

Credits : 5
Hours/Week : 6
Medium : English and Tamil
Semester : 1

Code:RR1PH1

(For students admitted from 2015)

PROPERTIES OF MATTER AND SOUND

Unit 1: ELASTICITY

Hooke's law – Stress – Strain Diagram – Elastic Moduli – Work done in deforming a body – Relation between elastic constants – Poisson's Ratio – Expression for Poisson's ratio in terms of elastic constants – Twisting couple on a wire – Rigidity modulus by static torsion – Work done in twisting – Torsional pendulum – Determination of rigidity modulus of a wire.

Unit 2: BENDING OF BEAMS

Expression for bending moment – Cantilever – Expression for depression – Experiment to find Young's Modulus – Cantilever oscillation – Expression for period – Uniform bending – Expression for elevation – Experiment to find Young's modulus using microscope – Non Uniform bending – Expression for depression – Experiment to find Young's modulus using mirror and telescope – I section girders.

Unit 3:

(a) Surface Tension

Definition and dimensions of surface tension – Examples – Excess of pressure over curved surfaces – Variation of surface tension with temperature – Jaeger's Experiment.

(b) Physics of Low Pressure

Production and measurement of low pressure – Gaede's molecular pump – Mercury diffusion pump – Knudsen's absolute gauge – Detection of leakage – McLeod gauge.

Unit 4: VISCOSITY

Streamlined motion – Turbulent motion – Coefficient of viscosity and its dimension – Rate of flow of liquid in a capillary tube – Poiseuille's formula – Experiment to determine the coefficient of viscosity of liquid – Variation of viscosity of liquid with temperature.

Unit 5 : SOUND

Laws of transverse vibrations in strings – verification by Sonometer – Music and noise – Characteristics of musical sound.

Source in an enclosure – reverberation and time of reverberation – Sabine’s formula – Measurement of reverberation time – Absorption coefficient – Acoustics design – Ultrasonics – Production- Piezo electric oscillator and magnetostriction oscillator method – Properties – Applications.

BOOKS FOR STUDY:

1. Properties of matter – Brijlal and Subramanian, S.Chand Co., Ltd (2001).
2. Properties of matter and acoustics –R.Murugesan, Kiruthiga Sivaprasad, S.Chand Co., Ltd (2013).

BOOKS FOR REFERENCE:

1. Elements of Properties of matter – D.S. Mathur. S.Chand, Ltd (1968).
2. Properties of matter – Subramanian Iyer and Jeyaraman.
3. Oscillations, waves and sound – L.P. Sharma, H.C. Saxena.
- 4 A text book of sound R. L. Saigal .

Question Paper Pattern:

Maximum Marks : 75

Exam Duration : 3 Hours

Part A 10x2 = 20 Answer **All** Questions (Two Questions from each unit)

Part B 5x5 = 25 Answer **All** Questions (Either or Type - Two Question from each unit)

Part C 3x10 = 30 Answer Any **THREE** (One Question from each unit)

Signature of the HOD

Credits : 5
Hours/Week : 3
Medium : English and Tamil
Semester : 1

Code:RR1PHP1

(For students admitted from 2015)

MAJOR PRACTICAL – I

(Choose any Ten only)

1. Surface tension and interfacial surface tension by drop weight method.
2. Coefficient of viscosity – burette method.
3. Compound Pendulum – Determination of g and K.
4. Sonometer – Verification of laws of transverse vibration.
5. Young's modulus - Non uniform bending – Scale and telescope .
6. Young's modulus – Non uniform bending –Pin and microscope
7. Convex lens –Focal length – Combination method(two types).
8. Spectrometer – Refractive index of the prism.
9. M1/M2-TanA & Tan B(Using Magnetometer).
10. Newton's law of cooling – Specific heat capacity of the liquid.
11. Newton's rings-determination of radius of curvature of the lens R.
12. Meter bridge – determination of specific resistance.
13. Potentiometer –Voltmeter calibration(low range)
14. Junction diode– Characteristics.

Question Paper Pattern:

Maximum Marks : 60

Exam Duration : 3 Hours

Signature of the HOD

Credits : 5
Hours/Week : 6
Medium : English and Tamil
Semester : 2

Code:RR2PH2

(For students admitted from 2015)

MECHANICS AND RELATIVITY

Unit 1: PROJECTILE, IMPULSE & IMPACT

Projectile- Path of a projectile is a parabola – Range on a inclined plane – Impulse – Impact – Impulsive force – Laws of impact – Impact of a smooth sphere on a horizontal plane – Direct & oblique impact – Loss of kinetic energy – Motion of two interacting bodies

Unit 2: DYNAMICS OF RIGID BODIES

Kinetic energy of rotation – Angular momentum of a rotating body – Compound pendulum – equivalent simple pendulum – centre of suspension & centre of oscillation – centre of percussion – minimum period – Determination of g and radius of gyration of a bar pendulum.

Law of conservation of momentum – Center of mass - Velocity and Acceleration of centre of mass – System of variable mass- Equation of a Rocket motion – conservation of linear and angular momentum.

Unit 3: GRAVITATION AND CENTER OF GRAVITY

Newton's law of gravitation – Gravitational potential and Field due to a spherical shell – Determination of G Boy's method – C.G. of solid cone and tetrahedron – C.G. of arc and sector of a circle.

