

Physics I PUC

Chapter-1: Physical World

RETAINED PORTION	DELETED PORTION
1.1 What is physics ? 1.4 Fundamental forces in nature	1.2 Physics-scope and excitement 1.3 Physics, technology and society 1.5 Nature of physical laws (To be discussed as a part of Introduction and integrated with other topics)

Chapter-2 : UNITS AND MEASUREMENTS

RETAINED PORTION	DELETED PORTION
2.1 Introduction 2.2 The international system of units 2.3 Measurement of length 2.4 Measurement of mass 2.5 Measurement of time 2.6 Accuracy, precision of instruments and errors in measurement 2.7 Significant figures 2.8 Dimensions of physical quantities 2.9 Dimensional formulae and dimensional equations 2.10 Dimensional analysis and its applications	Nil

Chapter-3 : Motion in a straight line

RETAINED PORTION	DELETED PORTION
3.1 Introduction 3.2 Position, path length and displacement 3.3 Average velocity and average speed 3.4 Instantaneous velocity and speed 3.5 Acceleration 3.6 Kinematic equations for uniformly accelerated motion 3.7 Relative velocity	Frame of reference: Position-time graph, speed and velocity

Chapter-4 MOTION IN A PLANE

RETAINED PORTION	DELETED PORTION
4.1 Introduction 4.2 Scalars and vectors 4.3 Multiplication of vectors by real numbers 4.4 Addition and subtraction of vectors – graphical method 4.5 Resolution of vectors 4.6 Vector addition – analytical method	Nil

4.7 Motion in a plane 4.8 Motion in a plane with constant acceleration 4.9 Relative velocity in two dimensions 4.10 Projectile motion 4.11 Uniform circular motion	
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Chapter-5 Laws of Motion

RETAINED PORTION	DELETED PORTION
5.1 Introduction 5.7 Conservation of momentum 5.8 Equilibrium of a particle 5.9 Common forces in mechanics 5.10 Circular motion 5.11 Solving problems in mechanics	5.2 Intuitive concept of force, 5.3 Inertia, 5.4 Newton's first law of motion; momentum 5.5 Newton's second law of motion; impulse; 5.6 Newton's third law of motion

Chapter 6 Work, Power, Energy

RETAINED PORTION	DELETED PORTION
6.1 Introduction 6.2 Notions of work and kinetic energy : The work energy theorem 6.3 Work 6.4 Kinetic energy 6.5 Work done by a variable force 6.6 The work energy theorem for a variable force 6.7 The concept of potential energy 6.8 The conservation of mechanical energy 6.9 The potential energy of a spring 6.10 Various forms of energy : the law of conservation of energy 6.11 Power 6.12 Collisions	Nil

Chapter-7 System of Particles and Rotational Motion

RETAINED PORTION	DELETED PORTION
7.1 Introduction 7.2 Centre of mass 7.3 Motion of centre of mass 7.4 Linear momentum of a system of particles 7.5 Vector product of two vectors 7.6 Angular velocity and its relation with linear velocity 7.7 Torque and angular momentum 7.8 Equilibrium of a rigid body. 7.9 Moment of inertia 7.11 Kinematics of rotational motion about a fixed axis 7.12 Dynamics of rotational motion about a	7.10 Statement of parallel and perpendicular axes theorems and their applications

fixed axis 7.13 Angular momentum in case of rotations about a fixed axis 7.14 Rolling motion	
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Chapter-8 Gravitation

RETAINED PORTION	DELETED PORTION
8.1 Introduction 8.3 Universal law of gravitation 8.4 The gravitational constant 8.6 Acceleration due to gravity below and above the surface of earth 8.7 Gravitational potential energy 8.8 Escape speed 8.9 Earth satellite 8.10 Energy of an orbiting satellite 8.11 Geostationary and polar satellites 8.12 Weightlessness	8.2 Kepler's laws of planetary motion 8.5 Acceleration due to gravity

Chapter-9 Mechanical Properties of Solids . .

