

Krantiguru Shyamji Krishna Verma

Kachchh University

Mundra Road

BHUJ : 370 001



SYLLABUS (NEP)

B. Sc. Semester VII& VIII

PHYSICS

(HONOURS / HONOURS WITH research)

With effect from June 2026



K S K V Kachchh University
B. Sc. (Physics) Sem VII – VIII (HONOR/ RESEARCH) NEP Syllabus
(In force from June 2026)

MAJPHY 701
MATHEMATICAL PHYSICS
(For Major Only) (3 Credit)

Unit I

Error & Mathematical Methods

1.3 Errors and their computations. 1.4 A general error formula. 2.1 Introduction. 2.2 Bisection Method. 3.3 Finite Differences, 3.3.1 Forward Differences, 3.3.2 Backwards Differences, 3.3.3 Central Differences. 6.2 Numerical Differentiation. 6.3 Maximum and minimum values of a tabulated function. 6.4 Numerical integration, 6.4.1 Trapezoidal rule, 6.4.2 Simpson's $1/3$ rule, 6.4.3 Simpson's $3/8$ rule.

Ref Book:

Introductory Methods of Numerical Analysis, Fifth Edition, by S.S. Sastry

Unit II

Introduction, Analytic functions, Contour integrals, Laurent series, The Residue theorem, Methods of finding residues, Evaluation of definite integrals by use of the residue theorem, The point at infinity; residues at infinity, Mapping. Green's function constructing Green's function, Few examples.

Unit III

Integral transforms, Fourier transform and its properties as well as applications such as Gaussian function, finite wave train, etc.,

transform and its properties, Laplace transforms of some elementary functions and derivatives including some applications in the problems of physics e. g. step function, simple harmonic oscillator, damped oscillator- RLC analogy etc.

Basic Text & Reference Books For Unit II – III:

1. Mathematical Methods for Physicists by G. Arfken and Weber, Academic Press, 6th Ed (2005).



2. A text book of Quantum Mechanics, by Mathews & Venkatesan, TMH Publication (2010)
3. Mathematical Physics by P. K. Chattopadhyay (Wiley Eastern Limited, (1990).
4. Vector Analysis Murray Spiegel (Schuam Series).
5. Mathematical Methods in Physical Sciences by M. L. Boas, Second Edition, John Wiley & Sons, (1996).
6. Mathematical Methods of Physics by Mathews & Walker, 2nd Ed. 2004 Pearson Education, (Singapore) Indian Br. Delhi, India.

MAJPHY 702
MATHEMATICAL PHYSICS (Practical)
(For Major Only) (1 Credit)

- 1 Phonon dispersion relation using Lattice dynamics kit
- 2 Efficiency of a G.M. Counter
- 3 Calculation of Empty Lattice Energy Bands
- 4 Random walk problem
- 5 SCR Characteristic
- 6 OPAMP IC 741: parameters



MAJPHY 703
ATOMIC & MOLECULAR SPECTROSCOPY AND STATISTICAL
MECHANICS
(For Major Only) (3 Credit)
Unit: I

Atoms and Molecules

Schrödinger equation for one-electron atoms – H-atom, the dipole selection rules. Fine structure of hydrogenic atoms, The Lamb shift and its determination, Hyperfine structure and isotopic shifts. Schrödinger equation for Two-electron atoms, the role of Pauli Exclusion Principle, Energy levels of He atom, Doubly excited states, Auto-ionization in Helium. Thomas-Fermi model for many-electron atoms. The Born-Oppenheimer approximation for molecule, electronic structure of diatomic molecules, LCAO approximation for H_2^+ ion.

Unit: II

Quantum Statistical Mechanics

Density operators: properties of density matrix, The density Operators of various ensembles, Examples, Density matrix, Partition function of a system of free particles, monoatomic molecules, diatomic molecules. The ideal Bose gas, Bose-Einstein Condensate. The ideal Fermi Gas, Degenerate Fermi gas, Applications: Black body radiation, Relativistic Fermi gas at $T=0$, White dwarf stars. Cluster expansion for a classical gas, expansion of the equation of state,

Evaluation of virial coefficients.

