



CLASS 11 PHYSICS

SYLLABUS 2026–27

CBSE Annual Examination — Subject Code 042

Complete unit-wise theory syllabus, practical scheme, marks distribution and question-paper design for the CBSE Class 11 Physics annual examination — based on the official syllabus released by CBSE for the 2026-27 academic session.

Prepared by Physics Point

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1. Exam Snapshot & Important Notes

Parameter	Details
Board	Central Board of Secondary Education (CBSE)
Subject Code	042
Academic Session	2026–27
Theory Exam Duration & Marks	3 hours, 70 marks
Practical / Internal Assessment	30 marks
Total Marks	100
Number of Theory Units	10 units across 14 chapters
Curriculum Basis	NCERT Class 11 Physics textbook (Parts I & II)

Important: CBSE periodically excludes certain topics and exercises from the NCERT textbook for a given academic session — for 2026-27 this includes parts of Chapter 1 (Physical World, now dropped as a separate chapter), sections on measurement and errors in Chapter 2, and topics such as damped/forced oscillations and the Doppler effect. Excluded content is not covered in this document. Always cross-check the latest CBSE circular and the official syllabus PDF at cbseacademic.nic.in before finalising your preparation.

2. Unit-Wise Marks Distribution

The theory paper (70 marks) is organised into 10 units. Where a unit spans more than one chapter, the marks shown apply to the unit as a whole.

Unit	Title	Chapters Covered	Marks
I	Physical World and Measurement	1. Units and Measurements	23
II	Kinematics	2. Motion in a Straight Line 3. Motion in a Plane	—
III	Laws of Motion	4. Laws of Motion	—
IV	Work, Energy and Power	5. Work, Energy and Power	17
V	Motion of System of Particles & Rigid Body	6. System of Particles and Rotational Motion	—
VI	Gravitation	7. Gravitation	—
VII	Properties of Bulk Matter	8. Mechanical Properties of Solids 9. Mechanical Properties of Fluids 10. Thermal Properties of Matter	20
VIII	Thermodynamics	11. Thermodynamics	—
IX	Behaviour of Perfect Gases & Kinetic Theory	12. Kinetic Theory	—
X	Oscillations and Waves	13. Oscillations 14. Waves	10

Physical World & Measurement, Kinematics and Laws of Motion (Units I–III) carry the highest combined weightage (23 marks), followed by Properties of Bulk Matter, Thermodynamics and Kinetic Theory (Units VII–IX, 20 marks) and Work, Energy & Power together with System of Particles and Gravitation (Units IV–VI, 17 marks).

3. Detailed Theory Syllabus

Unit I — Physical World and Measurement

Chapter 1: Units and Measurements

- The need for measurement; units of measurement, systems of units, and SI units; fundamental and derived units.
- Significant figures and determining the uncertainty in a result.
- Dimensions of physical quantities, dimensional analysis and its applications.

Unit II — Kinematics

Chapter 2: Motion in a Straight Line

- Frame of reference and motion in a straight line; elementary use of differentiation and integration to describe motion.
- Uniform and non-uniform motion; average speed, average velocity and instantaneous velocity; uniformly accelerated motion.
- Velocity–time and position–time graphs; the equations of uniformly accelerated motion (graphical and calculus-based treatment).

Chapter 3: Motion in a Plane

- Scalar and vector quantities; position and displacement vectors, general vector notation, equality of vectors, multiplication of a vector by a real number.
- Addition and subtraction of vectors; unit vectors; resolving a vector in a plane, rectangular components; scalar and vector products of vectors.
- Motion in a plane under uniform velocity and uniform acceleration — projectile motion and uniform circular motion.

Unit III — Laws of Motion

Chapter 4: Laws of Motion

- Intuitive ideas of force; inertia, Newton's first law of motion; momentum and Newton's second law; impulse; Newton's third law of motion.
- Law of conservation of linear momentum and its applications; equilibrium of concurrent forces.
- Static and kinetic friction, laws of friction, rolling friction, lubrication (qualitative).
- Dynamics of uniform circular motion — centripetal force and its applications, such as a vehicle moving on a level or a banked road.

