

**MAULANA AZAD NATIONAL INSTITUTE OF TECHNOLOGY,
BHOPAL - 462003**

Name of Program	B.Tech.	Semester: 1st and 2nd	Year: 2020-21
Name of Course	PHYSICS LAB		
Course Code	PHY 117		
Core / Elective / Other	Core		
Prerequisite:			
1.	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:			
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 perform Melde's Experiment in transverse and longitudinal modes and determine the frequency of an electrically maintained tuning fork.		
4.	To determine frequency of AC mains using an electrical vibrator.		
5.	To determine the radius of curvature of a lens by Newton's ring method.		
6.	To determine the refractive index of the material of the prism for various colors of mercury light using prism and spectrometer.		
7.	To determine the dispersive power of the material of the prism using spectrometer.		
8.	To determine the wavelength of different colors of mercury light using a plane transmission grating.		
9.	To determine percentage of transmission of light for a semitransparent film using Lummer-Brodhum photometer.		
10.	To study diffraction at a single slit using He-Ne laser.		
11.	To determine the wavelength of He-Ne laser by Michelson Interferometer.		
12.	To determine Hall Potential and Hall Coefficient.		
13.	To study the characteristic of Photo Cell.		
14.	To verify the formula for the combination of lenses and to determine the cardinal points of the combination using Nodal Slide assembly.		
15.	To measure resistivity of a semiconductor by Four Probe method at different temperatures and determine the Band-gap.		
16.	To determine the Plank's Constant using LED		
17.	To study the characteristic of Photoconductive material.		
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: Arther Beiser (McGraw-Hill)		
3.	Principles of Optics: Brijlal Subramanyam (S. Chand)		

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List of Reference Books:	
1.	Concepts of Modern Physics: Arther Beiser (McGraw-Hill)
2.	Text Book on Advanced Practical Physics by Chauhan & Singh
3	Laboratory Manual of MANIT Physics Lab
URLs:	
1.	http://www.vlab.co.in/broad-area-physical-sciences
2.	https://nptel.ac.in/courses/115/105/115105121/
3.	https://en.wikipedia.org/wiki/Engineering_physics
Lab Plan (about 45 Lectures):	
Lecture No.	Topic
15x3=45 Periods	15 Labs of 3 periods