Unit: III

Non-equilibrium Statistical Mechanics

Classification of phase transitions, Landau theory of second order phase transition, Examples of phase transitions, Ising model in one and two dimensions, Critical indices, Scaling laws, Boltzmann Transport Equation, Boltzmann H – theorem, Theory of Brownian motion, Diffusion equation.

Books:

1. Physics of Atoms and Molecules, by B. Bransden and C. J. Joachain (Pearson Education Publication, New Delhi).
2. Fundamentals of molecular spectroscopy, by C. N. Banvel.



3. LASERS Theory and Applications, by K. Thyagarajan and A. K. Ghatak (Macmillan India Ltd., 2008).
4. Lasers and Non-linear Optics, by B. B. Laud (New Age International P Ltd., India, 2nd edition, 1996).
5. Mechanics, 3rd Ed. by Landau & Lifshitz, Pergamon Press, 1976
6. Statistical Mechanics, by R K Pathria, 2nd Ed. 1996, Butterworth-Heinemann, Oxford.
7. Statistical Mechanics, by Kerson Huang, Jhon Wiley & Sons, 1987
8. Thermodynamics and Statistical Mechanics, by Griener, Neise and Stoecker, Springer-Ind., Ed. 1997.
9. Statistical Mechanics, by R K Srivastava and J Ashok, Prentice Hall of India, 2005

MAJPHY 704

ATOMIC & MOLECULAR SPECTROSCOPY AND STATISTICAL MECHANICS (Practical)

(For Major Only) (1 Credit)

- 1 OPAMP IC 741: Adder, Subtractor, Integrator and differentiator
- 2 Design and Study of Astable Multivibrator using IC 741
- 3 Design and Study of Phase Shift Oscillator using IC 741
- 4 Design and Study of Voltage Regulated Power Supply using IC 723
- 5 Design and Study of Schmitt Trigger using IC 741.
- 6 Design and Study of Low/high pass filter Circuit using IC 741.



MAJPHY 705
ANALOG AND DIGITAL ELECTRONICS
(For Major Only) (3 Credit)
Unit: I

PN Junction Based Devices

Carrier Statistics in P-N junction-Barrier Potential and I-V Characteristics, Applications of P-N junctions- Diode as clipper, Diode as a clamper circuit, Diode as a switch, Reverse Recovery time of diode, optoelectronic devices, photodiode and phototransistor, Silicon control rectifier, DIAC and TRIAC.

Unit: II

Non-linear Integrated Circuits

Block diagram of Operational Amplifier IC 741, Characteristics and parameters of Op-Amp, Non-Linear Applications of Op-Amp- comparator, Schmitt Trigger, UTP and LTP adjustments, Voltage Controlled Oscillator using IC-741, Timer IC 555 block diagram, Timing waveform generators using IC 555- astablemultivibrator and monostable multivibrator.

Unit: III

BCD Codes and Digital Circuits

Review of Binary Coded Decimal codes, Boolean functions, Min-terms and Max-terms. Karnaugh Mapping, Tri-state logic, positive and negative logic, signed binary numbers. Arithmetic logic circuits: Adders- Half adder and Full adder, Subtractors, comparators, Combinational and Sequential Circuits- Decoders, De-multiplexers, Encoders, Multiplexers, Registers and Counters.

Books:

1. Solid State Pulse Circuits by David A. Bell; Prentice Hall of India, New Delhi
2. Digital Electronics by Malvino & Leech.
3. Microelectronics: Digital and Analog by K. R. Botkar.
4. Integrated Electronics by K. R. Botkar.
5. Electronic Devices & Components by J. Seymour
6. Operational Amplifier by Ramakant Gaekwad



MAJPHY 706
ANALOG AND DIGITAL ELECTRONICS (Practical)
(For Major Only) (1 Credit)

Computer Laboratory:
Python3 programming on various numerical methods applied to physical problems

MAJPHY 707
Astronomy AND Cosmology
(For Major Only) (3 Credit)

