

Lesson Plan

Name of the Assistant/ Associate Professor: - Nidhi Sharma

Class and Section: M.Sc. Physics (Semester II)

Subject: Quantum Mechanics- II

Paper code: PHY 201

Week	Date	Topics
1	1-Jan-18	Introduction : Approximate methods for bound states-1
	2-Jan-18	Stationary perturbation theory : non-degenerate case –first-order&second-order
	3-Jan-18	Correction to energy eigenvalues & eigenfunction
	4-Jan-18	Perturbation of an oscillator (harmonic & anharmonic perturbation)
	5-Jan-18	Fine st. of hydrogen atom (relative & spin-orbit coupling correction)
	6-Jan-18	Ground state of helium atom
	7-Jan-18	Sunday
2	8-Jan-18	Degenerate case-removal of degeneracy in second order
	9-Jan-18	do
	10-Jan-18	Zeeman effect without electron spin first -order
	11-Jan-18	do
	12-Jan-18	- Stark effect in $n=2$ state of hydrogen
	13-Jan-18	- do
	14-Jan-18	Sunday
3	15-Jan-18	Rayleigh-Ritz variational method ground & excited states
	16-Jan-18	do
	17-Jan-18	do
	18-Jan-18	Application to ground state of helium
	19-Jan-18	Problem on above topics
	20-Jan-18	test
	21-Jan-18	Sunday
4	22-Jan-18	Vasant Panchami
	23-Jan-18	Van der Waals interaction using perturbation & variational methods
	24-Jan-18	Sir Chhotu Ram Jayanti
	25-Jan-18	do
	26-Jan-18	Republic Day
	27-Jan-18	do
	28-Jan-18	Sunday
5	29-Jan-18	Problem on above topics
	30-Jan-18	Assignment
	31-Jan-18	test

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Name of the Assistant/ Associate Professor Nidhi Sharma

Class and Section: M.Sc. Physics(SemesterII)

Subject:Quantum Mechanics-II

Paper Code: PHY201

Week	Date	Topics
1	1-Feb-18	Introduction:Approximate methods for bound states-II
	2-Feb-18	TheWKB approximation:classical limit Approximate solution
	3-Feb-18	do
	4-Feb-18	Sunday
2	5-Feb-18	Asymptotic nature of solution ,solution near a turning point
	6-Feb-18	Special case of linear turing point ,connection at the turing point
	7-Feb-18	Asymptotic connection formulae
	8-Feb-18	do
	9-Feb-18	Application to energy level of quantum well
	10-Feb-18	Maharshi Dayanand Saraswati Jayanti
	11-Feb-18	Sunday
3	12-Feb-18	Application to tunnelling through a potential barrier &alpha decay
	13-Feb-18	Maha Shivratri
	14-Feb-18	do
	15-Feb-18	First-order Time-dependent perturbation theory
	16-Feb-18	do
	17-Feb-18	Problem on above topics
	18-Feb-18	Sunday
4	19-Feb-18	Transition probability for constant & harmonic perturbation
	20-Feb-18	Transition to a group of final states-T he Fermi golden rule
	21-Feb-18	Application: Ionization of hydrogen atom
	22-Feb-18	do
	23-Feb-18	Interaction of an atom with em radiation
	24-Feb-18	do
	25-Feb-18	Sunday
5	26-Feb-18	Transition probabability for induced absorption &emission
	27-Feb-18	Assignment

	28-Feb-18	As per Uni. Calendar Holiday
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Class and Section: M.Sc. Physics (SemesterII)

Subject: Quantum Mechanics-II Paper Code: PHY201

Week	Date	Topics
1	1-Mar-18	Guru Ravidas Birthday
	2-Mar-18	Holi
	3-Mar-18	As per Uni. Calendar Holiday
	4-Mar-18	Sunday
2	5-Mar-18	Introduction: selected application of quantum mechanics
	6-Mar-18	Atomic st. Of many –electron atom
	7-Mar-18	Central-field approximation Periodic system of elements
	8-Mar-18	do
	9-Mar-18	Thomas-Fermi statistical model
	10-Mar-18	Evaluation of the potential
	11-Mar-18	Sunday
3	12-Mar-18	Hartree, self –consistent fields & connection with variational method
	13-Mar-18	do
	14-Mar-18	Correction to the central-field approximation “(L-S & j-j coupling)
	15-Mar-18	do
	16-Mar-18	Molecular st. Classification of energy , wave equation
	17-Mar-18	test
	18-Mar-18	Sunday
4	19-Mar-18	Hydrogen molecule: Potential energy function
	20-Mar-18	The Morse potential,
	21-Mar-18	Rotational & vibration of diatomic molecules
	22-Mar-18	do
	23-Mar-18	Shaheedi Diwas of Bhagat Singh, Rajguru & Sukhdev
	24-Mar-18	problems
	25-Mar-18	Sunday/ Ram Navami
5	26-Mar-18	Energy level
	27-Mar-18	problems
	28-Mar-18	Assignment
	29-Mar-18	Mahavir Jayanti
	30-Mar-18	Revised
	31-Mar-18	do

Lesson Plan

Name of the Assistant/ Associate Professor Nidhi Sharma

Class and Section: M.Sc. Physics (Semester II)

Subject: Quantum Mechanics –II Paper Code...PHY 201

Week	Date	Topics
1	1-Apr-18	Sunday
	2-Apr-18	Introduction: Quantum theory of scattering
	3-Apr-18	Scattering experiment & cross-section
	4-Apr-18	Laboratory & centre of mass system
	5-Apr-18	Scattering amplitude & cross section
	6-Apr-18	Method of partial waves ' phase shift differential & cross section
	7-Apr-18	do
	8-Apr-18	Sunday
2	9-Apr-18	Relation between phase shift & scattering potential
	10-Apr-18	Convergence of partial wave series
	11-Apr-18	Scattering by a finite square well
	12-Apr-18	Resonances-Breit-Wigner formula
	13-Apr-18	Scattering by a hard sphere potential
	14-Apr-18	Dr Ambedkar Jayanti / Vaisakhi
	15-Apr-18	Sunday
3	16-Apr-18	Green's function method
	17-Apr-18	Lippmann-Schwinger equation
	18-Apr-18	Parashurama Jayanti
	19-Apr-18	Born series First Born approximation
	20-Apr-18	do
	21-Apr-18	problems
	22-Apr-18	Sunday
4	23-Apr-18	Scattering of an electron by a screened coulomb potential in Born approximation
	24-Apr-18	do
	25-Apr-18	Validity criterion, scattering of two identical spinless bosons & spin-half fermions
	26-Apr-18	do
	27-Apr-18	problems

	28-Apr-18	Assignment
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