

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

NPTEL Video Course - Chemistry and Biochemistry - NOC: Approximate Methods in Quantum Chemistry

Subject Co-ordinator - Prof. Sabyashachi Mishra

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Review of Quantum Chemistry
Lecture 2 - Postulates of Quantum Mechanics - I
Lecture 3 - Postulates of Quantum Mechanics - II
Lecture 4 - Exactly Solvable Models - I
Lecture 5 - Exactly Solvable Models - II
Lecture 6 - Exactly Solvable Models - II (Continued...)
Lecture 7 - Variational Principle - I
Lecture 8 - Variational Principle - II
Lecture 9 - Variational Method: Applications - I
Lecture 10 - Linear Variational Method
Lecture 11 - Applications of Linear Variational Method
Lecture 12 - Variational Method in Chemical Bonding - I
Lecture 13 - Variational Method in Chemical Bonding - II
Lecture 14 - Variational Method in Chemical Bonding - III
Lecture 15 - Molecular Orbital Treatment of Polyatomics
Lecture 16 - Molecular Orbital Treatment of Polyatomics
Lecture 17 - Perturbation Theory
Lecture 18 - Examples of Perturbation Theory - I
Lecture 19 - Examples of Perturbation Theory - II
Lecture 20 - Molecular Response to Electric Field - I
Lecture 21 - Molecular Response to Electric Field - II
Lecture 22 - Degenerate Perturbation Theory
Lecture 23 - Excited States of He Atom - I
Lecture 24 - Excited States of He Atom - II
Lecture 25 - Slater Determinants - I
Lecture 26 - Slater Determinants - II
Lecture 27 - Energy Expectation Value with Slater Determinants - I
Lecture 28 - Energy Expectation Value with Slater Determinants - II
Lecture 29 - Self-Consistent Field Method

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- Lecture 30 - Canonical HF Equations
- Lecture 31 - Hartree-Fock Energy
- Lecture 32 - Hartree-Fock-Roothan Equations
- Lecture 33 - The Density Matrix
- Lecture 34 - Evaluation of Molecular Properties
- Lecture 35 - Basis Sets - I
- Lecture 36 - Basis Sets - II
- Lecture 37 - Electron Correlation and Post HF Methods
- Lecture 38 - Time-Dependent Perturbation Theory - I
- Lecture 39 - Time-Dependent Perturbation Theory - II
- Lecture 40 - Slowly Switched Constant Perturbation
- Lecture 41 - Oscillating Perturbation
- Lecture 42 - Einstein's Coefficients