Unit I

Astronomy

The Distances to Stars, The Stellar Magnitude Scale, Concept Application: Magnitudes and Fluxes. Absolute Magnitude and Distance Modulus, H.R. diagram

The Sun: A Model Star

The Structure Of The Sun, Photosphere, Chromosphere, Corona, solar activity (only introductory)

The Solar System in Perspective:

Planets (only introductory), Moons, rings and debris, Asteroids, Comets, Meteoroids, interplanetary dust

Ref. Book:

Introductory Astronomy And Astrophysics by Michael Zeilik & Stephen A. Gregor

<https://vdoc.pub/download/introductory-astronomy-and-astrophysics-7bu6sm1bmvr0>

UNIT: II

The Large Scale Structure of the Universe: Astronomy and Cosmology, Our galaxy, Types of Galaxies Radio sources, Quasars Structures on the large scale, Co-ordinates and catalogues of astronomical objects, Classification of stars, HR diagram; Expansion of the universe, Background radiation, Relativistic cosmology.



UNIT: III

Big Bang and the Early Universe: The Early Universe, Thermodynamics of the early Universe, Primordial neutrinos, the proton – neutron ratio, Synthesis of helium and other nuclei, The microwave background, Formation of structures in the Universe, The expanding Universe, Growth in the post recombination era, Observational constraints, The inflationary phase, role of dark matter and dark energy.

Basic Text & Reference Books:-

- 1 Introduction to Cosmology by J V Narlikar, Cambridge Univ Press, 1998.

MAJPHY 708

Astronomy AND Cosmology(Practical)

(For Major Only) (1 Credit)

Project Work/ Field Visit/ Online Short Course Under Supervision or mentoring of Faculty Member

MAJPHY 709

Research Methodology

(For Major Only) (2 Credit)

Unit - I

Research Methodology of Science:

Areas of Science, Philosophy of science, Characteristics of Research, Types of research, Research process; Methodology: Topic selection, Hypothesis, Designing experiment, Analysis, Results, Models; Critical thinking and Science: Strategies and common fallacies. (15 hours)

Text Book:

1. The Scientific Endeavor -Methodology and Perspectives of Sciences- Jeffrey A.Lee, Pearson India (2010)



Unit – II

Empirical Laws and Curve Fitting:

Introduction, Graphical method, Laws reducible to the linear law, Method of group averages, Laws containing three constants, Principle of least squares, Method of least squares, Fitting of other curves, Method of moments.

Reference Books:

1. S. Grewal and J. S. Grewal, Numerical Methods in Engineering and Science, Khanna Publishers, New Delhi (2002).
2. E. Balgurusamy, Numerical Methods, TMH Pub. Co. Ltd, New Delhi (2000).
3. R. Srivastava and S. Guha, Numerical Methods: for Engineering and Science, OUP India (2010).
4. S. C. Chapra and R. P. Canale, Numerical Methods for Engineers, 8th Ed., TMH, India (2021).

MINPHY 710

Nuclear Physics, Atomic Spectra, Molecular Spectra (For Minor Only) (3 Credit)

Unit-I

Nuclear Physics

Physical Tools: Interaction between particles and matter: A brief survey; Detectors for Nuclear Particles: (i) Proportional Counter (ii) The Geiger Counter (iii) Scintillation Counter (iv) Solid state or Semi-conductor Detector (vi) Cloud and Bubble Chambers; Particle Accelerators: (i) Van de Graaff Generator (ii) The cyclotron.

The Q Equation: Introduction; Types of Nuclear Reactions; The balance of Mass and Energy in Nuclear Reaction; The Q Equation; Solution of Q Equation.

Ref.:

1. Nuclear Physics by S.B Patel
(Chapter 1, Art.1. I.2 to 1.I.4; Chapter 3, Art. 3.1 to 3.5)



Unit-II

Atomic Spectra

Orbital Magnetic Dipole moment: Bohr Magnetron; Larmor Precession; space quantization; Electron Spin; Vector model of the atom; Spectroscopic terms and their notations; The Stern-Gerlach experiment;

Normal and Anomalous Zeeman effect; Explanation of Normal Zeeman effect; Explanation of Anomalous Zeeman effect.

