Quantum Chemistry and Spectroscopy

S19

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DEPARTMENT	Chemistry
INSTITUTE	IIT KHARAGPUR
COURSE OUTLINE	

COURSE DETAILS

S. No	Module ID/ Lecture ID	Lecture Title/Topic
1	Lecture 1	Birth of Quantum Mechanics (Part - I)
2	Lecture 2	Birth of Quantum Mechanics (Part - II)
3	Lecture 3	Postulates of Quantum Mechanics (Part - I)
4	Lecture 4	Postulates of Quantum Mechanics (Part - II)
5	Lecture 5	Postulates of Quantum Mechanics (Part - III)
6	Lecture 6	Postulates of Quantum Mechanics (Part - IV)
7	Lecture 7	Postulates of Quantum Mechanics (Part - V)
8	Lecture 8	Postulates of Quantum Mechanics (Part - VI)
9	Lecture 9	Particle in a box (Part - I)
10	Lecture 10	Particle in a box (Part - II)

11	Lecture 11	Particle in a box (Part - lll)
12	Lecture 12	Particle in a box (Part - lV)
13	Lecture 13	Harmonic Oscillator (Part - l)
14	Lecture 14	Harmonic Oscillator (Part - ll)
15	Lecture 15	Harmonic Oscillator (Part - lll)
16	Lecture 16	Harmonic Oscillator (Part - lV)
17	Lecture 17	Harmonic Oscillator (Part - V)
18	Lecture 18	Harmonic Oscillator (Part - Vl)
19	Lecture 19	Angular Momentum (Part - l)
20	Lecture 20	Angular Momentum (Part - ll)
21	Lecture 21	Angular Momentum (Part - lll)
22	Lecture 22	Angular Momentum (Part - lV)
23	Lecture 23	Angular Momentum (Part - V)
24	Lecture 24	Particle on a ring
25	Lecture 25	Particle on a sphere and rigid rotor
26	Lecture 26	Hydrogen atom (Part - l)
27	Lecture 27	Hydrogen atom (Part - ll)
28	Lecture 28	Hydrogen atom (Part - lll)
29	Lecture 29	Hydrogen atom energy levels
30	Lecture 30	Hydrogen atom wave functions (Part - l)
31	Lecture 31	Hydrogen atom wave functions (Part - ll)
32	Lecture 32	Hydrogen atom wave functions (Part - lll)

33	Lecture 33	Zeeman Effect
34	Lecture 34	Electron spin
35	Lecture 35	Time dependent Schroedinger Equation (Part - I)
36	Lecture 36	Time dependent Schroedinger Equation (Part - II)
37	Lecture 37	Bra-ket rotation (Part - I)
38	Lecture 38	Bra-ket rotation (Part - II)
39	Lecture 39	Comparison of models
40	Lecture 40	Atomic And molecular Hamiltonian
41	Lecture 41	Variational Principle (Part - I)
42	Lecture 42	Variational Principle (Part - II)
43	Lecture 43	Valence Bond Treatment of H_2 (Part - I)
44	Lecture 44	Valence Bond Treatment of H_2 (Part - II)
45	Lecture 45	Molecular Orbital Theory
46	Lecture 46	Perturbation Theory
47	Lecture 47	Introduction to moleculer spectroscopy
48	Lecture 48	Rotational Spectroscopy of diatomics (Part - I)
49	Lecture 49	Rotational Spectroscopy of diatomics (Part - II)
50	Lecture 50	Rotational Spectroscopy of Polytomics
51	Lecture 51	Vibrational spectroscopy of diatomics (Part - I)
52	Lecture 52	Vibrational spectroscopy of diatomics (Part - II)
53	Lecture 53	Vibrational spectroscopy of Polyatomics (Part - I)

54	Lecture 54	Vibrational spectroscopy of Polyatomics (Part - ll)
55	Lecture 55	Symmetry and Selection rules
56	Lecture 56	Ravibrational Spectroscopy
57	Lecture 57	Electronic Spectroscopy- Selection rules
58	Lecture 58	Electronic Spectroscopy- multielectron Atoms
59	Lecture 59	Electronic Spectrum of H_e
60	Lecture 60	electronic Spectroscopy of diatomics (Part - l)
61	Lecture 61	electronic Spectroscopy of diatomics (Part - ll)
62	Lecture 62	Franck-condon Principle

References if Any: