Department of PHYSICS

a) Enclose copy of curriculum **ENCLOSED**
b) List of the practical experiments in the curriculum actually done by the students and practical demonstrated.

Sl. No.	Name of the experiments [B.Sc.- I Year]
1	To study the Theorem of perpendicular axes of moment of inertia.
2	To determine the value of acceleration due to gravity (g) by Compound Pendulum.
3	To study the damping of a Bar Pendulum
4	To study the oscillation in a bifilar suspension arrangement and to verify.
5	To determine the Young modulus (Y) of the material of Cantilever by depression of Cantilever.
6	To determine the Young modulus (Y) of the material of beam by method of bending
7	To determine the modulus of rigidity (η) of the material of rod by Borton's horizontal method.
8	To determine the modulus of rigidity (η) of the material of rod by Borton's vertical method.
9	To determine the modulus of rigidity (η) of the material of write by Maxwell's Needle.
10	To determine the modulus of rigidity (η) by Torsion Pendulum.
11	To determine the coefficient of viscosity of liquid by Stoke's methods.
12	To determine the horizontal component of earth's magnetic field (H) and magnetic moment of a magnet (M).
13	To study the variation of magnetic field in circular coil by flowing electric current along its axis.
14	To determine the specific resistance of the material of a given wire by Carey Faster's bridge.
15	To determine the Resistance, Impedance and Power factor of choke coil.
16	Comparison of magnetic moment of two magnets with the help of oscillation magnetometer.
17	To study the increasing and decay current of L-R circuit.

Sl. No.	Name of the experiments [B.Sc.- II Year]
1	To determine the refractive index (μ) and dispersive power (ω) of the material of prism by Spectrometer.
2	To determine the wavelength (λ) of sodium light by Newton's rings arrangement.
3	To determine the wavelength monochromatic light (λ) by diffraction on single slit.
4	To determine the wavelength (λ) of laser using a Plane Transmission grating.
5	To determine the resolving power of a Telescope.
6	To determine the resolving power of a Plane Transmission diffraction grating.
7	To determine the resolving power of a prism by Spectrometer.
8	To determine the refractive indices of ordinary rays (μ_0) and extraordinary rays (μ_e) for Calcite Prism.
9	To determine the specific rotation of sugar in aqueous solution with the help of Polarimeter.
10	To determine the mechanical equivalent of heat (J) by Joule's calorimeter.
11	To study the heat efficiency of an electric kettle with varying voltage.
12	To study the conduction of heat through poor conductor by Lee's disc method.
13	To determine the coefficient of thermal conductivity by rubber tube.
14	To study the total thermal radiation with temperature and to verify the Steafan's law.
15	Measurement of coefficient of temperature resistance platinum resistance thermometer with the help of Carry Foster bridge.

Sl. No.	Name of the experiments [B.Sc.- III Year]
1	To determine the value of specific charge (e/m) of an electron by Thompson's method.
2	To determine the energy band gap and resistivity of a semiconductor using Four Probe method.

3	To determine the energy bandgap by using the temperature dependence of reverse saturation current.
4	To study the characteristic of a PNP transistor in CB configuration.
5	To study the characteristic of a PNP transistor in CE configuration.
6	To study the characteristic of a NPN transistor in CB configuration.
7	To study the characteristic of a NPN transistor in CE configuration.
8	To study and plot the forward and reverse bias characteristics curve of a P-N Junction diode.
9	To study and plot the forward and reverse bias characteristics curve of a Zener diode.
10	To study and plot the characteristics curve of a Tunnel diode.
11	To study the regulated and unregulated power supply using transistor.
12	To determine the ionization potential of a gas filled Thyratron valve.
13	To study the Filter circuit and find the Ripple factor and voltage regulation in power supply using L and л section filters.
14	Verification of Thevenin's Theorem.
15	Verification of Norton's Theorem.
16	Verification of superposition Theorem.
17	Verification of Maximum power Transfer Theorem.
18	To study the Characteristic curve of Light Emitting Diode (LED).

