

Tribhuvan University
Institute of Science and Technology
B.Sc. Physics

Course Title: Physics Laboratory
Course Code: PHY202
Nature of Course: Practical
Duration: 180 hours

Year: II
Full Marks: 50
Pass Marks: 20

Course Description:

Physics Laboratory (General) Practical course consists of three sections: (a) Optical Experiments, (b) Nuclear Experiments, and (c) Electronics Experiments. Students have to perform at least 15 experiments in 180 working hours. Students are required to perform 3 hours laboratory work twice in a week. Students should complete at least 20 experiments in the second year. Students need to write a laboratory report on each experiment they perform and get them duly checked and signed by the concerned teacher. They should write their reports in a separate sheet, and to keep them neat and properly filed.

Course Objectives:

1. To provide students with skill and knowledge in the experimental methods.
2. To make them able to apply knowledge to practical applications.
3. To make them capable of presenting their results/conclusions in a logical order.

B.Sc. Second Year Lab Works

[180]

1. To determine the wave length of given source of light by Newton's Ring method.
2. To determine the wavelength of given source of light using a plane diffraction grating.
3. To determine the resolving power of a prism.
4. To determine the resolving power of a plane transmission diffraction grating.
5. To determine the refractive index of the material of a prism for light of different wavelengths.
6. To determine the value of Cauchy's constants for the material of the given prism using a spectrometer.
7. To determine the specific rotation of sugar solution using Laurent half-shade polarimeter
8. To determine the charge of an electron by Millikan's method.
9. To determine the specific charge of an electron (e/m) by magnetron tube method.

10. To determine the specific charge of an electron (e/m) by Thomson's method.
11. To study the characteristics of Geiger Muller (G.M.) counter and its reliability.
12. To determine the linear absorption coefficient of β -particles in a matter using a G.M. counter.
13. To determine the resonant frequency and quality factor of series LCR circuit.
14. To study oscilloscope and calibrate it for the measurement of voltage and frequency.
15. Determine the unknown frequency of a given source using Lissajous figure.
16. To verify the maximum power transfer theorem.
17. To verify the network theorems: Thevenin's theorem and Norton's theorem.
18. To study the CB characteristics of a PNP and NPN junction transistor.
19. To study the CE characteristics of a PNP and NPN junction transistor.
20. To study the CC characteristics of a PNP and NPN junction transistor.
21. To study the characteristics of regulated power supply using Zener diode.
22. To study the characteristics of regulated power supply by using integrated circuit (IC).
23. To study logic gates OR, AND and NOT by using DTL and TTL.
24. To study logic gates NOR and NAND by using DTL and TTL.
25. To verify NAND and NOR gates are universal gates.

Text Books:

1. *Arora C. L. - B.Sc. Practical Physics*, S. Chand and Company Ltd. (2010)
2. *Squires G. L. - Practical Physics*, Cambridge University Press (1999)

Evaluation Scheme

1. Student must perform three hours laboratory work twice a week to complete PHY202 lab works.
2. PHY202 will be examined for the duration of six hours in two different three hours sessions.
3. The practical exam will be graded on the basis of the following marking scheme:

Record file:	20%	Experiment:	50%
Error Analysis:	10%	Viva:	20%