- Electromagnetic waves: characteristics and nature of waves.
- Electromagnetic spectrum: Radio Waves, Microwaves, Infrared Rays, Ultraviolet, X-rays & gamma rays.

Unit-6

Optics

Ray Optics

- Reflection: types of mirror, spherical mirrors, mirror formula.
- Refraction: total internal reflection and its uses, optical fibres, lenses, lens formula, lensmaker's formula.
- Magnification: power of a lens, thin lenses combination in contact.
- Prism: Refraction & dispersion of light through a prism, Scattering of light, Concept of appearance of the sun at sunrise and sunset.

Optical Instruments

- Human eye: image formation, eye defects (myopia, hypermetropia, presbyopia and astigmatism). Correction of Eye defects using lenses.
- Microscopes and astronomical telescopes.

Wave Optics

- Wave fronts
- Huygens principle, plane waves reflection and refraction. Laws of reflection and refraction Proofs.
- Interference Young's double slit experiment: expression for fringe width
- Diffraction due to a single slit: width of central maximum.
- Resolving power: microscopes and astronomical telescopes.
- Polarisation: Polaroids, Brewster's law, plane polarised light, uses of plane polarised light

Unit-7

Dual Nature of Matter

- Photoelectric Effect: Einstein's photoelectric equation, Hertz and Lenard's observations.
- Wave nature of particles, De Broglie wavelength.
- Davisson-Germer Experiment.

Unit-8

Atoms and Nuclei

- Rutherford's Experiment & Model; Bohr's Model, Atomic Energy Levels, Emission spectrum of hydrogen
- Nucleus, atomic masses, Isotopes, Isobars & isotones.
- Radioactivity rays/particles: Alpha, beta and gamma with their properties, Radioactive decay law.
- Mass defect & Binding Energy, Mass-energy Relation, Nuclear fission & Nuclear fusion.

Unit-9

Electronic Devices

- Semiconductor: Extrinsic & Intrinsic Semiconductors, Types of diode, characteristics in forward and reverse bias.
- Rectifier: Rectifier as a Diode, Half Wave Rectifier, Full Wave Rectifier.
- Transistor: characteristics of transistor, transistor as an amplifier (common emitter configuration), transistor as a switch.
- Analog and digital signals: Basic concept, Logic gates (OR, AND, NOT, NAND and NOR),

Unit-10

Communication Systems

- Basic terminology used in Electronic communication system
- Block Diagram of a Communication System.
- Bandwidth of Signals & transmission Medium.
- Electromagnetic Wave Propagation in the Atmosphere.
- Modulation and its Importance.
- Amplitude Modulation: Production and detection of Amplitude Modulated Wave.
- Sky and space Wave Propagation, Satellite Communication.

This information would be useful for those who are looking for Physics Class 12th Syllabus of Bihar Board.

Download eSaral App and get access to interactive learning and Video lectures related to board, JEE & NEET Preparation.