Unit 4: CENTER OF PRESSURE:

Centre of pressure of a rectangular with vortex on surface, base on the surface, triangular, circular lamina, effect of Centre of pressure on further immersion. Variation of atmospheric pressure with altitude difference in altitude measurement.- height of the homogeneous atmosphere.

Unit 5: THEORY OF RELATIVITY.

Galilean-Newtonian relativity, Galilean frames formations- Michelson Morley. Experiment and its importance – Einstein's postulates – Lorentz transformation – Relativity of space and time – Addition of velocities – Variation of Mass with velocity – Mass- Energy equivalence- Physical significance.

BOOKS FOR STUDY:

1. Mechanics Unit I & II M. Narayanamoorthy and N. Nagarethnam – NPC- Chennai.
2. Modern Physics: R. Mugrugesan, Kiruthiga sivaprasath S. Chand & Co Ltd New Delhi
3. Hydrostatics – M.Narayanamoorthy and N.Nagarethnam

BOOKS FOR REFERENCE:

1. Mechanics for B.Sc., Classes P. R. Subramaniam, T. Jayaraman and C. Rangarajan S.V. Publishers Chennai.
2. Mechanics D.S. Mathur S. Chand & Co Ltd New Delhi.(2000).

Question Paper Pattern:

Maximum Marks: 75

Exam duration: 3Hrs

Part A 10x2 = 20 Answer **All** Questions (Two questions from each unit)

Part B 5x5 = 25 Answer **All** Questions (Either or Type - Two question from each unit)

Part C 3x10 = 30 Answer Any **THREE** (One Question from each unit)

Signature of the HOD

Credits : 5
Hours/Week : 3
Medium : English and Tamil
Semester : 2

Code:RR2PHP2

(For students admitted from 2015)

MAJOR PRACTICAL-II

(Choose any Ten only)

1. Young's modulus – Uniform – Scale and telescope.
2. Young's modulus – Uniform – Pin and microscope.
3. Surface tension by capillary rise method.
4. Comparison of surface tension by capillary rise method.
5. Lee's disc –specific heat capacity of the bad conductor.
6. Focal length – Concave lens – Combination method (Two types)
7. Spectrometer –Dispersive Power of the prism.
8. Melde's string Determination of frequency.
9. Potentiometer – Internal resistance of cells.
10. Meter bridge – verification of laws of resistance.
11. Potentiometer –Ammeter Calibration.
12. M1/M2-Vibration Magnetometer.
13. Logic gates –Using discrete components.
14. Zener diode – Characteristics.

Question Paper Pattern:

Maximum Marks: 60
Exam Duration: 3 Hours

Signature of the HOD

Credits : 5
Hours/Week : 6
Medium : English and Tamil
Semester : 3

Code:RR3PH3

(For students admitted from 2015)

HEAT AND THERMODYNAMICS

Unit 1: SPECIFIC HEAT

Specific Heat – Specific Heat of a Liquid by Joule’s Electrical Method, Specific Heat of a Gas – Mayer’s Relation - Specific Heat of a gas at C_v – Joly’s Steam Calorimeter – C_p Regnault’s Method - Dulong and Petit’s Law – Variation of Specific Heat and Atomic Heat with Temperature – Debye’s theory – Einstein’s Quantum Theory.

Unit 2: NATURE OF HEAT

Degrees of freedom and Maxwell’s Law of Equipartition of Energy – Atomicity of Gases – Monatomic – Diatomic – Triatomic Gases – Molecular velocity distribution Maxwell’s Derivation – Mean Free Path – Transport Phenomena – Viscosity of Gases – Thermal Conductivity of Gases.

Unit 3: THERMODYNAMICS

Carnot’s Theorem – Thermodynamic Scale of Temperature –Clapeyron Latent Heat Equation – Entropy – Change of Entropy in a Reversible and Irreversible Process – 3rd Law of Thermodynamics – T-S Diagram – Entropy of a Perfect Gas – Zero Point Energy And Negative Temperature – Maxwell’s Thermo dynamical Relations Derivation.

Unit 4: TRANSMISSION OF HEAT

Coefficient of Thermal Conductivity –Lee’s Disc method for bad conductors - Radial and cylindrical flow of heat – Wiedmann – Franz law – Stefan’s law – Mathematical derivation –Newton’s law of cooling from Stefan’s law –Experimental verification – Stefan’s constant – Experimental determination.

Unit 5: STATISTICAL THERMODYNAMICS

Statistical equilibrium –M.B. distribution law –M.B. distribution law in terms of temperature – application to ideal gas – Quantum Statistics – Phase space – Fermi-Dirac Distribution Law – Electron gas – Fermi energy – Bose – Einstein Distribution Law – Photon gas – Comparison of three statistics.

