

JAC Board Class 11 Physics Reduced Syllabus 2020-21 PDF

विषय : भौतिकी

Chapter name	Whether the chapter is selected or not	Selected topics	Deleted topics
Physical World	No		Physics: Scope and excitement; nature of physical laws; Physics, technology and society.
Unit and Measurement	yes	Need for measurement: Units of measurement; systems of units; SI units, fundamental and derived units. Dimensions of physical quantities, dimensional analysis and its applications.	Length, mass and time measurements; accuracy and precision of measuring instruments; errors in measurement; significant figures.
Motion in straight line	yes	Frame of reference. Motion in a straight line: Position-time graph, speed and velocity. Uniform and non-uniform motion, average speed and instantaneous velocity. Uniformly accelerated motion, velocity-time and position-time graphs, relations for uniformly accelerated motion (graphical treatment). Elementary concepts of differentiation and integration for describing motion.	
Motion in plane	yes	Scalar and vector quantities: Position and displacement vectors, general vectors and notation, equality of vectors, multiplication of vectors by a real number; addition and subtraction of vectors. Relative velocity. Unit vectors. Resolution of a vector in a plane – rectangular components. Motion in a plane. Cases of uniform velocity and uniform acceleration – projectile motion. Uniform circular motion.	
Laws of motion	yes	Intuitive concept of force. Inertia, Newton's first law of motion; momentum and Newton's second law of motion; impulse; Newton's	Dynamics of uniform circular motion: examples of circular motion (vehicle on level circular road, vehicle on banked

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		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. Centripetal force, (road).	
Work, Energy and Power	yes	Scalar product of vectors. 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; conservation of mechanical energy (kinetic and potential energies);	non-conservative forces; elastic and inelastic collisions in one and two dimensions.
Motion of System of Particles and Rigid Body	yes	Vector product of vectors; moment of a force, torque, angular momentum, conservation of angular momentum with some examples. Equilibrium of rigid bodies, rigid body rotation and equation of rotational motion, comparison of linear and rotational motions; moment of inertia, radius of gyration. Values of M.I. for simple geometrical objects (no derivation).	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 circular ring, disc, rod and sphere. Statement of parallel and perpendicular axes theorems and their applications.
Gravitation	yes	Kepler's laws of planetary motion. The universal law of gravitation. Acceleration due to gravity and its variation with altitude and depth. Gravitational potential energy; gravitational potential. Escape speed.	orbital velocity of a satellite. Geostationary satellites.
Mechanical properties of solid	No		Elastic behaviour, Stress-strain relationship, Hooke's law, Young's modulus, bulk modulus, shear, modulus of rigidity.
Mechanical properties of	yes	Bernoulli's theorem and its applications. Surface energy	Pressure due to a fluid column; Pascal's law and its

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fluids		and surface tension, angle of contact, application of surface tension ideas to drops, bubbles and capillary rise.	applications (hydraulic lift and hydraulic brakes). Effect of gravity on fluid pressure. Viscosity, Stokes' law, terminal velocity, Reynold's number, streamline and turbulent flow.
Thermal properties of matter	yes	Heat, temperature, thermal expansion; specific heat capacity – calorimetry; change of state – latent heat.	Heat transfer – conduction, convection and radiation, thermal conductivity, Newton's law of cooling.
Thermodynamics	NO		Thermal equilibrium and definition of temperature (zeroth law of thermodynamics). Heat, work and internal energy. First law of thermodynamics. Second law of thermodynamics: Reversible and irreversible processes. Heat engines and refrigerators.
Behaviour of Perfect Gas and Kinetic Theory	No		Equation of state of a perfect gas, work done on compressing a gas. Kinetic theory of gases: Assumptions, concept of pressure. Kinetic energy and 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.
Oscillation	Yes	Periodic motion – period, frequency, displacement as a function of time. Periodic functions. Simple harmonic motion (SHM) and its equation; phase; energy in SHM – kinetic and potential energies; simple pendulum – derivation of expression for its time period;	free, forced and damped oscillations (qualitative ideas only), resonance. Oscillations of a spring – restoring force and force constant;
Waves	Yes	Wave motion. Longitudinal and transverse waves,	Principle of superposition of waves, reflection of waves,

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		speed of wave motion. Displacement relation for a progressive wave.	standing waves in strings and organ pipes, fundamental mode and harmonics. Beats. Doppler effect.