Ref. :

1. Atomic and Molecular Spectra By Rajkumar (Kedar Nath Ramnath Publication) (Chapter 4, Art. 1 to 7; Chapter 12, Art. 1 to 3)

Unit-III

Molecular Spectroscopy

Types of Molecular Energy States and Molecular Spectra: Types of molecular spectra.

Separation of electronic and nuclear motion: The Born-Oppenheimer Approximation.

Ref.:

1. Atomic and Molecular Spectra by Raj Kumar (Chapter 17, Art. 1, 2)

Pure Rotational Spectra:

Salient features of rotational spectra; Molecular requirement for rotational spectra; Experimental arrangement; Molecule as a rigid rotator – Explanation of rotational spectra (without solving Schrodinger equation to get energy formula); The non-rigid rotator; Isotope effect.

Ref.: Atomic And Molecular Spectra by Raj Kumar
(Chapter 18, Art. 1 to 6)

Classification of Molecular Electronic States: Molecular electronic states; Symmetry properties of electronic eigen functions.

Ref.: Atomic And Molecular Spectra by Raj Kumar (Chapter 24, Art. 1 and 2)



MINPHY 711

Nuclear Physics, Atomic Spectra, Molecular Spectra(Practical) (For Minor Only) (1 Credit)

1. Study of X-ray diffraction pattern
2. 'g' By bar pendulum
3. Resolving power of Telescope
4. High R by Leakage
5. Characteristics of FET
6. Hartman Formula



Sem VIII Credit Distribution					
Paper Code	Title	Credit	CA Marks	UA Marks	Total Marks
MAJPHY 801	Non-Linear Dynamics, Relativity, Remote Sensing	3	35	35	70
MAJPHY 802	Non-Linear Dynamics, Relativity, Remote Sensing (Practical)	1	15	15	30
MAJPHY 803	Electromagnetism, Solid State Physics	3	35	35	70
MAJPHY 804	Electromagnetism, Solid State Physics(Practical)	1	15	15	30
MAJPHY 805	Waveguides and Transmission Line, Solid State Properties	3	35	35	70
MAJPHY 806	Waveguides and Transmission Line, Solid State Properties(Practical)	1	15	15	30
OJT	OJT (For HONOURS) RESEARRCH PROJECT (For HONOURS WITH RESEARCH)	6			
MINPHY 807	Relativity, Electronics	3	35	35	70
MINPHY 808	Relativity, Electronics (Practical)	1	15	15	30



MAJPHY 801

Non-Linear Dynamics, Relativity, Remote Sensing

(For Major Only) (3 Credit)

Unit I

Dynamical systems: Dissipative systems, Attractors, Equilibrium solutions, Limit cycles, Periodic solutions, Poincare cuts, Static bifurcations, bifurcations of time-dependent solutions.

Lyapunov Exponents and Chaos: One dimensional system, Multidimensional systems Stretching and folding in phase space, Fractal geometry, Systems with chaotic dynamics: dynamics of discrete systems, One dimensional mappings.

UNIT: II

General relativity: Space, time and gravitation, Covariant differentiation, Riemannian geometry, Space-time curvature, Geodesics, Principle of equivalence Gravitational equations, The Schwarzschild solution.

From Relativity to Cosmology: The Einstein Universe, The expanding Universe, Assumptions of Cosmology, The red shifts Apparent magnitude, Hubble's law, Angular size, Einstein Field equations in Cosmology, Energy tensors of the universe, Solution of Friedmann's equations, Luminosity vs distance, Cosmological models with the Λ term.

Reference Books:-

1 Classical Mechanics – System of particles and Hamiltonian Dynamics' by Greiner, Springer

International Ed. 2003 (second Indian Reprint 2006).

