

**FUTURE TOPPER**  
*Empowering CUET Aspirants*

# CUET 2027

## Syllabus

### Physics

Subject Code: 322

*Based on the Latest Official CUET (UG) 2026 Syllabus released by NTA*

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## Unit 1: Electrostatics

- Electric charges, conservation of charge, Coulomb's law – force between two point charges, forces between multiple charges, superposition principle and continuous charge distribution, electric dipole.
- Electric potential, potential difference, electric potential due to a point charge, a dipole and system of charges; equipotential surfaces, electrical potential energy of a system of two-point charges and of electric dipole in an electrostatic field.
- Electric field, electric field lines, electric field due to a point charge, electric field due to a dipole, torque on a dipole in a uniform electric field.
- Electric flux, statement of Gauss's theorem and its applications to find field due to: infinitely long straight wire, uniformly charged infinite plane sheet, and uniformly charged thin spherical shell (field inside and outside).
- Conductors and insulators, free charges and bound charges inside a conductor. Dielectrics and electric polarisation, capacitors and capacitance, combination of capacitors in series and parallel, capacitance of a parallel plate capacitor with and without dielectric medium between the plates, energy stored in a capacitor.

## Unit 2: Current Electricity

- Electric current, flow of electric charges in a metallic conductor, drift velocity, mobility and their relation with electric current; Ohm's law, V-I characteristics (linear and non-linear), electrical energy and power, electrical resistivity and conductivity, temperature dependence of resistance, internal resistance of a cell, potential difference and EMF of a cell, combination of cells in series and parallel.
- Kirchhoff's rules, Wheatstone bridge.

## Unit 3: Magnetic Effects of Current and Magnetism

- Concept of magnetic field, Oersted's experiment. Biot-Savart law and its application to current-carrying circular loop.
- Ampere's law and its applications to infinitely long straight wire. The solenoid; force on a moving charge in uniform magnetic and electric fields.
- Force on a current-carrying conductor in a uniform magnetic field, force between two parallel current-carrying conductors – definition of ampere, current loop as a magnetic dipole and its magnetic dipole moment, torque experienced by a current loop in uniform magnetic field.
- Moving coil galvanometer – its current sensitivity and conversion to ammeter and voltmeter.
- Bar magnet as an equivalent solenoid, magnetic field lines, magnetic field intensity due to a magnetic dipole along its axis and perpendicular to its axis, torque on a magnetic dipole in a uniform magnetic field.
- Magnetic properties of materials – Para-, dia- and ferro-magnetic substances with examples; magnetisation of materials; effect of temperature on magnetic properties.

## Unit 4: Electromagnetic Induction and Alternating Currents

- Electromagnetic induction; Faraday's laws, induced EMF and current; Lenz's Law, self and mutual induction.
- Alternating currents, peak and rms value of alternating current/voltage; reactance and impedance; LCR series circuit, phasors, resonance, power in AC circuits, power factor, wattless current.
- AC generator, Transformer.

## Unit 5: Electromagnetic Waves

- Concept of displacement current.
- Electromagnetic waves, their characteristics, and their transverse nature.
- Electromagnetic spectrum (radio waves, microwaves, infrared, visible, ultraviolet, X-rays, and gamma rays) including elementary facts about their uses.

## Unit 6: Optics

- Reflection of light, spherical mirrors, mirror formula, refraction of light, total internal reflection and optical fibres, refraction at spherical surfaces, lenses, thin lens formula, lens maker's formula, magnification, power of a lens, combination of thin lenses in contact, refraction and dispersion of light through a prism.
- Optical instruments: Microscopes and astronomical telescopes (reflecting and refracting) and their magnifying powers.
- Wave front and Huygen's principle, reflection and refraction of plane waves at a plane surface using wave fronts.
- Proof of laws of reflection and refraction using Huygen's principle.
- Coherent sources and interference of light, Young's double slit experiment and expression for fringe width.
- Diffraction due to a single slit, width of central maxima.

### Unit 7: Dual Nature of Matter and Radiation

- Matter waves – wave nature of particles, de-Broglie relation.
- Dual nature of radiation, photoelectric effect, Hertz and Lenard's observations; Einstein's photoelectric equation – particle nature of light; experimental study of photoelectric effect.

### Unit 8: Atoms and Nuclei

- Alpha-particle scattering experiment; Rutherford's model of atom; Bohr model of hydrogen atom, expression for radius of an orbit, velocity and energy of electron in an orbit, hydrogen line spectra (qualitative treatment only).
- Composition and size of nucleus, atomic number, atomic mass number, isotopes, isobars and isotones, nuclear force. Mass-energy relation, mass defect; binding energy per nucleon and its variation with mass number; nuclear fission, nuclear fusion.

### Unit 9: Electronic Devices

- Energy bands in conductors, semiconductors and insulators (qualitative ideas only).
- Intrinsic and extrinsic semiconductors, p-type and n-type, p-n junction.
- Semiconductor diode – its I-V characteristics in forward and reverse bias.
- Application of junction diode – diode as a rectifier.

## Important Notes

- This syllabus is based on the official CUET (UG) 2026 syllabus released by NTA.
- No official CUET 2027 syllabus has been released at the time of this publication.
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## Disclaimer

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