

Saraswati Mahila Mahavidyalaya, Palwal

Lesson Plan :

Name of the Assistant/Associate Professor: TALAK VERMA / NEERAJ VERMA

Class and Section: M.Sc. Physics (P) [TnS-Lab], M.Sc. Physics (F) [TnS Lab], B.Sc Ist Lab (N.M)

Name of subject: M.Sc. Physics - At & mol. Physics - IInd sem, M.Sc. final - Atomic & molecular Physics - 4th sem.

Subject Lesson Plan : 18 weeks (from January 2018 to April 2018)

(Note: Prepare as per list of holidays declared by Haryana govt.)

WEEK 1	
ASSIGNMENT: UNIT - I st NMR.	
WEEK 1, DAY 1, DATE : 01/01/2018 (MONDAY)	
M.Sc. (F) Th.	(lab (final)) Aim - detm by Helical method. (ii) Energy Band gap. - Explanation of above -
Introduction of NMR	
WEEK 1, DAY 2, DATE : 02/01/2018 (TUESDAY)	
M.Sc. (F) Th	(lab (final)) Demo of these exp.
Explanation of NMR with e.g.	
WEEK 1, DAY 3, DATE : 03/01/2018 (WEDNESDAY)	
M.Sc. (F) Th.	(lab (final)) Experiments performed.
The principle of NMR	
WEEK 1, DAY 4, DATE : 04/01/2018 (THURSDAY)	
M.Sc. (Finals) (Th) UNIT - I st	
one e ⁻ systems and Pauli Principle.	
* quantum state of one e ⁻ atoms.	
* atomic orbital.	
WEEK 1, DAY 5, DATE : 05/01/2018 (FRIDAY)	
Holiday on account of Guru Govind Singh's Birthday	
WEEK 1, DAY 6, DATE : 06/01/2018 (SATURDAY)	

<ul style="list-style-type: none"> * Hydrogen spectrum * Pauli Principle 	
WEEK 2	
ASSIGNMENT:	
WEEK 2, DAY 1, DATE : 08/01/2018 (MONDAY)	
Final (M.Sc.) Th.	lab (F)
NMR Spectrometer	calculations of experiment.
WEEK 2, DAY 2, DATE : 09/01/2018 (TUESDAY)	
M.Sc. (F) Th	lab (F)
Types of NMR	Viva of e/m by Helical method.
WEEK 2, DAY 3, DATE : 10/01/2018 (WEDNESDAY)	
M.Sc. (F) Th	lab (P)
Importance of Types.	Viva of Energy Band gap.
WEEK 2, DAY 4, DATE : 11/01/2018 (THURSDAY)	
M.Sc. (P) Th.	
<ul style="list-style-type: none"> * Spectra of alkali elements. * 	
WEEK 2, DAY 5, DATE : 12/01/2018 (FRIDAY)	
M.Sc. (P) Th.	B.Sc. I st (lab)
* Spin orbit interaction	Aim: - To find the modulus of Rigidity of wire using Using maxwell's relation
WEEK 2, DAY 6, DATE : 13/01/2018 (SATURDAY)	
M.Sc. (P) Th.	B.Sc. I st (lab)
fine St. in alkali spectra	Read & Demo.

WEEK 3	
ASSIGNMENT:	
WEEK 3, DAY 1, DATE :15/01/2018(MONDAY)	
m.sc.(F) Th.	m.sc.(F) lab
Types of Nuclei viewed from the Stand point of NMR.	- file checked -
WEEK 3, DAY 2, DATE :16/01/2018(TUESDAY)	
m.sc.(F) Th.	m.sc.(F) lab
High Resolution	
WEEK 3, DAY 3, DATE :17/01/2018(WEDNESDAY)	
m.sc.(F) Th.	m.sc.(F) lab
Broad line NMR.	
WEEK 3, DAY 4, DATE :18/01/2018(THURSDAY)	
m.sc.(P) Th.	
* Spectra of two e^- systems	
WEEK 3, DAY 5, DATE :19/01/2018(FRIDAY)	
m.sc.(P) (Th)	B.Sc.-I (lab) N.M.
* equivalent and non equivalent electrons.	Practical conduct.
WEEK 3, DAY 6, DATE :20/01/2018(SATURDAY)	
m.sc.(P) (Th)	lab (B.Sc.-I) N.M.
Explanation of salient features of alkali spectra.	Calculation.
WEEK 4	
ASSIGNMENT:	
WEEK 4, DAY 1, DATE :22/01/2018(MONDAY)	
m.sc.(F) (Th)	m.sc.(F) lab

