

UNIT-1 → Mechanics

1) Moment of Inertia Theorem → parallel  
→ perpendicular

2) Moment of Inertia of → Continuous Bodies  
→ Diatomic molecules

3) Gyroscope

4) Torsional pendulum & Double pendulum

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Theory & Derivatives

UNIT #2 → Electromagnetic waves

- 1) Maxwell's Equation
- 2) Electromagnetic waves (EMW) → Definition, properties, Sources, Law & Theorem
- 3) EMW → Energy  
Intensity  
Momentum &  
Radiation pressure

UNIT-3 → Oscillation, Optics & Laser

- 1) Nd-YAG laser, CO<sub>2</sub> laser & Semiconductor laser  
(Including Application of laser)
- 2) Differential Equation of SHM
- 3) Michelson Interferometer
- 4) Einstein's Co-efficient
- 5) Standing & Travelling waves.

## Unit-4 → Basic Quantum Mechanics

- 1) Compton Effect → Experiment, principle, working & constructions
- 2) Schrodinger wave Equation (SWE)
- 3) particle in 1D, 2D & 3D
- 4) Electron Theory of metals



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Vivo AI camera

Unit - 5 → Applied Quantum mechanics

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Unit - 5 → Applied Quantum Mechanics

- 1) Harmonic Oscillator
- 2) Scanning Tunneling Microscope (STM)
- 3) Resonant Tunneling Diode (RTD)
- 4) Kronig-Penny Model
- 5) Energy Band Theory → 4 steps