2 General Theory of Relativity by P A M Dirac, Prentice Hall of India, 2001.

Unit III

Remote Sensing : What is Remote Sensing 2. What is a satellite 3. Satellite based Remote Sensing 4. History of Remote Sensing 5. Applications of Satellite Remote sensing for the common man a. Weather and climate b. Water resources monitoring c. Oceans d. Study of glaciers and snow monitoring e. Earth observation in day and night f. Agriculture g. Forest h. Disaster assessment i. Renewable energy j. Rural and urban development k. Some innovative applications

Ref Book: Satellite Remote Sensing and Common Man By Aloke K Mathur & Anil C Mathur



MAJPHY 802

Non-Linear Dynamics, Relativity, Remote Sensing(Practical)

(For Major Only) (1 Credit)

- 1 Study of Amplitude Modulation and Demodulation using Trainer kit.
- 2 Absorption coefficient of Beta particles of Aluminum
- 3 Study of Transmission Line characteristics using Trainer Kit.
- 4 Resistivity of a semiconductor by four probe method
- 5 Characteristics of optical fiber.
- 6 Characteristics of Optoelectronic devices



MAJPHY 803
Electromagnetism, Solid State Physics
(For Major Only) (3 Credit)
Unit- I

Electromagnetism

Electromagnetic waves in Matter:

Propagation in linear media, Uniform plane waves propagation, Conductors and Dielectrics, Reflection and transmission of plane waves at normal incidence, Reflection and transmission at oblique incidence, Surface impedance, Total internal reflection, Reflection from the surface of a metal, Pointing's theorem, Instantaneous, Average and complex Pointing vector, Power loss in a plane conductor, Illustrative examples.

Ref. :

1. J. Griffiths, Introduction to electrodynamics, Prentice Hall India Ltd. (2nd ed.)
2. B.B. Laud, Electromagnetics, Wiley Eastern, (2nd ed.)

Unit – II

Magnetic Properties of Solids:

Introduction, Magnetic susceptibility, classification of materials, Atomic Magnetic Moment, Diamagnetism: Langevin's formula for the susceptibility of diamagnetism of core electrons, Paramagnetism: Free ion paramagnetism, conduction electron paramagnetism, Quantum theory of paramagnetism

Ferromagnetism: Introduction, Domain Theory, Magnetostriction, Origin of domains, Weiss molecular field, Domain walls, Energy considerations, Hysteresis, Antiferromagnetism, Ferrimagnetism, Problems.

Unit – III

Superconductivity

Introduction, Occurrence of superconductivity, Destruction of superconductivity of magnetic field, Meissner effect, Heat Capacity, Energy gap, Isotope effect, Thermodynamics of the superconducting transition, London equation, Coherence Length, BCS theory of superconductivity, BCS ground state, Flux quantization in a



superconducting ring, Duration of persistence current, Type-I and Type-II superconductors, Vortex state, Estimation of H_{c1} and H_{c2} , Single particle tunnelling, Josephson superconductor tunnelling, DC Josephson effect, AC Josephson effect, Macroscopic quantum interference, Introduction to High T_c Superconductors, Problem Solving.

Ref. : Unit – II Unit – III

C. Kittel, Introduction to Solid State Physics, 8th Ed., Wiley Eastern Limited, New Delhi

(2018).

2. J. P. Srivastava, Elements of Solid State Physics, 4th Ed., PHI Learning Private Limited, Delhi (2016).
3. C. M. Kachhava, Solid State Physics, Solid State Devices and Electronics, New Age International Publishers, New Delhi (2011).
4. S. O. Pillai, Solid State Physics, 10th Ed. New Age International Publishers, New Delhi (2023).
5. S. L. Kakani and C. Hemrajani, Solid State Physics – Theory, Applications and Problems, Sultan Chand and Sons, New Delhi (2014).
6. B. S. Saxena, P. N. Saxena, R. C. Gupta and J. N. Mandal Fundamentals of Solid State Physics, 32nd Ed., Pragati Prakashan, Meerut (2022).
7. A. K. Saxena, Solid State Physics (With an Introduction to Semiconductor Devices), 3rd Ed., Trinity Press, New Delhi (2014).