Holiday on account of Basant Panchmi.	
WEEK 4, DAY 2, DATE :23/01/2018(TUESDAY)	
m.Sc. (P) Th. Relaxation mechanisms.	m.Sc. (P) lab
WEEK 4, DAY 3, DATE :24/01/2018(WEDNESDAY)	
Holiday on account of Sir Chotu Ram Jayanti.	
WEEK 4, DAY 4, DATE :25/01/2018(THURSDAY)	
m.Sc. (P) Th. Problems & Assignment (i) atomic orbitals (ii) fine st. of alkali spectra.	m.Sc. —
WEEK 4, DAY 5, DATE :26/01/2018(FRIDAY)	
Holiday on account of Republic Day.	
WEEK 4, DAY 6, DATE :27/01/2018(SATURDAY)	
m.Sc. (P) Th. Numerical Related with coupling & Test.	lab B.Sc. I st written work & viva
WEEK 5	
ASSIGNMENT:	
WEEK 5, DAY 1, DATE :29/01/2018(MONDAY)	
m.Sc. (P) Th. chemical shift.	lab (P)
WEEK 5, DAY 2, DATE :30/01/2018(TUESDAY)	
m.Sc. (P) Th. g _s Graphical Representation.	lab (P)
WEEK 5, DAY 3, DATE :31/01/2018(WEDNESDAY)	
Holiday on account of Guru Ravi Dass Jayanti	
WEEK 5, DAY 4, DATE :01/02/2018(THURSDAY)	

M.Sc. (P) Th. Spin-spin coupling.	
WEEK 5, DAY 5, DATE :02/02/2018(FRIDAY) UNIT-II	
M.Sc. (P) Th. St. and line broadening. Explanation of Zeeman effect.	B.Sc. I (lab) Viva- file checked.
WEEK 5, DAY 6, DATE :03/02/2018(SATURDAY) M.Sc. (P) Th. Normal and anomalous Zeeman effect.	B.Sc. I (lab) Aim - Elastic cast. by Seear's method. Explanation & app. shown.
WEEK 6	
ASSIGNMENT:	
WEEK 6, DAY 1, DATE :05/02/2018(MONDAY)	
M.Sc. (F) Th. Spin-spin coupling & JH features.	M.Sc. (F) lab Aim - Push Pull amplifier - Type - I Type - II
WEEK 6, DAY 2, DATE :06/02/2018(TUESDAY)	
M.Sc. (F) Th. Applications of NMR.	M.Sc. (F) lab Demo of above Experiment.
WEEK 6, DAY 3, DATE :07/02/2018(WEDNESDAY)	
M.Sc. (F) Th. Limitation and Advantages	M.Sc. (F) lab Experiment Performed.
WEEK 6, DAY 4, DATE :08/02/2018(THURSDAY)	
M.Sc. (P) Th. Paschen Back effect.	
WEEK 6, DAY 5, DATE :09/02/2018(FRIDAY)	

M.Sc. (P) Th.
Stark effect.

WEEK 6, DAY 6, DATE :10/02/2018(SATURDAY)

Holiday on account of Maharshi Dayanand Saraswati Jayanti.

WEEK 7

ASSIGNMENT:

WEEK 7, DAY 1, DATE :12/02/2018(MONDAY)

M.Sc. (P)

Numerical Related this unit.
& Problems (Discuss)

Lab

Calculation of
type of (A)
amplifier.

WEEK 7, DAY 2, DATE :13/02/2018(TUESDAY)

Holiday on account of Maha Shivaratri.

WEEK 7, DAY 3, DATE :14/02/2018(WEDNESDAY)

M.Sc. (P)

ASSIGNMENT :-

(i) Types of NMR (ii) Relaxation
mechanism
(iii) High resolution.

Lab

Calculation of
type of (B)
amplifier.

WEEK 7, DAY 4, DATE :15/02/2018(THURSDAY)

M.Sc. (P) Th.

Two electron systems
Interaction Energy in LS and JJ coupling

WEEK 7, DAY 5, DATE :16/02/2018(FRIDAY)

M.Sc. (P) Th.