c) When was the last exercise for curriculum revision undertaken?
   As per the amendments made by affiliating University's Board of Studies.
d) Specialization of the course - **NIL**
e) No. of SoP's created Kits for practicals – **NIL**

PHYSICS

PRACTICALS

Minimum 16 (Eight from each group)

Experiments out of the following or similar experiments of equal standard

GROUP-A

1. Study of laws of parallel and perpendicular axes for moment of inertia.
2. Moment of inertia of Fly wheel.
3. Moment of inertia of irregular bodies by inertia table.
4. Study of conservation of momentum in two dimensional oscillations.
5. Study of a compound pendulum.
6. Study of damping of a bar pendulum under various mechanics.
7. Study of oscillations under a bifilar suspension.
8. Study of modulus of rigidity by Maxwell's needle.
9. Determination of Y, k, η by Searl's apparatus.
10. To study the oscillation of a rubber band and hence to draw a potential energy curve from it.
11. Study of oscillation of a mass under different combinations of springs.
12. Study of torsion of wire (static and dynamic method).
13. Poisson's ratio of rubber tube.
14. Study of bending of a cantilever or a beam.
15. Study of flow of liquids through capillaries.
16. Determination of surface tension of a liquid.
17. Study of viscosity of a fluid by different methods.

GROUP-B

1. Use of a vibration magnetometer to study a field.
2. Study of magnetic field B due to a current.
3. Measurement of low resistance by Carey-Foster bridge.
4. Measurement of inductance using impedance at different frequencies.
5. Study of decay of currents in LR and RC circuits.
6. Response curve for LCR circuit and response frequency and quality factor.
7. Study of waveforms using cathode-ray oscilloscope.
8. Characteristics of a choke and Measurement of inductance.
9. Study of Lorentz force.
10. Study of discrete and continuous LC transmission line.
11. Elementary FORTRAN programs, Flowcharts and their interpretation.
18. To find the product of two matrices.
19. Numerical solution of equation of motion.
20. To find the roots of quadratic equation.

TEXT AND REFERENCE BOOKs:

1. B saraf et al Mechanical Systems(Vikas publishing House,New Delhi).
2. D.P. khandelwal, A Laboratory Manual of Physics for Undergraduate classes (Vani Publication House,New Delhi).
3. C G Lambe Elements of statistics (Longmans Green and Co London New York, Tprpnto).
4. C Dixon, Numerical analysis.
5. S Lipsdutz and A Poe, schaum's outline of theory and problems of programming with Fortran (MC Graw-Hill Book Company, Singapore 1986).

Physics Practical List (B.Sc.-II year)

PRACTICALS

Minimum 16 (Sixteen) out of the following or similar experiments of equal standard.

1. Study of Brownian motion
2. Study of adiabatic expansion or a gas.
3. Study of conversion of mechanical energy into heat.
4. Heating efficiency of electrical kettle with varying voltages.
5. Study of temperature dependence of total radiation.
6. Study of termperature dependence of spectral density of radiation.
7. Resistance thermometry.
8. Thermoemf thermometry.
9. Conduction of heat through poor conductors of different geometries.
10. Experimental study of probability distribution for a two-option system using a coloured dice.
11. Study of statistical distributions on nuclear distintergration data (GM Counter used as a black box)
12. Speed of waves on a stretched string.
13. Studies on torsional waves in a lumped system.
14. Study of interference with two coherent sources of sound.
15. Chlandi's figures with varying excitation and loading points.
16. Measurement of sound intensities with different situation.
17. Characteristics of a microphone-loudspeaker system.
18. Designing an optical viewing system.
19. Study of monochromatic defects of images.
20. Determining the principal points of a combination of lenses.
21. Study of interference of light (biprism or wedge film)
22. Study of diffraction at a straight edge or a single slit.
23. Study of F-P elaton fringes.
24. Use of Deffraction grating and its resolving limit.
25. Resolving limit of a telescope system.
26. Polarization of light by reflection ; also cos-squared law.
27. Study of Optical rotation for any systems.
28. Study of laser as a monochromotor coherent sourec.
29. Study of a divergence of a Laser beam.
30. Calculation of days between two dates of a year.
31. To check if triangle exists and the type of the triangle.
32. To find the sum of the sine and cosine series and print out the curve.