MAJPHY 804

Electromagnetism, Solid State Physics(Practical)

(For Major Only) (1 Credit)

- 1 Experiments on optical fiber communication.
- 2 Design and Study of Astable & Monostable Multi vibrator using IC 555.
- 3 Design and Study of different types of Flip-Flops using IC 7400, 7402 & 7473.
- 4 Study of different types of Shift Registers using IC 7493.
- 5 Design and study of decade counter using IC 7490.
- 6 Design and study of divide by six counter using IC 7490.



MAJPHY 805

Waveguides and Transmission Line, Solid State Properties

(For Major Only) (3 Credit)

Unit – I

Transmission Lines:

Transmission Lines, Circuit representation of the parallel transmission line, Parallel planes transmission lines with loss, E and H about long parallel cylindrical conductors of arbitrary crosssection, Transmission Lines theory, Low-loss Radio Frequency and UHF Transmission Lines, UHF lines as circuit elements, Transmission Lines charts, Illustrative examples.

Ref. Book

E. C. Jordan and K. G. Balmain, Electromagnetic waves and radiating systems, Prentice Hall of India, New Delhi, 1976

Unit: II

Lattice vibrations, Vibration of mono-atomic lattice, First Brillouin zone, group velocity and continuum limit, Lattice with two atoms per primitive cell, Quantization of lattice vibrations, phonon momentum, inelastic scattering of neutrons by phonons.

Unit – III

Imperfections in Solids:

Classification of Imperfections, Point imperfections, Line imperfections, Shear strength and process of plastic flow, types of dislocations, Stress fields of dislocations, planer imperfections, Role of dislocations in crystal growth, strength of alloys, Problems Defect creation by ion beams : Possibilities of tailoring the materials properties with ion beams, nuclear and electronic energy loss in materials, consequence of large electronic energy density deposition by swift heavy ions.

Reference books:

1. C. Kittel, Introduction to Solid State Physics, 8th Ed., Wiley Eastern Limited, New Delhi (2018).
2. J. P. Srivastava, Elements of Solid State Physics, 4th Ed., PHI Learning Private Limited, Delhi(2016).



3. C. M. Kachhava, Solid State Physics, Solid State Devices and Electronics, New Age International Publishers, New Delhi (2011).
4. S. O. Pillai, Solid State Physics, 10th Ed. New Age International Publishers, New Delhi (2023).
5. S. L. Kakani and C. Hemrajani, Solid State Physics – Theory, Applications and Problems, Sultan Chand and Sons, New Delhi (2014).
6. B. S. Saxena, P. N. Saxena, R. C. Gupta and J. N. Mandal Fundamentals of Solid State Physics, 32nd Ed., Pragati Prakashan, Meerut (2022).
7. A. K. Saxena, Solid State Physics (With an Introduction to Semiconductor Devices), 3rd Ed., Trinity Press, New Delhi (2014).
8. G.K. Mehta and D.K. Avasthi, Swift Heavy Ions for Materials Engineering and Nanostructuring, Springer: Springer Series in Materials Science (SSMATERIALS, volume 145)(2011)

MAJPHY 806

Waveguides and Transmission Line, Solid State Properties(Practical)

(For Major Only) (1 Credit)

Project Work/ Field Visit/ Online Short Course Under Supervision or mentoring of Faculty Member

OJT

On Job Training of 6 Credit (For HONOURS)

RESEARCH PROJECT

OF 6 Credit (For HONOURS WITH RESEARCH)



MINPHY 807

Relativity, Electronics (For Minor Only) (3 Credit)

Unit-I

Relativity

Introduction, Frame of reference, Newtonian Relativity, Galilean Transformation equations, The Ether Hypothesis, The Michelson Morley Experiment, Special Theory of Relativity, The Lorentz Transformation equations, Length Contraction, Time Dilation,

Ref.:

1. Modern Physics by R. Murugesan, Er. KiruthigaSivaprasath – S Chand Pub., (Chapter 1.1 to 1.10)

Doppler Effect, Twin Paradox, Relativistic Momentum, Mass and energy, Energy and Momentum, Mass less particles.