LIST OF BOOKS FOR STUDY:

1. Heat and Thermodynamics - Brijlal and Subramaniam. S.Chand Publishers [1998]
2. Heat and Thermodynamics - J.B.Rajam. S.Chand Publishers

Question Paper Pattern:

Maximum Marks : 75
Exam Duration : 3 Hours

Part A $10 \times 2 = 20$ Answer **All** Questions (Two questions from each unit)

Part B $5 \times 5 = 25$ Answer **All** Questions (Either or Type - Two questions from each unit)

Part C $3 \times 10 = 30$ Answer Any **THREE**(One Question from each unit)

Signature of the HOD

Credits : 5
Hours/Week : 3
Medium : English and Tamil
Semester : 3

Code:RR3PHP3

(For students admitted from 2015)

MAJOR PRACTICAL-III

(Choose any Ten only)

1. Static torsion – determine the rigidity modulus.
2. Young’s Modulus –Koenig’s Method (Non Uniform bending).
3. Emissivity of a surface – Spherical calorimeter.
4. Specific heat capacity of a liquid-Joules calorimeter.
5. Spectrometer – (i-d) curve.
6. Spectrometer- Grating- Normal Incidence.
7. Figure of merit- Table Galvanometer.
8. Potentiometer – Resistance of a coil.
9. Potentiometer – Calibration of high range voltmeter.
10. Bridge Rectifier.
11. Voltage Doubler and Tripler.
12. Transistor characteristics – common emitter.
13. FET – Characteristics.
14. Logic gates – Discrete components.

Question Paper Pattern:

Maximum Marks: 60

Exam Duration: 3 Hours

Signature of the HOD

Credits : 5
Hours/Week : 6
Medium : English and Tamil
Semester : 4

Code:RR4PH4

(For students admitted from 2015)

OPTICS AND SPECTROSCOPY

Unit 1: GEOMETRICAL OPTICS

Dispersive power of a prism - Deviation without dispersion - Dispersion without deviation - Spherical aberration in a lens -Methods of minimizing the spherical aberration - Chromatic aberration in a lens - Condition for achromatism for two thin lenses in contact, separated by a distance - Eye piece - Huygens's eye piece.

Unit 2: INTERFERENCE

Condition for bright and dark fringes - Fresnel's biprism - Determination of Wave Length - Interference by reflected and transmitted light In Thin Films - Air wedge - Determination of Thickness of Thin wire - Michelson's interferometer - determination of Wave Length.

Unit 3: DIFFRACTION

Fresnel and Fraunhofer diffraction(Definition only) - Construction of half period zones - Zone plate - Construction, theory -Comparison of zone plate and convex lens - Fraunhofer diffraction at a single slit - Grating theory Determination of Wave length - Resolving power of a telescope - Relation between magnifying power and resolving power of a telescope - Resolving power of a microscope.

Unit 4: POLARISATION

Brewster's law - Pile of plates -Double refraction - Uni axial crystals - Nicol Prism - Plane ,Circular, Elliptically polarized light (Theory of production and detection) - Quarter wave plate and Half wave plate - Specific rotation - Laurentz half shade polarimeter.

Unit 5 : SPECTROSCOPY

IR, UV Production, Detection and Uses -Rayleigh Scattering- Raman effect - Quantum theory.
LASER characteristics - Induced absorption, Spontaneous, Stimulated emission - Einstein's coefficient, derivation - Population inversion - Pumping - Uses- semiconductor LASER.

BOOKS FOR REFERENCE:

1. Optics and Spectroscopy by R.Murugesan.(2010).
2. Optics and Spectroscopy by N.Subramanian and Brijlal.S.Chandn Co.,(1992).

Question Paper Pattern:

Maximum Marks : 75

Exam Duration : 3 Hours

Part A $10 \times 2 = 20$ Answer **All** Questions (Two questions from each unit)

Part B $5 \times 5 = 25$ Answer **All** Questions (Either or Type - Two questions from each unit)

Part C $3 \times 10 = 30$ Answer Any **THREE** (One question from each unit)

Signature of the HOD

Credits : 5
Hours/Week : 3
Medium : English and Tamil
Semester : 4

Code:RR4PHP4

(For students admitted from 2015)
MAJOR PRACTICAL – IV

(Choose any Ten only)

1. Young's Modulus- Koenig's Method- Uniform Bending.
2. Torsional pendulum- determination of the rigidity modulus of thin wire.
3. Stokes method – determine the viscosity of the given liquid.
4. Torsional pendulum – comparison of radii.
5. Potentiometer-EMF of a thermocouple.
6. Potentiometer –Thermistor - Resistance determination.
7. Tan C – determination of M & B_H.
8. . Field along the axis of a coil- H determination.
9. Carey Foster's Bridge-Specific Resistance of a coil.
10. Spectrometer –Grating –Minimum Deviation.
11. Spectrometer – (i-i') curve.
12. LCR series & parallel resonance circuit.
13. Transistor characteristics-common base.
14. Zener regulated power supply- % of regulation.

Question Paper Pattern:

Maximum Marks: 60

Exam Duration: 3 Hour

Signature of the HOD

Credits : 4
Hours/Week : 7
Medium : English and Tamil
Semester : 5

Code:RR5PHEL1

(For students admitted from 2015)

ELECTRICITY AND MAGNETISM

Unit 1: ELECTROSTATICS

Coulomb's law – Proof — Gauss's Law-Proof- Mechanical force experienced by unit area of a charged conductor– Deduction of Coulomb's inverse square law from Gauss's law – Relation between electric field and electric potential – Potential at a point due to a uniformly charged conducting, non-conducting spheres.

Unit 2: CURRENT ELECTRICITY

Kirchhoff's Laws of Electricity(Statement), Wheatstone's bridge – Carey Foster's Bridge – Seebeck effect, Peltier effect, Thomson effect – Thermodynamics of thermocouple – Thermo electric diagrams – Determination of Thomson, Peltier coefficient.

Unit 3: ELECTROMAGNETIC INDUCTION

Electromagnetic Induction, Laws, Self-induction, Mutual Induction, Self-Inductance by Raleigh's Method - experimental determination of mutual inductance – coefficient of coupling – Charge and Discharge of a Capacitor through a resistor –Measurement of high resistance by leakage.

