

NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Chemistry and Biochemistry - NOC:Chemistry I:Introduction To Quantum Chemistry And Molec

Subject Co-ordinator - Prof. K. Mangala Sunder

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Lecture 1 - Historical context and experiments: Introducing the Schrödinger equation
Lecture 2 - Lecture 2 - Bohr's atom, De Broglie Matter Waves and Schrodinger equation
Lecture 3 - Lecture 3 - Electromagnetic Radiation
Lecture 4 - Lecture 4 - Interaction of Radiation with Matter
Lecture 5 - Lecture 5 - Molecular Spectroscopy
Lecture 6 - Lecture 6 - Elementary Mathematical Functions I
Lecture 7 - Lecture 7 - Review of Properties of Elementary Functions II
Lecture 8 - Lecture 8 - Time Dependent Schrödinger Equation & Time Independent Schrödinger Equation
Lecture 9 - Lecture 9 - Schrödinger Equation Particle in a One-dimensional Box : Part I
Lecture 10 - Lecture 10 - Schrödinger Equation Particle in a One-dimensional Box : Part II
Lecture 11 - Lecture 11 - Schrödinger Equation Particle in Two-dimensional Box : Part I
Lecture 12 - Lecture 12 - Particle in Two-dimensional Box : Part II Uncertainty Principle
Lecture 13 - Lecture 13 - Particle in Two-dimensional Box : Part III Expectation Values
Lecture 14 - Lecture 14 - The Quantum Mechanics of Hydrogen Atom - Part I
Lecture 15 - Lecture 15 - The Quantum Mechanics of Hydrogen Atom - Part II
Lecture 16 - Lecture 16 - The Quantum Mechanics of Hydrogen Atom - Part III
Lecture 17 - Lecture 17 - The Quantum Mechanics of Hydrogen Atom - Part IV
Lecture 18 - Lecture 18 - The Quantum Mechanics of Hydrogen Atom - Part V
Lecture 19 - Lecture 19A - Assignment 1 Solution/Hints
Lecture 20 - Lecture 19B - Assignment 1 Solution/Hints
Lecture 21 - Lecture 19C - Assignment 1 Solution/Hints
Lecture 22 - Lecture 19D - Assignment 1 Solution/Hints
Lecture 23 - Lecture 19E - Assignment 1 Solution/Hints
Lecture 24 - Lecture 20 Harmonic Oscillator Model - Part I
Lecture 25 - Lecture 21 Harmonic Oscillator Model - Part II
Lecture 26 - Lecture 22 Harmonic Oscillator Model - Part III
Lecture 27 - Lecture 23 Harmonic Oscillator Model - Part IV
Lecture 28 - Lecture 24 Particle on a Ring - Part I
Lecture 29 - Lecture 25 Particle on a Ring - Part II

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- Lecture 30 - Lecture 26 - Heisenberg's Uncertainty Relation
- Lecture 31 - Lecture 27A - Operators, Commutators, Eigenvalues and Eigenvectors
- Lecture 32 - Lecture 27B - Operators, Commutators, Eigenvalues and Eigenvectors
- Lecture 33 - Lecture 28 - Introduction to Chemical Applications
- Lecture 34 - Lecture 29 - Radiation Densities and Einstein's Semiclassical model
- Lecture 35 - Lecture 30 - Born Oppenheimer Approximation
- Lecture 36 - Lecture 31 - Beer Lambert Law
- Lecture 37 - Lecture 32 - Diatomic Vibrational Spectra Harmonic Model
- Lecture 38 - Lecture 33 - Diatomic Vibration Morse Oscillator Model
- Lecture 39 - Lecture 34 - Molecular Vibrations in Polyatomic Molecules - Qualitative Account
- Lecture 40 - Lecture 35 - Polyatomic Vibrations - Illustrative examples of normal vibrations