Lande's g-factor in LS & JJ coupling

Lab B.Sc-I

Demo &
Reading.

WEEK 7, DAY 6, DATE :17/02/2018(SATURDAY)

m.sc.(P) Th. Numerical Based on Lange's g-factor & coupling.	lab B.Sc-I Experiment Performed.
WEEK 8	
ASSIGNMENT:	
WEEK 8, DAY 1, DATE :19/02/2018(MONDAY)	
m.sc.(P) Th Test (Unit I st) & Assignment checked.	lab Viva-voce Experiment.
WEEK 8, DAY 2, DATE :20/02/2018(TUESDAY)	
m.sc.(P) Th (Mossbauer spectroscopy) Introduction of Mossbauer Theory.	lab fill checked
WEEK 8, DAY 3, DATE :21/02/2018(WEDNESDAY)	
m.sc.(P) Th. Explanation of Mossbauer Spectrometer	lab Aim-LED & Diode Characteristic
WEEK 8, DAY 4, DATE :22/02/2018(THURSDAY)	
m.sc.(P) Th Problems & Assignment: (i) Stark effect. (ii) Paschen Back effect.	
WEEK 8, DAY 5, DATE :23/02/2018(FRIDAY)	
m.sc.(P) Th Test. & Assignment checked.	lab B.Sc. I calculation. & written.
WEEK 8, DAY 6, DATE :24/02/2018(SATURDAY) UNIT III rd	
m.sc.(P) Th. Diatomic molecules and their rotation spectra - introduction.	lab B.Sc. I Viva -

WEEK 9

ASSIGNMENT:

WEEK 9, DAY 1, DATE : 26/02/2018 (MONDAY)
M.Sc. (F) Th.

gsmes nuclear transition

(lab) F

Demo-cube
experiment

WEEK 9, DAY 2, DATE : 27/02/2018 (TUESDAY)
M.Sc. (F) Th.

resonance fluorescence

(lab) F

Experiment
performed.

WEEK 9, DAY 3, DATE : 28/02/2018 (WEDNESDAY)

VACATION -II

WEEK 9, DAY 4, DATE : 01/03/2018 (THURSDAY)

VACATION -II

WEEK 9, DAY 5, DATE : 02/03/2018 (FRIDAY)

VACATION -II

WEEK 9, DAY 6, DATE : 03/03/2018 (SATURDAY)

VACATION -II

WEEK 10

ASSIGNMENT:

WEEK 10, DAY 1, DATE : 05/03/2018 (MONDAY)
M.Sc. (F) Th.

massbauer effect

(F) Lab.

-viva-

WEEK 10, DAY 2, DATE :06/03/2018(TUESDAY)	
m.sc. (Th) F massbauer nuclei	M.Sc. lab(F) - file checked -
WEEK 10, DAY 3, DATE :07/03/2018(WEDNESDAY)	
M.Sc. F (Th) isomer shift with numerical.	M.Sc. (F) lab Aim - To measure the numerical Aperture (NA) of optical explain. fibres
WEEK 10, DAY 4, DATE :08/03/2018(THURSDAY)	
M.Sc. (P) Th * Types of molecules * Diatomic linear symmetric top.	-
WEEK 10, DAY 5, DATE :09/03/2018(FRIDAY)	
M.Sc. (P) Th * asymmetric top and spherical top molecules	B.Sc. II lab - file checked -
WEEK 10, DAY 6, DATE :10/03/2018(SATURDAY)	
M.Sc. (P) Th. * Rotational spectra of diatomic molecules as a rigid rotator.	B.Sc. I (lab) Aim - 'g' by bar Pendulum explanation -
WEEK 11	
ASSIGNMENT:	
WEEK 11, DAY 1, DATE :12/03/2018(MONDAY)	
M.Sc. (F) Th. quadrupole splitting	M.Sc. (F) lab Demo of above experiment
WEEK 11, DAY 2, DATE :13/03/2018(TUESDAY)	
M.Sc. (F) Th	(F) Lab