Unit 4: ALTERNATING CURRENT

LC, LR, CR - AC Circuits - Series and Parallel resonance circuit – Resonance condition – their comparison – choke coil – Transformer – theory with and without load – uses - skin effect.

Unit 5: MAGNETIC PROPERTIES OF MATERIALS

Permeability, Susceptibility (Definition only) - Relation between them – Properties of dia, para and ferro magnetic materials –Langevin's theory of dia and Para magnetism –B-H curve-Energy loss due to hysteresis –Importance of hysteresis curves.

BOOKS FOR STUDY:

1. Electricity and Magnetism by R. Murugesan, S. Chand & Company Ltd. New Delhi (2008).
2. Electricity and Magnetism by Brijlal and N. Subramanian, Ratan Prakashan Mandir Agra, (2000).

BOOKS FOR REFERENCES:

1. Electricity and Magnetism by D.L. Sehgal, K.L. Chopra and N.K. Sehgal. 5th Edition S. Chand & Sons. New Delhi (1996).

Question Paper Pattern:

Maximum Marks : 75

Exam Duration : 3 Hours

Part A 10x2 = 20 Answer **All** Questions (Two questions from each unit)

Part B 5x5 = 25 Answer **All** Questions (Either or Type - Two questions from each unit)

Part C 3x10 = 30 Answer Any **THREE** (One question from each unit)

Signature of the HOD

Credits : 4
Hours/Week : 7
Medium : English and Tamil
Semester : 5

Code:RR5PHEL2

(For students admitted from 2015)

BASIC ELECTRONICS

Unit 1: DIODES AND RECTIFIERS

P N junction diode – characteristics- Zener diode – Characteristics- LED- Full wave rectifier - ripple factor - filters - L-section, Π -section filters - zener voltage regulated power supply, Photo Diode and Uses.

Unit 2: TRANSISTORS

Junction Transistors –construction – Mechanism of amplification – Modes of operation – Alpha & Beta of a Transistor – Current expression – Transistor static characteristics in CB and CE modes –Transistor biasing(voltage divider biasing) – Two port representation of a Transistor – Parameters- Determination of h-parameters.

Unit 3: SPECIAL DEVICES

Special semiconductor devices – FET, JFET, MOSFET(Construction and Working) - FET parameters – Comparison between FET and Transistor - Phototransistor – SCR, UJT, characteristics- Application of SCR as relay and UJT as relaxation oscillator.

Unit 4: AMPLIFIERS AND OSCILLATORS

Power amplifier – Class A power amplifier –Class B power amplifier - Push pull – Gain of amplifier with feed back – Effects of negative feed back – Oscillators – Types – Concepts of feedback oscillators – Hartley- Collpitt's oscillators.

Unit 5: MODULATORS AND DETECTORS

Modulation – Amplitude modulation-Modulation factor – Power in AM waves – Limitations of amplitude modulation-Frequency modulation – Phase modulation – Demodulation-Essentials in demodulation- Linear Diode Detector.

BOOKS FOR STUDY

1. Principles of electronics – V.K. Mehta, S.Chand & Co.- 7th Rev. Edition (2005).
2. Basic Electronics and Linear Circuits –N.Bhargava, D.Kulshreshtha and S.Gupta,Tata McGraw-Hill Publishing Co.(1983)

BOOKS FOR REFERENCE:

- 1.Electronic Devices and circuits – Sarjeer Gupta – Dhaanpat rai Publications – New Delhi – Reprint – 2008.
- 2.Elements of solid state electronics – A. Ambrose and T.Vincent Devaraj – Mera publications -1993.
- 3.Basic electrical, Electronics and computer Engineering – R.Muthusubramanian , S. Salivahanan, K.A. Muraleedharan – Tata McGraw Hill publishing Co. Ltd., New Delhi – Reprint (2004)
- 4.Electronic Devices and circuits – Jacob Millman, Christos. C. Halkib – Tata McGraw Hill publishing Co., Ltd., New Delhi – Reprint (2002).

Question Paper Pattern:

Maximum Marks : 75

Exam Duration : 3 Hours

Part A 10x2 = 20 Answer **All** Questions (Two questions from each unit)

Part B 5x5 = 25 Answer **All** Questions (Either or Type - Two questions from each unit)

Part C 3x10 = 30Answer Any **THREE** (One question from each unit)

Signature of the HOD

Credits : 4
Hours/Week : 7
Medium : English and Tamil
Semester : 5

Code: RR5PH5

(For students admitted from 2015)

ATOMIC AND SOLID STATE PHYSICS

Unit 1 :ATOMIC STRUCTURE

Excitation of atoms – Critical Potential – Excitation Potential – Ionisation Potential – Experimental determination of critical potential – Frank and Hertz`s method – Sommerfield atom model – Qualitative treatment – Derivation of condition for the allowed elliptical orbits – Vector atom model - Quantum numbers associated with Vector atom model-Coupling schemes – L-S and J J coupling _ Pauli`s exclusion principle and verification .

Unit 2: FINE STRUCTURE OF SPECTRAL LINES

Magnetic dipole moments due to orbital and spin motion – Selection rule for electron transition – Intensity rules – Interval rule – Fine structure of D line – Zeeman effect – Normal and Anomalous (Experimental study and results) – Debye`s theory of normal Zeeman effect – Lorentz theory of anomalous Zeeman effect - Paschen Back effect and Stark Effect (definition only).

