

CLASS XI : PHYSICS : HALF YEARLY & ANNUAL EXAMINATION : 2022-23 FULL MARKS 70

HALF YEARLY EXAMINATION

Unit	Chapter/Contents	Unit Wise Marks	MCQ (1 mark)	VSA (1 marks)	SA-I (2 marks)	SA-II (3 Marks)	LA-I (4 Marks)	LA-II (5 Marks)	TOTAL Marks
Unit -I	Physical World and Measurement	10	1	4	2x1	3x1			40
	Chapter–1: Physical World								
	Chapter–2: Units and Measurements								
Unit-II	Kinematics	14	2	5	2x2	3x1			40
	Chapter–3: Motion in a Straight Line								
	Chapter–4: Motion in a Plane								
Unit -III	Laws of Motion	16	3	4	2x2			5x1	40
	Chapter–5: Laws of Motion								
Unit-IV	Work, Energy and Power	8	2	3	0	3x1			30
	Chapter-6 : Work, Energy and Power								
Unit -V	Motion of System of Particles and Rigid Body	12	1	2	0		4x1	5x1	30
	Chapter–7: System of Particles and Rotational Motion								
Unit –VI	Gravitation	10	1	2	0	3x1	4x1		30
	Chapter–8: Gravitation								
Total Question / Marks			10	20	10	12	8	10	70

ANNUAL EXAMINATION 2022-23

Unit	Chapter/Contents	Unit Wise Marks)	MCQ (1 mark)	VSA (1 marks)	SA-I (2 marks)	SA-II (3 Marks)	LA-I (4 Marks)	LA-II (5 Marks)	TOTAL
Unit–VII	Properties of Bulk Matter	30	4	10	2x2	3x1	4x1	5x1	46
	Chapter–9: Mechanical Properties of Solids								
	Chapter–10: Mechanical Properties of Fluids								
	Chapter–11: Thermal Properties of Matter								
Unit-VIII	Thermodynamics	10	2	3	2x1	3x1	0		
	Chapter–12: Thermodynamics								
Unit–IX	Behavior of Perfect Gases and Kinetic Theory of Gases	6	1	2	0	3x1	0		
	Chapter–13: Kinetic Theory								
Unit–X	Oscillations and Waves	24	2	6	2x 2	3x1	4x1	1x5	24
	Chapter–14: Oscillations								
	Chapter–15: Waves								
	Total Questions/Marks		10	20	10	12	8	10	70

SYLLABUS :CLASS XI : PHYSICS : 2022-23 : MARKS 70

Half-yearly Exam			
UNIT	TOPICS	MARKS	
Unit-I	Physical World and Measurement	40	
	Chapter-2: Units and Measurements		
Unit-II	Kinematics		
	Chapter-3: Motion in a Straight Line		
	Chapter-4: Motion in a Plane		
Unit-III	Laws of Motion		
	Chapter-5: Laws of Motion		
Unit-IV	Work, Energy and Power		30
	Chapter-6: Work, Energy and Power		
Unit-V	Motion of System of Particles and Rigid Body		
	Chapter-7: System of Particles and Rotational Motion		
Unit-VI	Gravitation		
	Chapter-8: Gravitation		
Total		70	

Annual Examination

Unit-VII	Properties of Bulk Matter	24
	Chapter-9: Mechanical Properties of Solids	
	Chapter-10: Mechanical Properties of Fluids	
	Chapter-11: Thermal Properties of Matter	
Unit-VIII	Thermodynamics	22
	Chapter-12: Thermodynamics	
Unit-IX	Behaviour of Perfect Gases and Kinetic Theory of Gases	
	Chapter-13: Kinetic Theory	
Unit-X	Oscillations and Waves	24
	Chapter-14: Oscillations	
	Chapter-15: Waves	
Total		70

Unit I: Physical World and Measurement : Chapter-2: Units and Measurements

Need for measurement: Units of measurement; systems of units; SI units, fundamental and derived units. significant figures. Dimensions of physical quantities, dimensional analysis and its applications.

