CLASS: XII

SUBJECT: PHYSICS (PHYS)

COURSE CODE: PRACTICAL

FULL MARKS: 30 **CONTACT HOURS: 50 HOURS (30+ 20)**

PRACTICAL WORKS + VIVA (16+4) = 20 MARKS

The experiments for laboratory work are from two groups:

1) Experiment based on current electricity and Magnetism

2) Experiments based on ray optics and Semiconductor devices.

The main skill required in group 1 is understanding the circuit diagram and making connections, polarity of cells, meters, their ranges, zero error, least count, concept of magnetic lines of force and neutral point.

The main skill required in group 2 is to remove parallax between a needle and a real image of another needle. Basic circuit idea and knowledge of characteristic graphs of Semiconductor devices.

A graph is a convenient and effective way of representing result of measurement so it is an important part of the experiments. (Where it is applicable).

All the calculations should be rounded off up to proper decimal places or significant figures.

SECTION: A

No. OF EXPT.	TOPICS
1	Verify Ohm's law for a given unknown resistance (a 100 cm uniform wire) by plotting a graph of potential difference versus current. Calculate the resistance and hence resistance per cm of the wire from the slope of the graph.
2	Using a Metre Bridge determine the resistance of about 100 cm of uniform wire. If its length and diameter are supplied, calculate the specific resistance of the material of the wire.
3	To verify the law of series combination of resistances, using two resistances (2 ohm / 3 ohm range) in the Metre Bridge circuit.
4	To verify the law of parallel combination of resistances using two resistances (2 ohm / 3 ohm range) in Metre Bridge circuit.
5	To compare emfs of two cells using potentiometer circuit.
6	To determine the internal resistance of a cell using potentiometer circuit.
7	To determine resistance of a galvanometer by half deflection method and to find its figure of merit.
8	To convert a given Galvanometer (of known resistance and figure of merit) into an ammeter and voltmeter of desired range and verify same.
9	Draw the lines of forces for a magnet placing its north pole towards the geographic north. Also determine the position of neutral points on two sides of the magnet.

SECTION: B

No. OF EXPT.	TOPICS
1	To find the value of image distance (v) for different values of object distance (u) of a concave mirror. By drawing 1/ v - 1/ u graph determine the focal length of the mirror.
2	To find the focal length of a convex mirror, using a convex lens.
3	To find the focal length of a convex lens by plotting graphs between u - v and between 1/u - 1/ v
4	To find the focal length of a concave lens using a convex lens.
5	To determine the angle of minimum deviation for a given prism by plotting a graph between angle of incidence and angle of deviation
6	To determine the refractive index of a glass slab using a travelling microscope.
7	To draw I - V characteristic curves of a P - N junction diode in forward and reverse bias.
8	To draw the reverse bias characteristics of Zener diode and to determine its breakdown voltage
9	To study the characteristic of common emitter configuration of NPN or PNP transistor and to find dynamic resistances and amplification factor.

The students have to do one practical each from section A and section B in the examination.

PROJECT WORK (MARKS – 7)

All candidates will be required to do one project involving physics related topic/topics of their theory syllabus under the guidance of the Physics teacher.

Candidate should take under any one of the following types of projects:

1) Theoretical project

2) Working model

Candidates are to prepare a technical report formally written including title, abstract, some theoretical discussion, experiment set up, observations with tables of data collected, graph / chart (if any), analysis and discussion of result, deduction, conclusion etc. The report should be kept simple but neat and elegant.

No extra credit shall be given for typewritten material or decorative cover etc.

Suggested heading of project file for theory based project

Title of the project
Introduction
Contains
Analysis / material aid (graph, Data, Structure, diagram etc)
Conclusions/ comments

Suggested heading of project file for model based projects

Title of the project
Model construction
Principle used, concise project report
Conclusion / comments

PRACTICAL FILE – (MARKS – 3)

Teachers are required to access the students on the basis of Physics practical file maintained by them during the academic year. Generally students are not expected to write the procedure of the experiments. The students will write the working formula, draw the figure or circuit diagram, collection of data in proper tabular form, results and few ideas of precautions associated with the experiments.

PRACTICAL MARKS SCHEME

EXPERIMENT						SUB TOTAL (16)	VIVA (4)	L.N.B (3)	PROJECT (7)	TOTAL (30)
No. 1(2+5+1=8)			No. 2 (2+5+1=8)							
THEORY	RECORD	RESULT	THEORY	RECORD	RESULT					