Magnetic hyperfine structure.	Experiment performed
WEEK 11, DAY 3, DATE :14/03/2018(WEDNESDAY)	
m.sc. (F) Th. Applications of Mossbauer spectroscopy.	lab (F) - Viva & Experiment checked.
WEEK 11, DAY 4, DATE :15/03/2018(THURSDAY)	
m.sc. (P) Th. Energy levels.	—
WEEK 11, DAY 5, DATE :16/03/2018(FRIDAY)	
m.sc. (P) Th Spectra of non-rigid rotator.	lab B.Sc.I Read & apparatus Show & know.
WEEK 11, DAY 6, DATE :17/03/2018(SATURDAY)	
m.sc. (P) Th, Intensity of rotational lines.	lab B.Sc.I Experiment performed
WEEK 12	
ASSIGNMENT:	
WEEK 12, DAY 1, DATE :19/03/2018(MONDAY)	
m.sc. (F) Th. Problems of ^{21}Ne & Assignment (i) Isomer shift (ii) magnetic hyperfine st.	lab (F) Aim - To determine the wavelength of He-Ne laser light using diffraction grating.
WEEK 12, DAY 2, DATE :20/03/2018(TUESDAY) UNIT-III	
m.sc. (F) Th Spontaneous and stimulated emission. Absorption.	lab (F) Demo of this experi

WEEK 12, DAY 3, DATE :21/03/2018(WEDNESDAY)	
M.Sc. (F) Th. Einstein coefficients, The laser idea. Properties of laser beams.	M.Sc. Lab(F) Exp. Performed.
WEEK 12, DAY 4, DATE :22/03/2018(THURSDAY)	
M.Sc. (P) * Problems discuss and Power point presentation on topic (i) diatomic molecules as a rigid rotator.	
WEEK 12, DAY 5, DATE :23/03/2018(FRIDAY)	
Holiday on account of Shahidi diwas.	
WEEK 12, DAY 6, DATE :24/03/2018(SATURDAY)	
M.Sc. (P) Test of unit III rd .	lab B.Sc. I calculation- written
WEEK 13	
ASSIGNMENT:	
WEEK 13, DAY 1, DATE :26/03/2018(MONDAY)	
M.Sc. (F) Rate Equations, methods of obtaining Population inversions.	lab (F) -NVA-
WEEK 13, DAY 2, DATE :27/03/2018(TUESDAY)	
M.Sc. (F) laser resonator. Assignment : - (i) Absorption (ii) Rate Equations & Test.	lab (F) file checked.
WEEK 13, DAY 3, DATE :28/03/2018(WEDNESDAY)	

WEEK 12, DAY 3, DATE : 21/03/2018 (WEDNESDAY)	
M.Sc. (F) Th. Einstein coefficients, The laser idea. Properties of laser beams.	M.Sc. Lab (F) Exp. Performed.
WEEK 12, DAY 4, DATE : 22/03/2018 (THURSDAY)	
M.Sc. (P) * Problems Discuss and Power point presentation on topic (i) diatomic molecules as a rigid rotator.	
WEEK 12, DAY 5, DATE : 23/03/2018 (FRIDAY)	
Holiday on account of Shahidi diwas.	
WEEK 12, DAY 6, DATE : 24/03/2018 (SATURDAY)	
M.Sc. (P) Test of unit III rd .	lab B.Sc. I calculation - written
WEEK 13	
ASSIGNMENT:	
WEEK 13, DAY 1, DATE : 26/03/2018 (MONDAY)	
M.Sc. (F) Rate Equations, methods of obtaining Population inversions.	lab (F) - nva -
WEEK 13, DAY 2, DATE : 27/03/2018 (TUESDAY)	
M.Sc. (F) laser resonator. Assignment : - (i) Absorption (ii) Rate Equations & Test.	lab (F) file checked.
WEEK 13, DAY 3, DATE : 28/03/2018 (WEDNESDAY)	

