

SEMESTER V
Physics Major Practical Course (MJP -VI)

Sr. No.	Heading	Particulars
1	Description the course (Including but not limited to)	Introduction, Relevance, Usefulness, Application, Interest, Connection with other courses, Demand in the Industry, Job Prospects etc
2	Vertical:	Major /Minor/Open Electives /Skill Enhancement / Ability Enhancement/Indian Knowledge System
3	Type:	Practical
4	Credits:	2 credits (1 credit = 15 Hours for Theory or 30 Hours of Practical work in a Semester)
5	Hours:	60 Hours
6	Marks Allotted:	50 Marks
7	Course Objective (CO): The students are expected to	
	CO 1	develop a strong experimental foundation by performing practicals.
	CO 2	understand the theoretical principles behind each experiment and relate them to real-world applications.
	CO 3	learn accurate data recording, tabulation, graphical representation, and scientific reporting.
	CO 4	cultivate a scientific attitude, precision, and safety consciousness while working in a laboratory environment
8	Course outcomes (OC): After successful completion of this course, the students will be able to:	
	OC 1	perform physics experiments independently using standard laboratory equipment and techniques.
	OC 2	prepare clear, accurate laboratory reports and present experimental findings effectively.
	OC 3	demonstrate improved laboratory skills such as instrument handling, calibration, troubleshooting, and safe working practices.
	OC 4	apply experimental knowledge to real-life physical systems and further scientific investigations.
9	List of Experiments: 1. Determination of M/C by using BG 2. Maxwell's L/C bridge 3. To determine the Hall Coefficient and Carrier Concentration of a Semiconductor 4. Study of transistorized astable multivibrator 5. Design and study of transistorized bistable multivibrator 6. Application of Op-Amp as a window comparator 7. Application of Op-Amp as a Log amplifier 8. Wein Bridge Oscillator using OP – AMP 9. Arithmetic Circuits: 4 – bit Addition & Subtraction using IC 7483 & IC 7486 10. Photodiode and Phototransistor Characteristics 11. To draw the B - H curve of iron rod by using a Solenoid and to determine the energy loss due to Hysteresis 12. LM-317 as variable voltage source Skill Experiments: 1. Digital storage oscilloscope (DSO): Amplitude, Period and Phase shift measurement 2. Internal resistance of voltage and current source 3. Dual trace CRO: Phase shift measurement	

	4. Build and test an RC time circuit: measure charge /discharge curve on DSO 5. Build and test half-adder and full- adder circuit & verify truth table. Note: Teacher should follow the above guidelines to conduct skill experiment Minimum 8 experiments from the list of experiments and minimum 4 skill experiments must be completed and reported in the journal. Exemption: Exemption of two experiments may be given, if student carries out any one or more than one of the following activities: • If the student collects & reports the information of at least five Physicists with their work or any three events on physics, in the journal. • If the student executes a mini project to the satisfaction of teacher in-charge of practical. • If the student participates in a study tour or visit & submit a study tour report. General Instructions: • All the measurements and readings should be written with proper units in SI system only. • After completing all the required number of experiments in the semester and recording them in journal, student will have to get their journal certified and produce the certified journal at the time of practical examination to be eligible to appear in the Semester End Practical Examination • While evaluating practical, weightage should be given to diagram, observations, tabular representation, experimental skills and procedure, graph, calculation and result. • Skill of doing the experiment and its concepts should be more important than the accuracy of result. Instruction Regarding Semester End Practical Examination • For practical examinations, the learner will be examined in One experiment from the list of experiments. • Evaluation in viva voce will be based on regular experiments and skill experiments. • A candidate will be allowed to appear for the Semester End Practical Examination only if the candidate submit a certified journal at the time of practical examination or provide a certificate from the Head of the Department / Institute to the effect that the candidate has completed the practical course of that semester of T.Y.B. Sc. Physics as per the minimum requirement.
10	Reference Books: 1. An Advanced course in Practical Physics by D. Chattopadhyay, P. C. Rakshit & B. Saha (8th Edition) Book & Allied Pvt. Ltd. 2. BSc Practical Physics: Harnam Singh. S. Chand & Co. Ltd. – 2001. 3. Text book of Practical Physics: Samir Kumar Ghosh , New Central Book Agency (4th edition). 4. B Sc. Practical Physics: C. L. Arora (1st Edition) – 2001 S. Chand & Co. Ltd 5. Practical Physics: C. L. Squires – (3rd Edition) Cambridge University Press 6. University Practical Physics: D C Tayal. Himalaya Publication. 7. Advanced Practical Physics: Worsnop & Flint.
11	Scheme of Examination: Semester End Practical Examination: • The duration of Each Experiment in Semester End External Practical Examination will be of Two hours.

The Semester End External Practical Examination will be for 30 marks as per the marking scheme given below:		
Sr. No.	Activity	Total 30 Marks
1	One Experiments	20 Marks
2	Certified Journal	05 Marks
3	Viva	05 Marks
Internal Practical Examination: - The duration of Internal Practical Examination per experiment will be of Two hour. - The Internal Practical Examination Pattern for 20 marks (During the Semester), will be as per the marking scheme given below:		
Sr. No.	Activity	Total 20 Marks
1	Skill testing related any One Experiment	10 Marks
2	Overall performance	05 Marks
3	Viva-Voce	05 Marks