AIR FORCE SCHOOL BAMRAULI

SPLIT - UP OF SYLLABUS

ACADEMIC SESSION - 2024 -25

CLASS :XI

SUBJECT: PHYSICS

BOOK :-NCERT

MONTH	CHAPTER NO. & CHAPTER NAME	TOPIC/SUB TOPIC	NO. OF PERIODS	ACTIVITY
JUNE	2. UNITS AND MEASUREMENTS	Need for measurement. Units of measurement; system of units; SI units, fundamental and derive units, significant figures. Dimensions of physical quantities, dimensional analysis and its applications.	8	
JULY	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)	12	**O1.** To measure diameter of a small spherical/ cylindrical body and to measure internal diameter and depth of a given beaker/ calorimeter using Vernier Callipers and hence find its volume.
JUL	4.MOTION IN 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	12	**02.** To make a paper scale of given least count, e.g., 0.2cm, 0.5 cm.
AUG.	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; Centrupetal force, examples of circular motion (vehicle on a level circular road, vehicle on a banked road).	14	**03:** To measure diameter of a given wire and thickness of a given sheet using screw gauge.
AUG.	6. WORK, ENERGY AND POWER	Work done by a constant frce and a variable force; kinetic energy, work- energy theorem, power. Notion of potential energy, potential energy of a spring, conservative forces; non - conservative	14	**04.** To determine radius of curvature of a given spherical surface by a spherometer.

		forces, motion in a vertical circle; elastic and inelastic collisions in one and two dimensions.		
SEPT.	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 bidy 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)	18	**05.** To find the weight of a given body using parallelogram law of vectors.
SEPT.	8. GRAVITION	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 speed, orbital velocity of a satellite.	12	**06.** Using a simple pendulum, plot its L - T2 graph and use it to find the effective length of second pendulum.
OCT.	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.	4	**07.** To determine Young's modulus of elasticity of the material of a given wire
OCT.	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 applications. Surface energy and surface tension, angle of contact, excess of pressure accross a curved surface, application of surface tension ideas to drops, bubbles and capillary rise.	10	**08.** To find the force constant of a helical spring by plotting a graph between load and extention
NOV.	11. THERMAL PROPERTIES OF MATTER	Heat, temperature, thermal expansion; thermal expansion of solids, liquids and gases, anomalous expansion of water; specific heat capacity; Cp, Cv - 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.	10	
DEC.	12. THERMODYNAMICS	Thermal equilibrium and definiton of temperature, zeroth law of thermodynamics, heat, work and internal energy. First law of thermodyanamics, Second law of thermodynamics:	12	

		gaseous state of matter, change of condition of gaseous state - isothermal, adiabatic, reversible, irreversible, and cyclic processses.		
JAN	13. KINETIC THEORY OF GASES	Equation of state of a perfect gas, work done in compressing a gas. Kinetic theory of gases - assumptions, concept of pressure. Kinetic iterpretation of temperature; rms speed of gas molicules; degrees of freedom, law of equi-partition of energy (statement only) and application to specific heat capacities of gases; concept of mean free path, Avogadro's number.	8	
FEB.	14. OSCILLATIONS	Periodic motion - time period, frequencym displacement as a funtion of time, periodic functions and their applications. 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.	16	
FEB.	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.	10	
total			**160**	