RETAINED PORTION	DELETED PORTION
9.1 Introduction 9.3 Stress and strain 9.4 Hooke's law 9.5 Stress-strain curve 9.6 Elastic moduli 9.6.1 Young's modulus 9.6.2 Determination of young's modulus of the material wire 9.6.4 Bulk modulus 9.7 Applications of elastic behaviour of materials	9.2 Elastic behaviour 9.6.3 Shear modulus of rigidity, 9.6.5 Poisson's ratio; 9.6.6 Elastic energy

Chapter 10 MECHANICAL PROPERTIES FLUID

RETAINED PORTION	DELETED PORTION
10.1 Introduction 10.2 Pressure 10.3 Streamline flow 10.4 Bernoulli's principle 10.5 Viscosity 10.6 Surface tension	Nil

Chapter-11 Thermal properties matter

RETAINED PORTION	DELETED PORTION
11.1 Introduction 11.3 Measurement of temperature	11.2 Heat and temperature 11.9 Heat transfer

11.4 Ideal-gas equation and absolute temperature 11.5 Thermal expansion 11.6 Specific heat capacity 11.7 Calorimetry 11.8 Change of state 11.9.4 Black body radiation 11.9.5 Green house effect 11.10 Newton's law of coolings	11.9.1 Conduction, 11.9.2 convection 11.9.3 radiation
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Chapter-12 Thermodynamics

RETAINED PORTION	DELETED PORTION
12.1 Introduction 12.2 Thermal equilibrium 12.3 Zeroth law of thermodynamics 12.4 Heat, internal energy and work 12.5 First law of thermodynamics 12.6 Specific heat capacity 12.7 Thermodynamic state variables and equation of state 12.8 Thermodynamic processes 12.11 Second law of thermodynamics 12.12 Reversible and irreversible processes 12.13 Carnot engine	12.9 Heat engine 12.10 Refrigerator

Chapter-13 KINETIC THEORY

RETAINED PORTION	DELETED PORTION
13.1 Introduction 13.2 Molecular nature of matter 13.3 Behaviour of gases 13.4 Kinetic theory of an ideal gas 13.5 Law of equipartition of energy 13.6 Specific heat capacity 13.7 Mean free path	Nil

Chapter-14 OSCILLATION

RETAINED PORTION	DELETED PORTION
14.1 Introduction 14.2 Periodic and oscillatory motions 14.3 Simple harmonic motion 14.4 Simple harmonic motion and uniform circular motion 14.5 Velocity and acceleration in simple harmonic motion 14.6 Force law for simple harmonic motion 14.7 Energy in simple harmonic motion 14.8 Some systems executing Simple	Nil

Harmonic Motion 14.9 Damped simple harmonic motion 14.10 Forced oscillations and resonance	
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Chapter-15 Waves

RETAINED PORTION	DELETED PORTION
15.1 Introduction 15.2 Transverse and longitudinal waves 15.3 Displacement relation in a progressive wave 15.4 The speed of a travelling wave 15.5 The principle of superposition of waves 15.6 Reflection of waves (except fundamental mode and harmonics) 15.7 Beats	Fundamental mode and harmonics. 15.8 Doppler effect.

I.P.U.C Physics Practicals : Retained experiments

(Any eight experiments have to be conducted)

1. Use of Vernier Callipers to
 - (i) Measure diameter of small spherical/cylindrical body.
 - (ii) Measure the dimensions of given regular body of known mass and hence to determine its density and
 - (iii) Measure the internal diameter and depth of a given cylindrical object like beaker /glass/calorimeter and hence to calculate its volume
2. Use of screw gauge to
 - (a) Measure diameter of given wire.
 - (b) Measure thickness of given sheet and
 - (c) Determine volume of an irregular lamina
3. To determine the radius of curvature of given spherical surface by a spherometer
4. Measurement of the weight of given body (a wooden block) using the parallelogram law of vector addition
5. Using a simple pendulum plot $L - T$ and $L - T^2$ graphs, hence find the effective length of second's pendulum using appropriate graph
6. To study the relation between force of limiting friction and normal reaction and to find the coefficient of friction between surface of a moving block and that of a horizontal surface.
7. To find the force constant and effective mass of a helical spring by plotting $T^2 - m$ graph using method of oscillation
8. To determine the surface tension of water by capillary rise method
9. To determine the coefficient of viscosity of a given liquid by measuring the terminal velocity of a spherical body
10. To study the relationship between the temperature of a hot body and time by plotting a cooling curve

I PUC Physics Practicals : Deleted experiments

1. To determine mass of two different objects using a beam balance
2. To find the downward force, along an inclined plane, acting on a roller due to gravity and study its relationship with the angle of inclination by plotting graph between force and $\sin\theta$
3. To determine Young's modulus of the material of a given wire by using Searle's apparatus
4. To study the variation in volume (V) with pressure (P) for a sample of air at constant temperature by plotting graphs between P and V. and between P and $1/V$
5. (i) To study the relationship between frequency and length of a given wire under constant tension using a sonometer
(ii) To study the relation between the length of a given wire and tension for constant frequency using sonometer
6. To determine the velocity of sound in air at room temperature using a resonance tube
7. To determine the specific heat capacity of a given (i) solid and (ii) a liquid by the method of mixtures