MAULANA AZAD NATIONAL INATITUTE OF TECHNOLOGY,
BHOPAL - 462003

Name of Program	**B.Tech.**	**Year:** **First Year**	**Semester:** **1st and 2nd**	**Academic Year: 2025-26**		
Name of Course	**PHYSICS LABORATORY**					
Course Code	**PY 1122/ PY 1222**					
Core / Elective / Other	**Core**					
Concerned Department/ Section/Centre	**PHYSICS**					
Credits	**02**	**Periods per week**		**L**	**T**	**P**
				2	**0**	**0**

Prerequisite:	
	The knowledge of physics with special reference to concept of light, types of static/dynamic forces, Newton's law of motions, basic semiconductor devices and knowledge of Engineering mathematics involving differentiation and integration.
Course Outcomes: At the end of the course, the student will be able to:	
Upon successful completion of the course the student will be able:	
1.	To design and conduct simple experiments as well as analyze and interpret data.
2.	Develop skills in observation, interpretation, reasoning, synthesis, generalizing, predicting, and questioning as a way to learn new knowledge.
3.	To apply conceptual understanding of the physics to general real-world situations.
Description of Contents in brief:	
1.	To plot the characteristics curves of a p-n junction diode and calculate its resistance.
2.	To plot the characteristics curves of PNP transistors in CE mode.
3.	To determine frequency of AC mains using an electrical vibrator.
4.	To determine the radius of curvature of a lens by Newton's ring method.
5.	To determine the refractive index and dispersive power of the material of the prism for various colors of mercury light using prism and spectrometer.
6.	To determine the wavelength of different colors of mercury light using a plane transmission grating.
7.	To determine percentage of transmission of light for a semitransparent film using Lummer-Brodhum photometer.
8.	To study diffraction at multi-slit using He-Ne laser.
9.	To determine the wavelength of He-Ne laser by Michelson Interferometer.
10.	To determine Hall Potential and Hall Coefficient.
11.	To verify the formula for the combination of lenses and to determine the cardinal points of the combination using Nodal Slide assembly.
12.	To measure resistivity of a semiconductor by Four Probe method at different temperatures and determine the Band-gap.
13.	To determine the Plank's Constant using LED.
14.	To study the characteristic of Photoconductive material.

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List of Text Books:	
1.	Engineering Physics: M.N. Avadhanulu, P.G.Kshirsagar, T V S Arun Murthy, (S. Chand).
2.	Concepts of Modern Physics: ArtherBeiser (McGraw-Hill).
3.	Principles of Optics: Brijlal Subramanyam (S. Chand).
List of Reference Books:	
1.	Concepts of Modern Physics: ArtherBeiser (McGraw-Hill).
2.	Text Book on Advanced Practical Physics by Chauhan & Singh.
3.	Laboratory Manual of MANIT Physics Lab.
URLs:	
1.	https://www.manit.ac.in/sites/default/files/documents/BTech%20I%20Yr%20Physics%20Lab%20Manuals%20hindi-english%20%282%29.pdf
2.	https://www.vlab.co.in/broad-area-physical-sciences

List of experiments: 14

experiments No.	**Experiments name**
1	P-N Junction Diode
2	Transistor
3	AC Mains
4	Newton's Rings
5	Refractive Index & Dispersive Power
6	Transmission Grating
7	L-B Photometer
8	Multi slit Experiment
9	Michelson Interferometer
10	Hall Effect
11	Nodal slide Assembly
12	Four Probe
13	Planck's Constant
14	Photo Conductivity