Board of Intermediate Education, Andhra Pradesh.

Intermediate – I Year Syllabus w.e.f. 2012 – 13

Subject : PHYSICS – I

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1	**PHYSICAL WORLD** What is physics? Scope and excitement of physics Physics, technology and society Fundamental forces in nature Nature of physical laws	
2	**UNITS AND MEASUREMENTS** Introduction The international system of units Measurement of length Measurement of mass Measurement of time Accuracy, precision of instruments and errors in measurement Significant figures Dimensions of physical quantities Dimensional formulae and dimensional equations Dimensional analysis and its applications	
3	**MOTION IN A STRAIGHT LINE** **3.1** Introduction Position, path length and displacement Average velocity and average speed Instantaneous velocity and speed Acceleration Kinematic equations for uniformly accelerated motion Relative velocity	
4	**MOTION IN A PLANE** Introduction Scalars and vectors Multiplication of vectors by real numbers Addition and subtraction of vectors. graphical method Resolution of vectors Vector addition. analytical method Motion in a plane Motion in a plane with constant acceleration Relative velocity in two dimensions Projectile motion Uniform circular motion	
5	**LAWS OF MOTION** Introduction Aristotle's fallacy The law of inertia	

	Newton's first law of motion Newton's second law of motion Newton's third law of motion Conservation of momentum Equilibrium of a particle Common forces in mechanics, friction Circular motion Solving problems in mechanics	
6	**WORK, ENERGY AND POWER** Introduction Notions of work and kinetic energy : The work- energy theorem Work Kinetic energy Work done by a variable force The work-energy theorem for a variable force The concept of potential energy The conservation of mechanical energy The potential energy of a spring Various forms of energy : the law of conservation of energy Power Collisions	
7	**SYSTEM OF PARTICLES AND ROTATIONAL MOTION** Introduction Centre of mass, Centre of Gravity Motion of centre of mass Linear momentum of a system of particles Vector product of two vectors Angular velocity and its relation with linear velocity, Kinematics of rotational motion about a fixed axis Torque and angular momentum Equilibrium of a rigid body Moment of inertia Theorems of perpendicular and parallel axes Dynamics of rotational motion about a fixed axis Angular momentum in case of rotations about a fixed axis Rolling motion	
8	**OSCILLATIONS** Introduction Periodic and oscillatory motions Simple harmonic motion Simple harmonic motion and uniform circular motion Velocity and acceleration in simple harmonic motion Force law for Simple harmonic Motion Energy in simple harmonic motion Some systems executing Simple Harmonic Motion	

	Damped simple harmonic motion Forced oscillations and resonance	
9	**GRAVITATION** Introduction Kepler's laws Universal law of gravitation The gravitational constant Acceleration due to gravity of the earth Acceleration due to gravity below and above the surface of earth Gravitational potential energy Escape speed Earth satellite Energy of an orbiting satellite Geostationary and polar satellites Weightlessness	
10	**Mechanical Properties of Solids** Introduction Elastic behaviour of solids Stress and strain Hooke's law Stress-strain curve Elastic moduli Applications of elastic behaviour of materials	
11	**MECHANICAL PROPERTIES OF FLUIDS** Introduction Pressure Streamline flow Bernoulli's principle Viscosity Reynolds number Surface tension	
12	**THERMAL PROPERTIES OF MATTER** Introduction Temperature and heat Measurement of temperature Ideal-gas equation and absolute temperature Thermal expansion Specific heat capacity Calorimetry Change of state Heat transfer Newton's law of cooling	
13	**THERMODYNAMICS** Introduction Thermal equilibrium Zeroth law of thermodynamics Heat, internal energy and work	

	First law of thermodynamics Specific heat capacity Thermodynamic state variables and equation of State Thermodynamic processes Heat engines Refrigerators and heat pumps Second law of thermodynamics Reversible and irreversible processes Carnot engine, Carnot's theorem	
14	**KINETIC THEORY** Introduction Molecular nature of matter Behaviour of gases Kinetic theory of an ideal gas Law of equipartition of energy Specific heat capacity Mean free path	
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