

# GOVERNMENT COLLEGE BIROHAR (JHAJJAR)

Summary of Lesson Plans of College Faculty for Academic Session 2024-25

Name of Assistant/Associate Professor: Dr. Tej Paspath Sharma  
Class: B.S. IIIrd Subject: Physics (Solid State Physics)  
Semester: V Sem

Months	Topics/Chapters to be Covered
July 2024	Crystal Structure - I Crystalline and glassy forms, Liquid Crystal periodicity, Lattice and basis, crystal translation vectors and axes. Unit cell and primitive cell, Wigner Seitz primitive cell. Symmetry operations for a two Dimen. Crystal.
August 2024	Bravais lattices in two and three dimensions. Unit Test - I Crystal structure - II Crystal planes and Miller indices Interplanar spacing, Crystal structures of Zinc sulphide Sodium chloride and diamond, X-ray diffraction
September 2024	Bragg's Law and experimental X-ray diffraction Methods, $k$ -space Unit Test II Assignment - I <u>Reciprocal Lattice:-</u> Reciprocal Lattice and its physical significance, reciprocal lattice vectors.

October  
2024

Reciprocal lattice to a simple cubic  
lattice, b.c.c, and f.c.c.

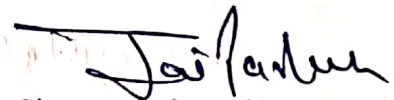
Specific heat: specific heat of solids  
Einstein theory of specific heat  
Debye Model of specific heat of solids.

November  
2024

Unit Test - III

Assignment - II

Complete Syllabus - revision



Signature of Asst/Asso. Professor



# GOVERNMENT COLLEGE BIROHAR (JHAJJAR)

Summary of Lesson Plans of College Faculty for Academic Session 2024-25

Name of Assistant/Associate Professor: Dr. Jai Prakash Sharma

Class: B.Sc/II Subject: Physics Quantum Mechanics

Semester: V

Months	Topics/Chapters to be Covered
July 2024	Origin of Quantum Mechanics Failure of Classical E.M. Theory. Quantum Theory of radiation (old quantum Theory) Photo, Photoelectric effect, Compton effect De-Broglie hypothesis Davisson and Germer Experiment G.P. Thomson experiment
August 2024	Phase velocity, group velocity Heisenberg's Uncertainty principle, Time energy and angular momentum Gamma Ray Microscope, Electron diffraction $\lambda = h/mv$ - Derivation of Time dependent Schrödinger wave eq. eigen values, eigen function. wave function.
September 2024	Normalization of wave function, concept of Observable and operator. Solution of Schrödinger eq. of harmonic oscillator ground state and excited state Unit Test - I, II Assignment - I

October  
2024

Application of Schrodinger eq. in the soln  
of following one dimensional:

- free particle in one dimensional box.

Sol. of Schrodinger wave eq., eigen function  
eigen values, quantization of Energy and Momentum

Nodes and antinodes, Zero point Energy.

(i) One Dimensional potential barrier:  $E > V_0$   
(Reflection and Transmission)

November  
2024

(ii) One D. potential barrier  $E < V_0$  (Reflection  
coefficient, penetration of leakage coefficient)  
penetration depth.

Unit Test  
Assignment No. 1, 2 Revision.

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# GOVERNMENT COLLEGE BIROHAR (JHAJJAR)

Summary of Lesson Plans of College Faculty for Academic Session 2024-25

Name of Assistant/Associate Professor: Dr. Jai Prakash Sharma  
 Class: B.Sc II<sup>nd</sup> Subject: Physics Optics - I  
 Semester: III<sup>rd</sup>

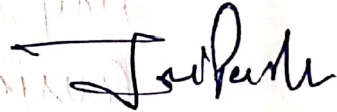
Months	Topics/Chapters to be Covered
July 2024	<p><u>Fourier Analysis and Fourier Transform</u></p> <p>Speed of transverse wave on a uniform string.                      Speed of longitudinal waves in a fluid                      Superposition of waves                      Fourier Analysis of complex waves and its applications. for the solution of triangular and rectangular waves.</p>
August 2024	<p>Half and full wave rectifier out puts.                      Fourier transforms and its properties.                      App. of Fourier transform.  <math>f(x) = e^{-x^2}</math>  <math>f(x) = 1 \quad  x  &lt; a</math>  <math>f(x) = 1 \quad  x  &gt; a</math></p> <p><u>Geometrical Optics</u></p> <p>Matrix method in paraxial optics, effect of translation and refraction.</p>
September 2024	<p>Derivation of thin lens and thick lens formulae                      Unit plane, nodal planes, system of thin lenses.                      Chromatic, spherical coma, astigmatism and distortion aberrations and their remedies.                      physical optics.</p>

October  
2024

Interference :- Interference by Division of  
wavefront.  
Fresnel's Biprism and its applications.  
to determination of wave length of sodium  
light and thickness of a mica sheet.  
Lloyd's mirror, phase change on reflection.

November  
2024

Unit Test  
Assignment  
Complete Syllabus - Revision



Signature of Asst/Asso. Professor