Unit 3: X-Rays

Origin of X-Rays – Polarization of x-rays-Absorption of X-Rays – Continuous, Characteristic X-Rays –Mosley`s Law –Mosley`s Law and its importance - Bragg`s law – Bragg X-ray spectrometer –Powder crystal method –Rotating Crystal method-Compton Effect – Theory – Experimental Verification.

Unit 4: PHOTO ELECTRICITY

Photo electric effect – laws of photoelectric emission -Einstein`s photo electric equation- Richardson and Compton Experiment – Millikan`s Experiment – verification of Einstein`s equations –determination of Plank`s constant-Photo electric cells - Photo Emissive, Photo Voltaic, Photo Conductive cells – Photo Multiplier – Applications of photo electric cells.

Unit 5: CRYSTAL STRUCTURE

Types of solids – Crystalline and Amorphous solids - Space Lattice – The Basis and the crystal structure unit cell and Primitive lattice cell – Lattice parameter – Symmetry elements in a cubic crystals - Point groups – Bravais lattice in two dimension – Seven crystal systems – coordination number for SC, BCC and FCC - Miller Indices – Features of miller indices – Crystal Structure – Nacl, Diamond, Zinc Blende,KCl.

BOOKS FOR STUDY:

1. Modern Physics by R.Murugesan S.Kiruthiga Sivaprasad.S.Chand Publishers(2012).
2. Modern Physics by Sehgal Chopra Sehgal S.Chand Publishers
3. Mordern Physics by J.B. Rajam.(1967).
- 4.Solid state physics by Gupta Kumar.Vikas Publishing Pvt., Ltd., (2001).
5. Solid State Physics – R- L Singhal. Wiley Eastern Ltd.

BOOKS FOR REFERENCE:

- 1.Modern Physics by B.L. Theraja.S.Chand (2008).
- 2.ModernPhysics by Beiser.Tata McCraw Hill (1967).
- 3.Solid state physics by Saxena Gupta Saxena .Pragati Prakashan.

Question Paper Pattern:

Maximum Marks : 75

Exam Duration : 3 Hours

Part A 10x2 = 20 Answer **All** Questions (Two questions from each unit)

Part B 5x5 = 25 Answer **All** Questions (Either or Type - Two questions from each unit)

Part C 3x10 = 30Answer Any **THREE** (One question from each unit)

Signature of the HOD

Credits : 4
Hours/Week : 3
Medium : English and Tamil
Semester : 5

Code:RR5PHP5

(For students admitted from 2015)

MAJOR PRACTICAL – V

(Choose any Fourteen Experiments)

1. B.G – Figure of Merit – Voltage and Current Sensitiveness.
2. Spectrometer – Dispersive Power of a grating.
3. Spectrometer – Cauchy’s Constants.
4. Comparison of mutual inductance – B.G.
5. Hartley Oscillator – Frequency and self-inductance (L).
6. Colpitt’s Oscillators- Frequency and self-inductance (L).
7. RC Coupled Transistor Amplifier – Band width.
8. FET Amplifier-Band width.
9. IC – Gates Truth Table Verifications
10. Demorgan’s Theorem Verification - IC-Gates.
11. Half Adder, Full Adder using basic logic gates-IC.
12. Emitter Follower.
13. Monostable multivibrator using transistor.
14. Multiplexer and Demultiplexer.
15. Operation Amplifier – Adder, Subtractor.
16. Clipping and Clamping Circuits.
17. Microprocessor – 8 bit addition and subtraction.
18. Microprocessor – 8 bit multiplication and division.

Question Paper Pattern:

Maximum Marks: 60

Exam Duration: 3 Hours

Signature of the HOD

Credits : 4
Hours/Week : 7
Medium : English and Tamil
Semester : 6

Code:RR6PH6

(For students admitted from 2015)

WAVE MECHANICS AND NUCLEAR PHYSICS

Unit 1: DUAL NATURE OF MATTER:

Dual nature of light – De' Broglie's concept of matter waves – De' Broglie wavelength – Wave and group velocity – Relation between wave and group velocity – Davisson and Germer experiment – G.P. Thompson experiments – Heisenberg's Uncertainty Principle.

Unit 2 : WAVE MECHANICS:

Basic Postulates of wave mechanics – Quantum operators, Linear operator, Hermitian operator, Parity operators – Properties of wave Function – Orthogonal and normalized wave functions – Eigen Values and Eigen Functions – Schrodinger's Equations – Time Independent – Time Dependent – Application – Particle in a box-Rigid rotator.

Unit 3: STRUCTURE OF THE NUCLEUS:

Classification of Nuclei – General Properties of Nucleus – Size, Mass, Density Charge, Angular momentum and Dipole moments – Binding Energy – Packing fraction – Nuclear stability – Semi Empirical Mass formula – Liquid Drop Model – Shell Model.

Unit 4: PARTICLE DETECTORS:

Radioactivity – Properties of Alpha, Beta and Gamma Rays – Geiger-Nuttal Law – Nuclear Isomerism – Soddy Fajan's displacement law – Radioactive disintegration Law – Half Life, Mean Life periods – Law of Successive disintegration-Linear Accelerator - Cyclotron-Betatron.

