



Quantum Mechanics I

SWAYAM Prabha Course Code - S4

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DEPARTMENT	Physics
INSTITUTE	Indian Institute of Technology, Bombay
COURSE OUTLINE	This course is a first level course in the Dirac's bra(ket) notation which will set foundation to take up advanced level courses.

COURSE DETAILS

S. No	Module ID/ Lecture ID	Lecture Title/Topic
1	L1	Introduction to Quantum Mechanics - I
2	L2	Introduction to Quantum Mechanics - II
3	L3	Review of Particle in Box, Potential Well, Barrier, Harmonic Oscillator-I
4	L4	Review of Particle in Box, Potential Well, Barrier, Harmonic Oscillator-II
5	L5	Bound States-I
6	L6	Bound States-II
7	L7	Conditions and Solutions for one dimensional bound states-I
8	L8	Conditions and Solutions for one dimensional bound states-II
9	L9	Linear Vector Space (LVS-I)
10	L10	Linear Vector Space (LVS-II)

11	L11	Linear Vector Space (LVS-III)
12	L12	Basis for operators and states in LVS-I
13	L13	Basis for operators and states in LVS-II
14	L14	Function spaces-I
15	L15	Function spaces-II
16	L16	Postulates of Quantum Mechanics-I
17	L17	Postulates of Quantum Mechanics-II
18	L18	Classical vs Quantum Mechanics-I
19	L19	Classical vs Quantum Mechanics-II
20	L20	Compatible vs Incompatible Observable-I
21	L21	Compatible vs Incompatible Observable-II
22	L22	Schrodinger, Heisenberg Pictures - I
23	L23	Schrodinger, Heisenberg Pictures - II
24	L24	Solutions to other Coupled Potential Energies - I
25	L25	Solutions to other Coupled Potential Energies -II
26	L26	Hydrogen Atom & Wave Functions, Angular Momentum Operators, Identical Particles - I
27	L27	Hydrogen Atom & Wave Functions, Angular Momentum Operators, Identical Particles - II
28	L28	Identical Particles & Quantum Computer -I
29	L29	Identical Particles & Quantum Computer -II
30	L30	Harmonic Oscillator - I
31	L31	Harmonic Oscillator - II
32	L32	Ladder Operators - I
33	L33	Ladder Operators - II

34	L34	stern - Gerlach Experiment - I
35	L35	stern - Gerlach Experiment - II
36	L36	Oscillator Algebra
37	L37	Angular momentum - I
38	L38	Angular momentum - II
39	L39	Rotations Group - I
40	L40	Rotations Group - II
41	L41	Addition of angular Momentum
42	L42	Addition of angular Momentum II
43	L43	clebsch - Gordan Coefficients - I
44	L44	clebsch - Gordan Coefficients - II
45	L45	clebsch - Gordan Coefficients - III
46	L46	Tensor Operators & Wingner-Eckart Theorem - I
47	L47	Tensor Operators & Wingner-Eckart Theorem - II
48	L48	Tensor Operators & Wingner-Eckart Theorem - III

References if Any: