LESSON PLAN FOR ODD SEMESTER(01 Sep 2022- 05 Dec 2022)
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SESSION 2022-23

Week	Date	THEORY (10 PERIODS/WEEK)			PRACTICAL (PERIODS/WEEK)	
		M. Sc.– II(3rdSem) Paper-IV: (Wed.-Sat.) Surface modification & characterization [04 PERIODS/WEEK]	**M. Sc. – I(1st Sem) Paper-I: (Wed.-Sat.) Applied spectroscopy [04 PERIODS/WEEK]**	**M.Sc.-I(Ist Sem) Paper-I: (Mon.-Tue.) [02 PER./WEEK]**	**M.Sc.-I(3rd Sem) Practical+Seminar (6 Lectures.) [PER./WEEK]**	**M.Sc.-Ist Sem. Practical+Seminar (Mon) [06PER./WEEK]**
1	01.09.2022	**UNIT-I** Ion implantation: Introduction	**UNIT-I** Molecular spectroscopy: Rotation of molecules and rotational spectra	----------	----------	As per remarks
	02.09.2022	Ion implantation process	Rigid diatomic molecule & intensities of spectral line	----------	As per remarks	Seminar
	03.09.2022	Basic features of ion implantation	Effect of isotopic substitution & non rigid rotation	----------	----------	----------
	04.09.2022	**SUNDAY**				
2	05.09.2022	----------	----------	**UNIT-I** Kirchoff's Current and Voltage Law	----------	As per remarks
	06.09.2022	----------	----------	Maximum Power Transfer Theorem, Node Method	As per remarks	
	07.09.2022	Radiation damage	Spectrum of non rigid rotator	----------	---------	----------
	08.09.2022	Radiation damage continue….& ion ranges concept	Vibrating diatomic molecule	----------	---------	----------
	09.09.2022	Concept of channeled ion ranges	Energy of a diatomic molecule	----------	As per remarks	Seminar
	10.09.2022	Ion beam mixing: An introduction	Harmonic oscillator	----------	----------	----------

	11.09.2022	**SUNDAY**				
3	12.09.2022	----------	----------	Mesh Method, Millman Theorem, Thevenin's Theorem	----------	As per remarks
	13.09.2022	----------	----------	Norton's Theorem, Superposition Theorem	As per remarks	
	14.09.2022	Change in mechanical properties & electrical properties due to ion irradiation	Revision of harmonic oscillator	----------	----------	----------
	15.09.2022	Change in optical properties of metals and semiconductors due to ion irradiation	Anharmonic oscillator	----------	----------	----------
	16.09.2022	Revision of unit-I	Diatomic vibrating rotator	----------	As per remarks	Seminar
	17.09.2022	Class test	Breakdown of born-oppenheimer approximation	----------		
	18.09.2022	**SUNDAY**				
4	19.09.2022	----------	----------	Two-Port Networks, Equivalent Circuits	----------	As per remarks
	20.09.2022	----------	----------	Integration, Differentiation using RC Circuits	As per remarks	
	21.09.2022	**UNIT-II** Introduction of RBS; Principle	Interaction of rotation and vibration	----------	----------	----------
	22.09.2022	Kinematics of elastic collision	Vibration of polyatomic molecules	----------	----------	----------
	23.09.2022	**SHAHEEDI DIWAS**				
	24.09.2022	Scattering cross-section & impact	Vibrations,overtones,influence of	----------	----------	----------

		parameter	rotation on polyatomic molecules			
	25.09.2022	**SUNDAY**				
	26.09.2022	**MAHARAJA AGARSAIN JAYANTI**				
	27.09.2022	Energy width in backscattering	Influence on nuclear spin	Clipping, Clamping	As per remarks	
	28.09.2022	**TALENT SHOW**				
	29.09.2022					
	30.09.2022					
	01.10.2022					
	02.10.2022	**GANDHI JAYANTI**				
	03.10.2022	----------	---------	Phase and Phasor diagrams of R-C, L-C, R-L, R-L-C Circuits.	----------	----------
	04.10.2022	----------	---------	Junction Diodes : Rectifying Diode	----------	----------
	05.10.2022	**DUSSHERA**				
	06.10.2022	Shape of backscattering spectrum	**UNIT-II** Raman spectroscopy: classical theory	---------	----------	----------
	07.10.2022	Depth profiles & Rutherford scattering	Rayleigh scattering; stokes and antistokes lines	----------	As per remarks	Seminar
	08.10.2022	Revision of RBS	Molecular polarizibility	----------	----------	----------
	09.10.2022	**SUNDAY**				

	10.10.2022	----------	----------	Forward and Reverse Bias Characteristics	Seminar	As per remarks
6	11.10.2022	----------	----------	Varactor Diode, Light Emitting Diode,	As per remarks	
	12.10.2022	EELS: principle & spectrum yield	Raman spectra of linear symmetric top molecules	----------	----------	----------
	13.10.2022	Influence of thin film morphology on electron attenuation.	Vibrational raman spectra	----------	----------	----------
	14.10.2022	Layer by layer attenuation	Mutual exclusion rule	----------	As per remarks	Seminar
7	15.10.2022	Single layer plus islanding	Rotational fine structure	----------	----------	
	16.10.2022	**SUNDAY**				
	17.10.2022	----------	----------	Zener Diode, Tunnel Diode	----------	As per remarks
	18.10.2022	----------	----------	Bipolar Junction Transistor : Basic working Principle (Qualitative)	As per remarks	----------
	19.10.2022	Revision of EELS	advantage and limitation of raman spectroscopy	----------	Seminar	----------
	20.10.2022	AFM: principle	Comparison between raman and IR spectra	----------	As per remarks	
	21.10.2022	Tip and cantilever	Revision/test of raman spectroscopy	----------	----------	----------
	22.10.2022	**DIWALI VACCATION**				

	23.10.2022	**DIWALI VACCATION**				
	24.10.2022	**DIWALI VACCATION**				
	25.10.2022	**DIWALI VACCATION**				
9	**26.10.2022**	**DIWALI VACCATION & CONSTITUTION DAY**				
	27.10.2022	**BHAI-DOOJ**				
	28.10.2022	Tapping mode operation	**UNIT-III** Electronic spectra of diatomic molecules	----------	As per remarks	Seminar
	29.10.2022	Applications of AFM	Born oppenheimer approximation		----------	
	30.10.2022	**SUNDAY**				
	31.10.2022	----------	----------	----------	Seminar	As per remarks
	01.11.2022	**HARYANA DAY**				
	02.11.2022	LEED: principle & schematic	Vibrational coarse structure	----------	----------	----------
	03.11.2022	LEED pattern applications	Progression and intensity of vibrational electronic structure	----------	---------	----------
	04.11.2022	Revision of LEED	Franck-condon principle	----------	As per remarks	----------
	05.11.2022	Glancing angle x ray diffraction	Resonance spectroscopy:spin and applied field	----------	----------	----------

10	**06.11.2022**	**SUNDAY**				
	07.11.2022	----------	----------	Characteristics, Basic Configurations and Biasing, Operating Point; Load Line, Biasing for stabilization of Operating Point	----------	As per remarks
	08.11.2022	**GURU NANAK DEV JAYANTI**				
11	09.11.2022	SEEMAN- BOHLIN X-ray diffractometer	Interaction b/w spin and magnetic field	----------	Seminar	----------
	10.11.2022	Instrumentation & applications	Larmor precision and electron spin resonance	----------	----------	----------
	11.11.2022	Revision of glancing angle x ray diffraction	Position of electron spin resonanace absorptions	----------	As per remarks	----------
	12.11.2022	SEM: Principle, instrumentation, magnification	G factor and limitation of ESR	----------	----------	----------
	13.11.2022	**SUNDAY**				
	14.11.2022	----------	----------	**UNIT – II** JFET Basic working Principle (Qualitative)	----------	As per remarks
	15.11.2022	----------	----------	Characteristics, Pinchoff Voltage	As per remarks	
	16.11.2022	Applications of SEM	ESR spectrometer	----------	----------	----------
	17.11.2022	Revision of SEM	Application of ESR	----------	seminar	----------
	18.11.2022	TEM: principle instrumentation	**UNIT-IV** Introduction to NMR	----------	As per remarks	----------