Unit 5: NUCLEAR REACTIONS:

Types of Nuclear Reaction – Energy balance – Q value – Transmutation by Alpha, Proton, Deutrons and Neutrons – Artificial Radioactivity – Radio Isotopes – Applications – Nuclear Fission – Chain reaction – Nuclear Reactor –Fast Breeder reactor- Nuclear Fusion – Thermo Nuclear Reactions – Carbon-Nitrogen Cycle – Proton-Proton Cycle.

BOOKS FOR STUDY:

1. Modern Physics by R.Murugesan S.Chand & Co New Delhi 1995.
2. Modern Physics by M.A. Thangaraj & N. Anandha Krishnan.
3. Modern Physics by J.B. Rajam, S. Chand & Co New Delhi 1980.

Question Paper Pattern:

Maximum Marks : 75

Exam Duration : 3 Hours

Part A 10x2 = 20 Answer **All** Questions (Two questions from each unit)

Part B 5x5 = 25 Answer **All** Questions (Either or Type - Two questions from each unit)

Part C 3x10 = 30 Answer Any **THREE** (One question from each unit)

Signature of the HOD

Credits : 4
Hours/Week : 7
Medium : English and Tamil
Semester : 6

Code:RR6PH7

(For students admitted from 2015)

DIGITAL ELECTRONICS

Unit 1: NUMBER SYSTEM AND LOGIC GATES

Decimal – Binary – Octal – Hexadecimal Number Systems – Inter Conversion – BCD Codes – 8 - 4 - 2 - 1 Codes, Excess – 3 Code – Gray Code – Binary Arithmetic Operations – Addition – Subtraction – Multiplication – Division – 1's Complement – 2's Complement Binary Operation.

Basic Logic Gates AND, OR, NOT, NAND, NOR, X – OR, X – NOR – Universal Building Blocks-NAND,NOR.

Unit 2: BOOLEAN ALGEBRA AND KARNAUGH MAPS

Basic law of Boolean algebra – Demorgan's theorems – Duality Theorem – Reducing Boolean expressions Using Boolean laws – Minterms – Maxterms – Sum of Products – Products of Sums.

3 Variable K –Map using minterms-Simplification -4 Variable K – Map using minterms-simplification.

Unit 3: ARITHMETIC AND COMBINATION CIRCUIT

Half Adder – Full Adder – BCD Adder – Half Subtractor – Full Subtractor – Multiplexer – 4 to 1 Multiplexer – Demultiplexer – 1 to 4 Demultiplexer.

Decoder – Binary to Gray Decoder –BCD to Seven Segment Decoder – Encoder-Octal to Binary.

Unit 4: SEQUENTIAL LOGIC DESIGN

Flip Flops – R/S Flip Flop – D-F/F – T-F/F – JK F/F – Master Slave Flip Flops – Registers – Shift Left – Shift Right (4 bit only) –Ring counter- Johnson's counter- Asynchronous Counters - Mod 4- Mod 8, Mod 16 Counters.

Unit 5: 555 TIMER AND D/A AND A/D CONVERTERS

555 Timer pin configuration – 555 Timers as Schmitt trigger-555 timer as monostable-multivibrator-monostable Theory.

Binary Weighted D/A Converter – Resolution – accuracy –R-2R resistive ladder D/A converter-Analog to digital converter- counter type ADC – successive approximation A/D converter.

BOOKS FOR STUDY

1. Digital Principles and Applications – Albert Paul Malvino and Donald P. Leech.
2. Digital circuits & design. S. Salivaganan and S. Arivalagan- Vikas Publishing house.

BOOKS FOR REFERENCE

1. Operational Amplifier – Chowdhry.

Question Paper Pattern:

Maximum Marks : 75

Exam Duration : 3 Hours

Part A 10x2 = 20 Answer **All** Questions (Two questions from each unit)

Part B 5x5 = 25 Answer **All** Questions (Either or Type - Two questions from each unit)

Part C 3x10 = 30Answer Any **THREE** (One question from each unit)

Signature of the HOD

Credits : 4
Hours/Week : 7
Medium : English and Tamil
Semester : 6

Code:RR6PHEL3

(For students admitted from 2015)

MICROPROCESSOR AND C PROGRAMMING

Unit 1: BASICS OF DIGITAL COMPUTER

Basic components of a digital computer - Evolution of microprocessors - Important INTEL microprocessors - Buses - Hardware, Software and Firmware - Memory - Semiconductor memories - RAM,ROM - Flash memory.

Unit 2: INTEL 8085 AND ITS ARCHITECTURE

INTEL 8085 - Pin Diagram - Architecture - Various registers - Status Flags - Interrupts and their order of priority - Addressing modes - Direct ,Register, Register indirect, Immediate and implicit addressing - Instruction set - Data transfer group - Arithmetic Group - Logical group - Branch control group and stack and I/O- Machine control group.

Unit 3: ASSEMBLY LANGUAGE PROGRAMMING

Addition - Subtraction - Multiplication -Division of two 8- bit numbers - Finding the largest number in a data array - Finding the smallest number in a data array-Arranging a list of numbers in ascending or descending order-complement-shift-mask-look up table- multi byte addition and subtraction –decimal addition - subtraction.

Unit 4: INTRODUCTION TO C

Structure of ‘C’ – Fundamentals of C – Character set – identifiers and key words – data types constants – variables – declarations – expressions – symbolic constants – arithmetic operators- Relational, Logical and assignment operators, Unary, Bitwise and Ternary operators – conditional operators – I/O function – library function.

