(Lesson Plan) ODD

MCM DAV College for Women, Sector – 36A, Chandigarh
Monthly Teaching Plans (*Odd Semester*)
Session – (2024-25)

Name of the Teacher: **Dr. Kulwinder Kaur and Dr. Monika**

Department: **Physics**

Class: **B.Sc (II)**

Subject: **Quantum Physics(I)**

Section (s): **Non-Medical, Vocational**

S.No.	Date (Monthly)		Topics Covered	Academic Activity Undertaken*
	From	To		
1	15th July, 2024	31th August,2024	✓ De Broglie waves, ✓ wave packet, ✓ Phase velocity and Group velocity, ✓ Electron microscope, ✓ Particle diffraction ✓ Davisson-Germer experiment, ✓ Uncertainty principle with illustrations, ✓ Principle of complementarity.	✓ **Lecture using board and ppt in classroom** ✓ **Group Discussion** ✓ **Online animations for concept clarity**
2	1st September ,2024	30st September,2024	✓ Quantum mechanics, Wave equation, ✓ Plausible arguments leading to time-dependent Schrodinger equations, Born's interpretation of Wave	✓ **Lecture using black board in classroom,** ✓ **Oral questions** ✓ **Numerical Problems**

			function, complex character, continuity and boundary conditions, probability interpretation, normalization, ✓ Probability current, Probability conservation equation, ✓ Principle of superposition.	
3	1st October,2024	15th October,2024	✓ Fundamental postulates of quantum mechanics. ✓ Eigen values and Eigen functions. ✓ Operator formalism, Position, momentum and energy operators, ✓ expectation values, ✓ Ehrenfest theorem, Hermitian operators ✓ Steady-state Schrodinger equation ✓ Application to stationary states for one dimension, ✓	✓ **Lecture using black board in classroom,** ✓ **Assignments** ✓ **Oral Tests**
4	16th October,2024	18th Nov,2024	✓ .Potential step, potential barrier, Tunnel effect examples, Scanning Tunneling microscope, ✓ Rectangular potential well, linear harmonic oscillator. Schrödinger equation for spherically symmetric potential, ✓ Spherical harmonics, Hydrogen atom ✓ Energy levels and Eigen functions, ✓ Principal, Orbital and Magnetic quantum numbers,	✓ **Lecture using black board in classroom** ✓ **Online sources** ✓ **Group Discussions**

			✓ Electron probability density.	

***Any of these** – (i) Lecture Method; (ii) PPT; (iii) Online Sources; (iv) Group Discussion; (v) Case Studies etc.
Other Methods adopted by the teacher – Please write the specific teaching method

EVEN
(Lesson Plan)

MCM DAV College for Women, Sector – 36A, Chandigarh
Monthly Teaching Plans (*Even Semester*)
Session – (2024-2025)

Name of the Teacher: **Dr. Kulwinder Kaur and Dr. Monika**

Department: **Physics**

Class: **B.Sc (II)**

Subject: **Quantum Physics (II)**

Section (s): **Non-Medical, Vocational**

S.No.	Date (Monthly)		Topics Covered	Academic Activity Undertaken*
	From	To		
1	10th Jan. 2025 (Tentative)	31st Jan,2025	✓ Radiative transitions, selection rules and life times, ✓ Spectrum of hydrogen atom. ✓ Normal Zeeman effect and experiment, Degeneracy of H-atom energy levels, fine structure, ✓ Electron angular momentum, Larmor's frequency, electron spin angular momentum, ✓ Exclusive principle, Stern- Gerlach experiment.	✓ **Lecture using black board in classroom,** ✓ **Oral questions** ✓ **Numerical Problems** ✓
2	1st Feb,2025	28th Feb,2025	✓ Spin-orbit coupling, electron magnetic moment, total angular momentum,	✓ **Lecture(using black board in classroom,**

			✓ Hyperfine structure, examples of one electron systems ✓ Anomalous Zeeman Effect, Lade-g factor (sodium D-lines). ✓ Paschen-Back Effect, Stark Effect. ✓ Symmetric and Ant symmetric wave functions, ✓ Exclusion principle, Many electron atoms, Slater determinant, ✓ Electronic configurations, Hund's rule, Spin-Orbit coupling	✓ **Group Discussions**
3	1st March,2025	31st March,2025	✓ L-S coupling, J-J couplings, term symbols. ✓ Atomic spectra of H, Na, He and Hg, ✓ Selection rules. ✓ X-ray spectra, nomenclature, Selection rules, ✓ Mosley law, Auger Effect ✓ Molecular bonding, H2 + ion and H2 molecules, Complex molecules, molecular spectra, selection rules, symmetric structures,	✓ **Lecture (using black board) in classroom,** ✓ **Assignments** ✓ **Oral Tests** ✓ **Group Discussions**
4	1st April,2025	15th April, 2025	✓ Rotational vibration levels and spectra of diatomic molecules, ✓ Vibration-Rotational spectra, Electronic spectra of molecules,	✓ **Lecture using black board in classroom** ✓ **Group Discussions**

				✓ **Quiz**
5	16th April, 2025	26th April, 2025	✓ Franck Condon principle, fluorescence and phosphorescence, ✓ Raman Effect, ✓ Magnetic resonance experiments.	✓ **Lecture using black board in classroom** ✓ **Group discussion** ✓ **Notes** ✓ **Numerical Problems**

***Any of these** – (i) Lecture Method; (ii) PPT; (iii) Online Sources; (iv) Group Discussion; (v) Case Studies etc.
Other Methods adopted by the teacher – Please write the specific teaching method