Unit IV — Work, Energy and Power

Chapter 5: Work, Energy and Power

- Work done by a constant force and by a variable force; kinetic energy, the work–energy theorem, and power.
- The notion of potential energy; potential energy of a spring; conservative and non-conservative forces; motion in a vertical circle.
- Elastic and inelastic collisions in one and two dimensions.

Unit V — Motion of System of Particles & Rigid Body

Chapter 6: System of Particles and Rotational Motion

- Centre of mass of a two-particle system; momentum conservation and motion of the centre of mass; centre of mass of a rigid body and of a uniform rod.
- Moment of a force, torque, angular momentum, and the law of conservation of angular momentum with its applications.
- Equilibrium of rigid bodies; rigid-body rotation and the equations of rotational motion; comparison of linear and rotational motion.
- Moment of inertia and radius of gyration; values of the moment of inertia for simple geometrical objects (no derivation required).

Unit VI — Gravitation

Chapter 7: Gravitation

- Kepler's laws of planetary motion and the universal law of gravitation.
- Acceleration due to gravity and its variation with altitude and depth.
- Gravitational potential energy and gravitational potential; escape speed; orbital velocity of a satellite and the energy of an orbiting satellite.

Unit VII — Properties of Bulk Matter

Chapter 8: Mechanical Properties of Solids

- Elasticity, stress–strain relationship and Hooke's law; Young's modulus, bulk modulus and shear modulus of rigidity (qualitative idea only); Poisson's ratio; elastic potential energy.
- Applications of the elastic behaviour of materials (qualitative idea only).

Chapter 9: Mechanical Properties of Fluids

- Pressure due to a fluid column; Pascal's law and its applications (hydraulic lift and hydraulic brakes); effect of gravity on fluid pressure.
- Viscosity, Stokes' law, terminal velocity, streamline and turbulent flow, critical velocity, Bernoulli's theorem and simple applications (Torricelli's law, dynamic lift).
- Surface energy and surface tension, angle of contact, excess pressure across a curved surface; applications to drops, bubbles and capillary rise.

Chapter 10: Thermal Properties of Matter

- Heat, temperature and thermal expansion; thermal expansion of solids, liquids and gases; anomalous expansion of water.
- Specific heat capacity, C_p and C_v ; calorimetry; change of state and latent heat.
- Heat transfer by conduction, convection and radiation; thermal conductivity; qualitative ideas of blackbody radiation, Wien's displacement law and Stefan's law.

Unit VIII — Thermodynamics

Chapter 11: Thermodynamics

- Thermal equilibrium and the definition of temperature; the zeroth law of thermodynamics; heat, work and internal energy.
- The first law of thermodynamics; the second law of thermodynamics; thermodynamic state variables and the equation of state.
- Changes of state of a gas — isothermal, adiabatic, reversible, irreversible and cyclic processes.

Unit IX — Behaviour of Perfect Gases & Kinetic Theory

Chapter 12: Kinetic Theory

- The equation of state of a perfect gas; work done in compressing a gas.
- Kinetic theory of gases — assumptions and the concept of pressure; kinetic interpretation of temperature; rms speed of gas molecules.
- Degrees of freedom and the law of equipartition of energy (statement only), with its application to the specific heat capacities of gases; the concept of mean free path and Avogadro's number.

Unit X — Oscillations and Waves

Chapter 13: Oscillations

- Periodic motion — time period, frequency, displacement as a function of time, and periodic functions.
- Simple harmonic motion (SHM) and its relation to uniform circular motion; phase; oscillations of a loaded spring — restoring force and force constant; kinetic and potential energy in SHM.
- The simple pendulum and the derivation of the expression for its time period.

Chapter 14: Waves

- Wave motion — transverse and longitudinal waves; speed of a travelling wave; the displacement relation for a progressive wave.
- The principle of superposition of waves and reflection of waves; standing waves in strings and organ pipes, fundamental mode and harmonics; beats.

4. Practical Syllabus & Evaluation Scheme

Practicals carry 30 marks (3-hour examination). The practical file submitted at the annual examination must include:

- At least 12 experiments (6 from each of Section A and Section B).
- At least 8 activities (4 from each section).
- A written report of one investigatory project carried out by the student.

