B.Sc.Part III Physics Laboratory Experiments

Total Marks: 200 Credits: 08

- **Group-I**

1. Resonance pendulum
2. S.T. of soap solution
3. Surface tension of mercury by Fergusson modified method
4. Y and η using Flat Spiral Spring
5. Y by Koenig's method
6. Y by Cornu's spiral
7. C program to arrange the given set of numbers in ascending/descending order
8. C program to findlargest/smallest number from a given set of numbers
9. Scilab Expt. 1 (problem from Quantum Mechanics)
10. Scilab Expt. 2 (problem from Quantum Mechanics)

- **Group-II**

1. Cardinal points by turn table method
2. Cardinal points by Newton's method
3. Refractive index of glass by Brewster's law
4. Diffraction at a Single Slit
5. Diffraction at cylindrical obstacle
6. Lloyd's single mirror
7. Double refracting prism
8. Diameter of Lycopodium powder
9. Spherical aberration
10. Absorption spectrum of a liquid ($KMnO_4$ solution)

- **Group-III**

1. Self Inductance by Owen's Bridge
2. Measurement of B_H , B_V and θ using Earth Inductor /Hysteresis by magnetometer method
3. Mutual inductance using Ballistic galvanometer.
4. Resistance of B.G. by half deflection method
5. e/m of Electron By Thomson's Method/Calibration of wire by Carey Foster bridge
6. Calibration of wire by Griffith's method

7. Absolute capacity of condenser
8. I-V characteristics of Solar Cell
9. Band gap energy of semiconductor using p-n junction diode
10. Determination of Plank's constant by using LED

- **Group–IV**

1. To verify the truth tables of NAND, NOR, Ex-OR and Ex-NOR gates by usingbasic gates with IC-74 series.
2. To verify the De-Morgan's theorems by using IC-74 series.
3. To design a single stage CE amplifier of given gain using voltage divider bias.
4. To built and test Colpitts oscillator using BJT.
5. To builtand test phase shift oscillator using BJT.
6. To determine A.C. and D.C. sensitivity of the C.R.O. andto measure unknown frequency.
7. To design and test an astablemultivibrator using IC-555 Timer.
8. To design and testmonostablemultivibratorusing IC-555 Timer.
9. To studyOp-amp as an inverting amplifier.
10. To study Op-amp as Schmitt trigger.

Skill Testing Experiments

- **Group-V-A**
    1. Study of divergence of LASER beam
    2. Measurement of wavelength of LASER using plane diffraction grating
    3. Schuster's method and optical leveling of spectrometer
    4. Obtaining Biprism fringes without lateral shift
    5. Measurement of distance between two coherent sources in Biprism experiment
    6. Polar graph using photocell/photovoltaic cell
    7. Study of quantum tunneling effect using tunnel diode
    8. Testing of electronic components
    9. C program – Edit,save and execute given C program
    10. C program – Edit,save and execute given C program

- **Group – V-B**
    1. Radius of Capillary bore using mercury thread
    2. Determination of lattices constant using given XRD powder pattern
    3. Estimation of errors
    4. Measurement of phase shift of RC network using CRO
    5. Study of Half and Full adder
    6. Simplification of digital circuit using Boolean laws (paper-work).
    7. Measurement of resistance of galvanometer (Kelvin's method)
    8. Electrical wiring of bulb, switch and plug.
    9. Tracing of given electronic circuit/ build the given circuit using breadboard
    10. Assembling of given electronic circuit(soldering method)

- **Group VI: Assessment of Annual Work of a Student**
    1. Certified Laboratory Journal.
    2. Study Tour Report.
    3. Seminar Report (2 Seminars) / Project work.

- **Reference Books for practical**

1. Advanced Practical Physics for students, B.L. Flint & H.T. Worsnop, 1971, Asia Publishing House.
2. Advanced level Physics Practical, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
3. A Text Book of Practical Physics, Indu Prakash and Ramakrishna, 11th Edition,2011, Kitab Mahal, New Delhi.
4. B.Sc. Practical Physics, C.L.Arora, S.Chand & Company Pvt.Ltd., New Delhi
5. B.Sc. Practical Physics, Harman Singh,Hemane, 2012 Edition.

- **Revised Scheme of Practical Examination for B. Sc. Part – III**

1. Practical examination will be conducted annually.
2. Practical examination will be conducted for three days per batch.
3. The examination will be conducted in two sessions per day and each session will be of three hours duration.