Ref.:

2. Concepts of Modern Physics by Arthur Beiser, Sixth edition., (Chapter 1, Art. 1.3, 1.5, 1.7 to 1.9)

Unit-II

Resonance: Definition of Q, the factor of merit; Series Resonance; Band width of the series resonant circuit; Parallel resonance or anti-resonance; Currents in anti-resonant circuits; Band width of anti-resonant circuits.

Ref.:

3. Networks, Lines and Fields by John D. Ryder, (Chapter 2, Art. 2.1 to 2.4, 2.6, 2.8)

Amplitude Modulation : Introduction; Amplitude modulation; Amplitude modulation index; Modulation index for Sinusoidal AM; Frequency spectrum for Sinusoidal AM; Average power for Sinusoidal AM; Effective voltage and current for Sinusoidal AM.

Ref.:

4. Electronic Communications by Dennis Roddy, John Coolen (Chapter 8, Art. 8.1 to 8.7)



Unit-III

C.R.O.

Cathode Ray Oscilloscope : Cathode Ray Oscilloscope; Cathode Ray tube; Deflection systems; Mathematical expression for electrostatic deflection sensitivity; Electromagnetic deflection system; Magnetic deflection in C.R. Tube; Uses of CRO.

Ref.:

5. Electronics and Radio Engineering (Eighth Ed.) by M. L. Gupta
(Chapter 36, Art. 36.1, 36.2, 36.7, 36.8 to 36.10, 36.20)

Regulated D.C. Power Supply

17.1 Ordinary D.C. Power Supply **17.2** Important Terms **17.3** Regulated Power Supply **17.4** Types of Voltage Regulator **17.5** Zener Diode Voltage Regulator **17.6** Conditions for Proper Operations of Zener Regulator **17.7** Transistor Series Voltage Regulator

Ref.:

6. Principles of Electronics by V.K.Mehta and Rohit Mehta (11th Edition)

MINPHY 808

Relativity, Electronics(Practical)

(For Minor Only) (1 Credit)

1. Mutual Inductance of Two Coils
2. Acceleration due to Gravity by Kater's Pendulum (Variable Knife Edges)
3. Colpitt Oscillator – Measurement of Frequency by C.R.O.
4. Dielectric Constant of a Liquid
5. Half Adder and Full Adder
6. Numerical Integration



Assessment Scheme

College Assessment

Theory Paper

[Total Marks: 35, Passing standards: 14 Marks]

(Written Test 20 Marks, Seminar/Assignment/Poster Presentation: 10 Marks, Attendance: 5 Marks)

Practical Paper

Practical Examination

Duration of the exam: 3 Hrs. Passing standard: 6 Marks out of 15 Marks.

There will be FOUR Exercises in each Practical, as under, total of 15 Marks
(1) Approach (2) Readings and Calculations (3) Viva (4) Practical Journal

University Assessment

FOR SEMESTER-END EXAMS

Total Marks: 35, Passing standard: 14 Marks [Time: 2 Hrs.]

Questions	Section	Marks
Question-1 (Unit-I)	Descriptive type (with internal option) The types of questions are varied, like: Derivations, Short notes, Problems etc.	09 marks
Question-2 (Unit-II)	--do--	09 marks
Question-3 (Unit-III)	--do--	09 marks
Question – 4 (Unit-I, II & III)	Total 12 short questions of 1 mark, each unit will have 4 questions. Students will attempt any 08 out of 12	08 Marks



- Question 4 may include one-line answers/ two-line answers/ definitions/ reasoning/ derivations of equations/ derivations of sums/ drawing small figures/ fill in the blanks/ multiple choice question/ one-word answer etc.
- The language of the question papers will be English.

PRACTICAL EXAMINATION

Duration of the exam: 3 Hrs.

Passing standard: 6 Marks out of 15 Marks.

There will be FOUR Exercises in each Practical, as under,
total of 15 Marks

(1) Approach (2) Readings and Calculations (3) Viva (4) Practical Journal



**Chairman
BOS (Physics)**



**DEAN
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