Evaluation Scheme (30 Marks)

Component	Marks
Two experiments (one from each section)	7 + 7 marks
Practical record (experiments & activities)	5 marks
One activity (from either section)	3 marks
Investigatory project	3 marks
Viva (experiments, activities & project)	5 marks
Total	30 marks

Section A — Sample Experiments (Measurement & Mechanics)

- Measuring the diameter of a small spherical or cylindrical body and the thickness of a sheet using vernier callipers.
- Measuring the diameter of a given wire and the thickness of a given sheet using a screw gauge.
- Determining the radius of curvature of a spherical surface using a spherometer.
- Determining the mass of two different objects using a beam balance.
- Establishing the relation between the time period and length of a simple pendulum, and using it to find g .
- Studying the variation in the time period of a simple pendulum with its amplitude.
- Plotting a graph for a given set of data, choosing suitable scales and estimating error bars.

Section B — Sample Experiments (Properties of Matter, Heat & Sound)

- Determining the Young's modulus of the material of a given wire by Searle's method.
- Finding the force constant of a helical spring by plotting a load–extension graph.
- Studying the relationship between the temperature of a hot body and time by plotting a cooling curve.
- Determining the specific heat capacity of a given solid using a calorimeter.
- Studying the relation between frequency and the length of a vibrating wire under constant tension using a sonometer.
- Finding the speed of sound in air at room temperature using a resonance tube.
- Determining the coefficient of viscosity of a given viscous liquid by measuring the terminal velocity of a spherical body.
- Determining the surface tension of water by the capillary-rise method.

In addition to these experiments, students perform a set of short activities from each section and complete one investigatory project — for example, studying how the period of a simple pendulum varies with amplitude, or investigating the factors affecting the rate of cooling of a liquid.

5. Question Paper Design

Theory paper — 70 marks, 3 hours. Questions are distributed across three cognitive levels:

Typology	Description	Marks	%
Remembering & Understanding	Recalling facts, terms and concepts; organising, comparing and explaining ideas.	27	38%
Applying	Using acquired knowledge, facts and techniques to solve problems in new situations.	22	32%
Analysing, Evaluating & Creating	Breaking down information, forming judgements, and combining ideas into new solutions.	21	30%

Roughly 50% of the theory paper is competency-focused (MCQs, case-based and source-based integrated questions), 20% is direct MCQ-based, and the remaining 30% is made up of short- and long-answer constructed-response questions.

6. Prescribed Books

- Physics, Class XI, Parts I & II — NCERT
- Laboratory Manual of Physics for Class XI — NCERT
- Other related NCERT books, manuals and multimedia resources

7. Preparation Tips & Revision Checklist

- **Anchor everything in NCERT** — The CBSE question paper is drawn directly from the NCERT Class 11 Physics textbook — read every in-text example and exercise carefully, including the deleted-topic list so you don't over-study.
- **Prioritise the highest-weightage units** — Physical World & Measurement, Kinematics and Laws of Motion together carry 23 marks — the single largest combined block in the paper — so build these fundamentals first.
- **Master vectors early** — Motion in a Plane's vector algebra underpins almost every later chapter, from rotational motion to gravitation — don't skip the fundamentals.
- **Balance derivations with numericals** — Units like Gravitation, Thermodynamics and Oscillations mix conceptual derivations with numerical problems — practice both, not just one.
- **Don't neglect practicals** — Practical carry 30 of the 100 total marks. Keep a clean, well-labelled practical file and revise the viva questions for each experiment.
- **Use previous years' papers** — Solve at least 5 years of CBSE Class 11 Physics papers (or unit tests) to get used to the question paper design and difficulty level.
- **Track excluded topics** — CBSE periodically drops selected topics and exercises from the NCERT textbook for a given session — check the latest circular so you don't waste time on deleted content.

This document is prepared and shared by Physics Point for student reference, based on the CBSE Class 11 Physics syllabus released for the 2026-27 academic session. For the official, legally binding syllabus, always refer to CBSE's website at cbseacademic.nic.in.