33. To solve simultaneous equations by elimination method.

34. To prepare a mark-list of polynomials.

35. Fitting a straight line or a simple curve to a given data.

36. Convert a given integer into binary and octal systems and vice-versa.

37. Inverse of a matrix.

38. Spiral array.

TEXT AND REFERENCE BOOKS :

D.P. Khandelwal	:	"Optics and Atomic Physics" (Himalaya Publishing House, Bombay 1988)
D.P. Khandelwal	:	"A Laboratory Manual for Undergraduate Classes" (Vani Publishing House, New Delhi)
S. Lipschutz and A Poe	:	"Schaum's Outline of Theory and Problems of Programming with Fortran" (McGraw-Hill Book Company 1986)
C. Dixon	:	"Numerical Analysis".

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UNIT-V Introduction to computer organisation, time sharing and multi programming systems, window based word processing packages, MS Word.

Introduction to C programming and application to simple problems of arranging numbers in ascending / descending orders : sorting a given data in an array, solution of simultaneous euation.

BOOKS RECOMMENDED :

1. Introduction to solid state physics : C.Kittel
2. Solid State Physics : A.J. Dekkar
3. Electronic Circuits : Mottershead
4. Electronic Circuits : Millman and Halkias
5. Semiconductor Devices : S.M. Sze
6. Computer fundamental : balaguara Swami

PRACTICALS

MINIMUM 16 (Sixteen) Out of the following or similar experiment of equal standard :

1. Determination of Planck's constant
2. Determination of e/m by using Thomson's tube
3. Determination of e by Millikan's method
4. Study of spectra of hydrogen and deuterium (Rydberg constant and ratio of masses of electron proton)
5. Absorption spectrum of iodine vapour
6. Study of alkali or alkaline earth spectra using a concave gra's
7. Study of Zeeman effect for determination of Lande g-factor.
8. Analysis of a given band spectrum.
9. Study of Raman spectrum using laser as an excitation source.
10. Study of absorption of alpha and beta rays.
11. Study of statistics in radioactive measurement.
12. Coniometric study of crystal faces.
13. Determination of dielectric constant
14. Hysteresis curve of transformer core
15. Hall-probe method for measuement of magnetic field
16. Specific resistance and energy gap of a semiconductor
17. Characteristics of transistor
18. Characteristics of a tunnel diode
19. Study of voltage regulation system
20. Study of a regulated power supply

21. Study of lissajous figures using a CRO
22. Study of VTVM
23. Study of RC and TC coupled amplifiers
24. Study of AF and RF oscillators
25. Find roots of f(x)=0 by using Newton-Raphson method
26. Find roots of F(x)=0 by using secant method
27. Integration by Simpson rule
28. To find the value of V at
31. String manipulations
32. Towers of Honoi (Nonrecursive)
33. Finding first four perfect numbers
34. Quadratic interpolation using Newton's forward-difference formula of degree two.

TEXT AND REFERENCE BOOKS :

1. B.G. Strechman ; "Solid State Electronic Devices". II Edition (Prentice-Hall of India, New Delhi, 1986)
2. W.D. Stanley ; "Electronic Devices, Circuits and Applications" (Prentice Hall, New Jersey, USA, 1988)
3. S. Lipschutsz and A Poe ; "Schaum's Outline of Theory and Problems of Programming with Fortran" (McGraw-Hill Book Co. Singapore, 1986)
4. C Dixon ; "Numerical Analysis"

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