Unit 5: PRELIMINARIES AND FUNCTIONS

Data input and output – getchar, putchar, scanf, printf, gets, puts functions – Control statements- while, do.... While, for nested loops, if ... else, switch, break, continue and goto statements.

Basic functions – Return values and their types- Calling functions – storage class-automatic variables- External Variables- Static Variables- Recursion.

BOOKS FOR STUDY:

1. B.Ram.Fundamentals of Microprocessors and Microcomputers.
Dhanpat Rai publication pr. Ltd., New Delhi.
2. Programming in C -E. Balagurusamy – Tata McGraw Hill Pub. Co.(2008).

BOOKS FOR REFERENCES:

- 1.Ramesh. S.Goankar, Microprocessor Architecture, Programming and Applications with the 8085, Penram International Publishing (India) Pvt.Ltd.(2002).
2. Programming with C - Venugopal, K.R. And Sudep, R.P.- Tata McGraw Hill Pub. Co. Ltd.

Question Paper Pattern:

Maximum Marks : 75

Exam Duration : 3 Hours

Part A 10x2 = 20 Answer **All** Questions (Two questions from each unit)

Part B 5x5 = 25 Answer **All** Questions (Either or Type - Two questions from each unit)

Part C 3x10 = 30 Answer Any **THREE** (One question from each unit)

Signature of the HOD

Credits : 4
Hours/Week : 3
Medium : English and Tamil
Semester : 6

Code:RR6PHP6

(For students admitted from 2015)
MAJOR PRACTICAL – VI
(Any Fourteen Experiments)

1. Spectrometer – Small Angled Prism.
2. Potentiometer – Thermistor – Temperature Coefficient.
3. Carey Foster Bridge - Temperature Coefficient of a coil.
4. Construction of Dual Power Supply 5 -0 -5V, 9 -0-9V.
5. B.G. – Comparison of Capacitance.
6. BG – Absolute capacitance of a capacitor.
7. Feedback Amplifier - Transistor.
8. Flip Flop.
9. Astable multivibrator.
10. Operational Amplifier-Low pass filters.
11. Operational Amplifier – Differentiator, Integrator.
12. Verification of Demorgan’s Theorem using IC’s.
13. Half Subtractor , Full Subtractor using IC gates.
14. NAND, NOR Universal gates – Verification.
15. Bistable Multivibrator.
16. Shift Register using IC.
17. Microprocessor- 16-Bit Addition.
18. Microprocessor – Decimal to Octal Conversion.

Question Paper Pattern:

Maximum Marks: 60

Exam Duration: 3 Hours

Signature of the HOD

Credits : 4
Hours/Week : 4
Medium : English and Tamil
Semester : 3

Code:RR3AP1

(For students admitted from 2015)
ALLIED PHYSICS –I

Unit 1: MECHANICS

Centre of gravity- Determination of C.G – Centre of gravity of a solid hemisphere and Solid cone- Gravitation: Kepler's Law of Planetary motion – Newton's laws of gravitation. Deduction of Newton's law of gravitation from Kepler's law-Boy's method of determination of G –Variation of 'g' with latitude, altitude and depth.

Unit 2: SOUND

Simple harmonic motion – Differential equation of SHM– Lissajou's figures. Acoustics of buildings: Conditions for good acoustics-Reverberation and Reverberation time - Absorption co-efficient - determination of reverberation time by Sabine's formula.

Unit 3: PROPERTIES OF MATTER

Hooke's Law- Stress - Strain - Elastic moduli - Poisson's Ratio - Expression for Poisson's Ratio - Experimental determination - Definition and dimensions of surface tension, Diffusion, Osmosis and osmotic pressure - Ficks law of diffusion -Cantilever - Non uniform bending (Pin and microscope).

Unit 4: THERMAL PHYSICS

Laws of thermodynamics–Isothermal and adiabatic changes – Reversible and irreversible process –Carnot's theorem -Newton's Law of cooling - Stefan's law of radiation-Newton's law from Stefan's law - Black body radiation -Solar constant - Measurement of solar constant - Angstrom's pyroheliometer-temperature of the sun.

Unit 5: OPTICS

Electromagnetic spectrum - Laser - Raman Effect - Theory-Experiment-Application of Raman effect.UV, IR Spectra , Spectrometer, applications.

BOOKS FOR STUDY / REFERENCE:

1. Mechanics-D.S.Mathur.S.Chand & Co New Delhi 2012.
2. A Text Book of Sound-Brijilal and Subramanian S.Chand & Co New Delhi 2011.
3. Properties of Matter-Brijlal and Subramaniam. S.Chand & Co New Delhi 2012.
4. Properties of Matter - R.Murugeshan. S.Chand & Co New Delhi 2012.
5. Heat and Thermodynamics-Brijlal and Subramanian. S.Chand & Co New Delhi 2013.
6. A text book of Optics-Brijlal and Subramaniam. S.Chand & Co New Delhi 2013.
7. Allied Physics Paper I-A.Sundaravelusammy. Priya Publications 2012.