Unit II: Kinematics

Chapter-3: Motion in a Straight Line

Frame of reference, Motion in a straight line, Elementary concepts of differentiation and integration for describing motion, uniform and non- uniform motion, and instantaneous velocity, uniformly accelerated motion, velocity - time and position-time graphs. Relations for uniformly accelerated motion (graphical treatment).

Chapter-4: Motion in a Plane

Scalar and vector quantities; position and displacement vectors, general vectors and their notations; equality of vectors, multiplication of vectors by a real number; addition and subtraction of vectors, Unit vector; resolution of a vector in a plane, rectangular components, Scalar and Vector product of vectors.

Motion in a plane, cases of uniform velocity and uniform acceleration- projectile motion, uniform circular motion.

Unit III: Laws of Motion : Chapter-5: Laws of Motion

Intuitive concept of force, Inertia, Newton's first law of motion; momentum and Newton's second law of motion; 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.

Dynamics of uniform circular motion: Centripetal force, examples of circular motion (vehicle on a level circular road, vehicle on a banked road).

Unit IV: Work, Energy and Power : Chapter-6: Work, Energy and Power

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

Unit V: Motion of System of Particles and Rigid Body : Chapter-7: System of Particles and Rotational Motion

Centre of mass of a two-particle system, momentum conservation and Centre of mass motion. Centre of mass of a rigid body; centre of mass of a uniform rod.

Moment of a force, torque, angular momentum, law of conservation of angular momentum and its applications.
Equilibrium of rigid bodies, rigid body rotation and equations of rotational motion, comparison of linear and rotational motions.
Moment of inertia, radius of gyration, values of moments of inertia for simple geometrical objects (no derivation).

Unit VI: Gravitation : Chapter-8: Gravitation

Kepler's laws of planetary motion, universal law of gravitation. Acceleration due to gravity and its variation with altitude and depth.

Gravitational potential energy and gravitational potential, escape velocity, orbital velocity of a satellite.

Unit VII: Properties of Bulk Matter

Chapter-9: Mechanical Properties of Solids

Elasticity, Stress-strain relationship, Hooke's law, Young's modulus, bulk modulus, shear modulus of rigidity (qualitative idea only), Poisson's ratio; elastic energy.

Chapter-10: 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 its simple applications.

Surface energy and surface tension, angle of contact, excess of pressure across a curved surface, application of surface tension ideas to drops, bubbles and capillary rise.

Chapter-11: Thermal Properties of Matter

Heat, temperature, thermal expansion; thermal expansion of solids, liquids and gases, anomalous expansion of water; specific heat capacity; C_p , C_v - calorimetry; change of state - latent heat capacity.

Heat transfer-conduction, convection and radiation, thermal conductivity, qualitative ideas of Blackbody radiation, Wein's displacement Law, Stefan's law.

Unit VIII: Thermodynamics : Chapter-12: Thermodynamics

Thermal equilibrium and definition of temperature zeroth law of thermodynamics, heat, work and internal energy. First law of thermodynamics,

Second law of thermodynamics: gaseous state of matter, change of condition of gaseous state -isothermal, adiabatic, reversible, irreversible, and cyclic processes.

Unit IX: Behavior of Perfect Gases and Kinetic Theory of Gases : Chapter-13: Kinetic Theory

Equation of state of a perfect gas, work done in compressing a gas.

Kinetic theory of gases - assumptions, concept of pressure. Kinetic interpretation of temperature; rms speed of gas molecules; degrees of freedom, law of equipartition of energy (statement only) and application to specific heat capacities of gases; concept of mean free path, Avogadro's number.

Unit X: Oscillations and Waves

Chapter-14: Oscillations

Periodic motion - time period, frequency, displacement as a function of time, periodic functions and their application.

Simple harmonic motion (S.H.M) and its equations of motion; phase; oscillations of a loaded spring- restoring force and force constant; energy in S.H.M. Kinetic and potential energies; simple pendulum derivation of expression for its time period.

Chapter-15: Waves

Wave motion: Transverse and longitudinal waves, speed of travelling wave, displacement relation for a progressive wave, principle of superposition of waves, reflection of waves, standing waves in strings and organ pipes, fundamental mode and harmonics, Beats.