12	19.11.2022	Applications of TEM	Nuclear spin concept	----------	----------	----------
	20.11.2022	**SUNDAY**				
	21.11.2022	----------	----------	MOSFET: Basic working Principle (Qualitative), Characteristics, Pinchoff Voltage.	----------	As per remarks
	22.11.2022	----------	----------	Unijunction Transistor : Basic Working Principle (Qualitative), Characteristics	As per remarks	
	23.11.2022	Revision of TEM	Magnetic moment	----------	---------	
	24.11.2022	STM: Principle, sample scanner	Nuclear magnetic resonance	---------	---------	
	25.11.2022	Computer interface: STM	Magnetic moment and magnetic field	---------	As per remarks And seminar	
	26.11.2022	Revision of STM	Theory of NMR spectra	----------	---------	
	27.11.2022	**SUNDAY**				
	28.11.2022	----------	----------	-------	---------	As per remarks
	29.11.2022	----------	----------	------	As per remarks	
	30.11.2022	AES:principle, nomenclature & schematic of energy levels	Chemical shift	------	--------	
	01.12.2022	Instrumentation ,SAM, compositional analysis	Spin spin splitting	------	--------	
	02.12.2022	Detection limit and applications of AES	Shielding of magnetic nuclei	------	As per remarks	Seminar
	03.12.2022	Depth profile	Deshielding of magnetic nuclei	------	--------	
	04.12.2022	**SUNDAY**				
	05.12.2022	----------	----------	Four Layer Diode (PNPN)	--------	As per remarks and Seminar

	06.12.2022	----------	----------	Silicon Controlled Rectifier (SCR), Triac, Diac, Principles and Characteristics and Applications	As per remarks	
	07.12.2022	XPS: Principle, photoemission process & schematic of the energy level	NMR spectrometer and Limitation of NMR spectroscopy	Transducers : Commonly used Transducers like LDR Thermistors. Thermocouples, Photodiodes, Photo Transistors,	------	
	08.12.2022	Instrumentation, experimental consideration	Application of NMR and Mossbauer spectroscopy	------	------	Seminar
	09.12.2022	Electron multiplier & photoelectron energy spectrum	Natural line width	------	As per remarks And seminar	
	10.12.2022	Quantitative analysis & applications	Recoil energy loss	------	------	
	11.12.2022	**SUNDAY**				
	12.12.2022	----------	----------	IR Detectors, MVDT, Strain Gauge	------	As per remarks and Seminar
	13.12.2022	----------	----------	Application of Transducers in Temperature, Pressure, Light Intensity, Humidity Measurements	As per remarks	
	14.12.2022	SIMS: Basic principle, instrumentation	Resonance and resonance flourescence	------	------	
	15.12.2022	Working: SIMS & applications	Mossbauer effect and spectrometer	------	------	Seminar
	16.12.2022	Test SIMS	Lamb Mossbauer factor and application	------	As per remarks	

Remarks:

As per University syllabus in an academic session every student is required to perform eight Experiments. The number of students allotted in every practical group is divided in to subgroups, each subgroup comprising of two students. In the begging of practical class, maintaining the balance of experiments kit are allotted to different subgroups, every student of each subgroup ask to read the theory of allotted experiment at home. On the next day of practical class demonstration of allotted experiments are given in each subgroup by explaining Theory, Principle, working and how to perform & record the readings. Next Experiment is allotted to every subgroup after checking the practical file of every student through Viva-Voce. The same procedure is followed for every Practical group of allotted classes throughout the academic session.

Seminar list first semester:

1. **To determine the numerical aperture and attenuation for optical fiber.**
2. **To determine the value of planck constant.**
3. **To determine the efficiency of g.m counter for gamma ray source.**
4. **To prepare slit width of a given width and verify it using diffraction method.**
5. **To determine the linear and mass attenuation for gamma ray source.**
6. **To find the refractive index of a transparent material by measuring brewester angle.**
7. **To study the magnetostriction in metallic rod with the help of michaelson interferometer arrangement.**
8. **To study the alpha particle using solid state nano track detector.**

Seminar list third semester:

1. **To record gamma ray spectrum of Cs-137 and co-60 and to find energy calibration and resolution of scintillation spectrometer.**
2. **Study of hysteresis and transition temperature of ferroelectric crystals.**
3. **Study of low and high pass filter.**
4. **To study DIAC and TRIAC.**
5. **To study differentiating and integrating circuit.**
6. **To find coefficient of absorption and mass absorption coefficient of beta rays in Al and Pb using GM Counter.**
7. **Integration and differentiation using op-amp.**
8. **Study Electron Spin Resonance.**