

UGPHS – 01
Elementary Mechanics

Block-I	Concepts in Mechanics
Unit-01	Motion –Language for describing Motion Uniform circular motion, Relative motion
Unit-02	Force and Momentum- Causes of Motion, Linear Momentum
Unit-03	Work and Energy
Unit-04	Gravitation
Block-II	Systems of Particles
Unit-05	Motion under Control Conservative Forces
Unit-06	Many Particle System
Unit-07	Scattering
Unit-08	Rigid Body Dynamics
Unit-09	Motion in non- Inertial Frames of reference
Unit-10	Appendix-A-Conic Section
Unit-11	Appendix-B-Methods of Determinations of moment of Inertia

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Oscillations and Waves

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Unit-02	Superposition of Simple Harmonic Oscillations
Unit-03	Damped Harmonic Motion
Unit-04	Forced Oscillations and Resonance
Unit-05	Coupled Oscillations
Block-II	Waves
Unit-06	Wave Motion
Unit-07	Waves at the Boundary of two media
Unit-08	Superposition of waves-I- Stationary waves, wave groups and group Velocity beats
Unit-09	Super Position of waves –II- Interference diffraction

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Electric and Magnetic Phenomena

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Unit-01	Electric charge force and field
Unit-02	Gauss's law
Unit-03	Electric potential
Unit-04	Coupled Oscillations
Unit-05	Potential for continuous charge distribution and energy
Block- II	Electrostatics in Medium
Unit-06	Macroscopic proportions of Dielectrics
Unit-07	Capacitor
Unit-08	Microscopic Properties of Dielectrics
Block-III	Electric Current and Magnetic Field
Unit-09	Electric Current
Unit-10	Magnetic Field
Unit-11	Motion of Charges in Electric and Magnetic Field
Unit-12	Magnetism of Materials-I
Unit-13	Magnetism of Materials-II- Ferromagnetism, Magnetic, Intensify, Relationship between B&H, Magnetic Circuits.
Block-IV	Electromagnetism
Unit-14	Electromagnetism Induction
Unit-15	Maxwell's Equations and Electromagnetic Waves
Unit-16	Reflection and Refraction of Electromagnetic Waves

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Electrical Circuits and Electronics

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Unit-01	Circuit Analysis
Unit-02	A.C. and D.C. Circuits
Unit-03	Electron Devices
Block-II	Electronic Circuits
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Unit-05	Oscillators
Unit-06	Power Supply
Block-III	Linear Integrated Circuits
Unit-07	The Operational Amplifier
Unit-08	Application of Operational Amplifier
Unit-09	Linear's IC's- Amplifier and Voltage Regulators
Block-IV	Digital Electronics
Unit-10	Number System and Codes
Unit-11	Fundamental of Boolean Algebra and Flips Flops
Unit-12	Registers, Counters, Memory Circuits and Analog
Unit-13	Electronic Instruments

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Thermodynamics and Statistical Mechanics

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Unit-04	The Applications of the First Law of Thermodynamics
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Unit-12	Real Gases
Block- IV	Elements of Statistical Mechanics
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Unit-14	The Partition Function
Unit-15	Quantum Statistics

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Optics

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Unit-12	Diffraction and Resolution
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Modern Physics

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Unit-06	Schrodinger Equation
Unit-07	Observables and Operators
Block-III	Application of Quantum Mechanics to Some System
Unit-08	Some Simple System
Unit-09	Spherically Symmetric Systems: Hydrogen Atom
Unit-10	Atomic Spectra
Unit-11	x-Ray Spectra
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Unit-13	Nucleus
Unit-14	Applied Nuclear Science
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Mathematical Methods in Physics-I

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Mathematical Methods in Physics-II

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Ordinary Differential Equations

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- Unit-03 Second Order Ordinary Differential Equations with Variable Coefficients.
- Unit-04 Some Applications of ODE in Physics

Block-II

Partial Differential Equations

- Unit-05 An Introduction to Partial Differential Equations
- Unit-06 Partial Differential Equations in Physics
- Unit-07 Fourier Series
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Quantum Mechanics: Approximation Methods and Perturbation Theory

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Unit-02	Introduction to Laboratory-1- Measurement
Unit-03	Introduction to Laboratory – II- Error Analysis

Block-II

Unit-04	Some Experiments on Mechanical and Electrical Properties of Materials
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UGPHS (L) -02
Physics Laboratory-II
Block-I

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UGPHS (L) -03
Physics Laboratory-
Block-I

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Unit-02	Some Experiments on Electronics Circuits on Galvan magnetic Phenomena and

Books Recommended:

1. **Question Physics:** Lehniger, D.C Tangal
2. **Physics:** A. K. Gupta
3. **Text Book:** Ajay Ghatak
4. **All Titles:** Gupta & Kumar
5. **Quantum:** L. Schiff