<p>M.Sc. (F) Th.</p> <p>(b) fine structure (c) hyperfine st. (d) Ligand hyperfine St.</p>	<p>lab(F)</p> <p>calculation & viva</p>
<p>WEEK 14, DAY 4, DATE :05/04/2018(THURSDAY)</p>	
<p>M.Sc. (P.) Th.</p> <p>* vibrational energy of diatomic molecules</p>	
<p>WEEK 14, DAY 5, DATE :06/04/2018(FRIDAY)</p>	
<p>M.Sc. (P.)</p> <p>* Salient features of vibrational - Rotational Spectra * As a simple harmonic oscillator.</p>	<p>Lab B.Sc. I ex-4th- Verification of inverse square law Principle based - Explanation -</p>
<p>WEEK 14, DAY 6, DATE :07/04/2018(SATURDAY)</p>	
<p>M.Sc. (P.)</p> <p>* Energy levels & spectrum. with population of energy levels.</p>	<p>lab B.Sc. I Read & Demo</p>
<p>WEEK 15</p>	
<p>ASSIGNMENT:</p>	
<p>WEEK 15, DAY 1, DATE :09/04/2018(MONDAY)</p>	
<p>M.Sc. (F) Th</p> <p>Application of ESR. & Take Problems, & Test.</p>	<p>lab(F)</p> <p>file checked</p>
<p>WEEK 15, DAY 2, DATE :10/04/2018(TUESDAY) UNIT-IV</p>	
<p>M.Sc. (F) Th</p> <p>Nd: YAG Laser.</p>	<p>lab(F)</p> <p>Revision of e/m by Helical method.</p>

WEEK 15, DAY 3, DATE :11/04/2018(WEDNESDAY)	
M.Sc. (F) Th. CO ₂ laser, Dye laser.	lab F Revision of energy band gap.
WEEK 15, DAY 4, DATE :12/04/2018(THURSDAY)	
M.Sc. (Fr.) * morse Potential Energy curve.	lab
WEEK 15, DAY 5, DATE :13/04/2018(FRIDAY)	
M.Sc. (Fr.) * molecules as vibrating rotator.	B.Sc. I (lab) Experiment performed.
WEEK 15, DAY 6, DATE :14/04/2018(SATURDAY)	
Holiday on account of Vaisakhi & Dr B.R. Ambedkar's Jayanti.	
WEEK 16	
ASSIGNMENT:	
WEEK 16, DAY 1, DATE :16/04/2018(MONDAY)	
M.Sc. (F) Th. Nitrogen laser, laser Applications:-	lab (F) Revision of Type Push Pull amplifier (A)
WEEK 16, DAY 2, DATE :17/04/2018(TUESDAY)	
M.Sc. (F) Th. (i) Holography material Processing fusion reaction.	lab (F) Type A Type B.
WEEK 16, DAY 3, DATE :18/04/2018(WEDNESDAY)	

Holiday on account of Maharshi Pasuram Jayanti

WEEK 16, DAY 4, DATE :19/04/2018(THURSDAY)	
M.Sc. (P) Th.	
* vibration spectrum of diatomic molecules.	
WEEK 16, DAY 5, DATE :20/04/2018(FRIDAY)	
M.Sc. (P) Th.	B.Sc. lab, Ist
* fine st. of rotation - vibrations Bands	
	calculation written
WEEK 16, DAY 6, DATE :21/04/2018(SATURDAY)	
M.Sc. (P) Th.	B.Sc. lab Ist
Solved Numericals.	
	-viva- file checked.
WEEK 17	
ASSIGNMENT:	
WEEK 17, DAY 1, DATE :23/04/2018(MONDAY)	
M.Sc. (F) Th.	Lab F.
Laser isotope separation.	
	Revision of LED
WEEK 17, DAY 2, DATE :24/04/2018(TUESDAY)	
M.Sc. (F) Th.	Lab F.
Numerical Related this UNIT.	
	Revision of (NA)
WEEK 17, DAY 3, DATE :25/04/2018(WEDNESDAY)	
M.Sc. (F) Th.	
Problem Discuss & Test. & Assignment given.	

WEEK 17, DAY 4, DATE :26/04/2018(THURSDAY)

* M.Sc. (Th) Pr.
PQR Branches.

WEEK 17, DAY 5, DATE :27/04/2018(FRIDAY)

m.sc. (Pr.) (Th)
* Applications of vibrational spectroscopy
& Problems discuss.

B.Sc. Ist Lab

Ex-5th
Aim -
Pr. of
A.C. mains.
Ex-Performed.

WEEK 17, DAY 6, DATE :28/04/2018(SATURDAY)

m.sc. (Pr.) Th.
Test unit IV, Revision work.

B.Sc. Ist Lab.

calculation
- checked -
file.
with viva-

WEEK 18

ASSIGNMENT:

WEEK 18, DAY 1, DATE :30/04/2018(MONDAY)

Revision & Test. & PPT.

Palak veng