NPTEL Video Course - Chemistry and Biochemistry - NOC:Quantum Chemistry of Atoms and Molecules

Subject Co-ordinator - Prof. Anindya Datta

Co-ordinating Institute - IIT - Bombay

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

Lecture 30 - 2p orbitals
Lecture 31 - 3pz and 3d orbitals
Lecture 32 - Atomic orbitals and orbital approximation
Lecture 33 - Multi electron atoms
Lecture 34 - He atom wavefunction
Lecture 35 - Excited states of many electron atoms
Lecture 36 - Introduction to Perturbation theory
Lecture 37 - Scope of Perturbation theory
Lecture 38 - Application of Perturbation theory
Lecture 39 - Higher order perturbations
Lecture 40 - Perturbation theory for non-degenerate states
Lecture 41 - Perturbation Theory for degenerate states
Lecture 42 - Application of Perturbation Theory for degenerate States
Lecture 43 - Variation Method
Lecture 44 - Variational Method (Continued...)
Lecture 45 - Variational calculations for Harmonic Oscillator and Particle in a Box
Lecture 46 - Secular equations in Variational calculations
Lecture 47 - Secular equations for particle in a box
Lecture 48 - Variational calculation for particle in a box (Continued...)
Lecture 49 - Perturbation theory for many electron atoms
Lecture 50 - Variational method for many electron atoms
Lecture 51 - Hartree-Fock Equations and Self Consistent Fields
Lecture 52 - Hartree-Fock Equations for He - Part 1
Lecture 53 - Hartree-Fock Equations for He - Part 2
Lecture 54 - Electronic Wavefunctions of He atom
Lecture 55 - Valance Bond Theory and homonuclear diatomics - Part 1
Lecture 56 - Valance Bond Theory and homonuclear diatomics - Part 2
Lecture 57 - Molecular shape and hybrid orbitals
Lecture 58 - sp2 hybridization
Lecture 59 - sp3 hybridization
Lecture 60 - Non-equivalent hybrid orbitals
Lecture 61 - Molecular Orbital Theory for H2+
Lecture 62 - Molecular orbital theory for homonuclear diatomic molecules
Lecture 63 - Beyond Homonuclear diatomic molecules
Lecture 64 - MOT for polyatomic molecules
Lecture 65 - Huckel MOT-1
Lecture 66 - Huckel MOT-2
Lecture 67 - The last word