Question Paper Pattern:

Maximum Marks : 75

Exam Duration : 3 Hours

Part A $10 \times 2 = 20$ Answer All Questions (Two questions from each unit)

Part B $5 \times 5 = 25$ Answer All Questions (Either or Type - Two questions from each unit)

Part C $3 \times 10 = 30$ Answer Any THREE (One question from each unit)

Signature of the HOD

Code:RR4AP2

Credits : 4
Hours/Week : 4
Medium : English and Tamil
Semester : 4

(For students admitted from 2015)

ALLIED PHYSICS – II

Unit 1: ELECTROSTATICS

Coulomb's law-Gauss theorem-Applications-Mechanical force on the surface of charged conductor-Electrical images - Capacitors-Principles of a capacitor -Capacity of an isolated sphere -Energy of a charged capacitor - Loss of energy due to sharing of charges.

Unit 2: ELECTRICITY

Kirchoff's Laws (statement only) Wheatstone's bridge -Condition for bridge balance-Carey Fosters bridge - Variation of resistance with temperature - Laws of Electromagnetic induction – self induction – Raleigh's method of finding self inductance of a coil – Mutual induction – Absolute determination of M (B.G) –Coefficient of coupling.

Unit 3: ATOMIC PHYSICS

Quantum numbers - Vector atom model- electron spin- spin orbit Interaction-spectral terms-selection rule-Pauli's exclusion principle. X-rays - Continuous and characteristic X-rays - Mosley's law and- its importance - Bragg's law and spectrometer.

Unit 4: NUCLEAR PHYSICS

Characteristics of nuclear forces – nuclear structure by liquid drop model – Binding energy – mass defect – particle accelerators – cyclotron and Betatron - nuclear Fission and nuclear Fusion (basic idea only) – elementary particles – Leptons, Mesons and Baryons.

Unit 5: ELECTRONICS AND DIGITAL ELECTRONICS

Junction diode- characteristics study- zener diode- characteristics study- Principles of LED and LCD - Transistor-FET-basic principles and applications -Number systems- Binary, Decimal, Octal, Hexa-Basic and universal logic Gates - Demorgan's Theorem.

BOOKS FOR STUDY / REFERENCE:

1. Allied Physics II –A. Sundara velusamy Priya Publications Karur 2012.
2. Electricity and Magnetism –Brijlal and Subramaniam S.Chand & Co New Delhi 2013.
3. Modern Physics –R.Murugesan S.Chand & Co New Delhi 2014.
4. Principles of Electronics –V.K Mehtha S.Chand & Co New Delhi 2013.
5. Digital Principles and Applications –Albert Paul Malvino and Donald P. Leach Tata McGraw Hill 2011.

Question Paper Pattern:

Maximum Marks : 75

Exam Duration : 3 Hours

Part A $10 \times 2 = 20$ Answer All Questions (Two questions from each unit)

Part B $5 \times 5 = 25$ Answer All Questions (Either or Type - Two questions from each unit)

Part C $3 \times 10 = 30$ Answer Any THREE (One question from each unit)

Signature of the HOD

Code:RR4APP

Credits : 4
Hours/Week : 3
Medium : English and Tamil
Semester : 4

(For students admitted from 2015)

ALLIED PRACTICAL

(Choose any Fourteen only)

1. Non uniform bending – Pin and Microscope Method
2. Surface Tension and Interfacial Tension – Drop Weight Method
3. Coefficient of Viscosity of liquid using graduated burette
4. Specific heat capacity of liquid by cooling Method
5. Lee’s Disc – Thermal Conductivity of Bad Conductor
6. Spectrometer – Grating – minimum deviation method
7. Spectrometer Refractive index of Solid Prism (A, D and μ)
8. Newton’s Rings – Radius of curvature of a convex lens
9. Sonometer – Verification of Three Laws
10. Carey Foster’s Bridge – specific Resistance
11. Meter Bridge – Verification of Resistance in Series and Parallel
12. EMF of thermocouple – Direct Deflection method
13. Characteristics of a junction diode
14. Characteristics of a zener diode
15. AND, OR and NOT logic gates – verification of truth table using Discrete Components.
16. Meter Bridge – Determination of specific Resistance
17. Potentiometer – Low range voltmeter calibration
18. Bridge rectifier - Construction

LIST OF REFERENCE BOOKS:

1. A textbook of practical physics – M.N Srinivasan and others – Sultan Chand & sons, New Delhi.
2. Practical Physics – A. Dhana Lakshmi and K.R. Paramasivam – Apsara Publication, Trichy.

Question Paper Pattern:

Maximum Marks: 60
Exam Duration: 3 Hours

Signature of the HOD

Code:RR3ACSP1

Credits : 4
Hours/Week : 4
Medium : English
Semester : 3

(For students admitted from 2015)

APPLIED PHYSICS – I

Unit 1: ELECTROSTATICS

Coulombs theorem-Mechanical force on the surface of a charged conductor- Electrostatics energy in the medium- Capacitors-Principles of a capacitor -Capacity of an isolated sphere -Energy of a charged capacitor - Loss of energy due to sharing of charges.

Unit 2: MAGNETOSTATICS

Magnetic field- magnetic flux density – magnetization – Intensity of magnetization- Permeability – Susceptibility – relation between them – magnetic potential – potential due to a dipole – relation between potential and intensity – magnetic shell and its potential at any point – Properties of dia, para and ferro magnetic materials.

Unit 3: CURRENT ELECTRICITY

Laplace law – Ohm’s law – Kirchoff’s law- Application to Wheatstone bridge – Carrey Foster’s bridge – Potentiometer – Measurement of current and resistance– Calibration of low range voltmeter – Fleming’s left hand rule – Theory of moving coil galvanometer.

Unit 4: ELECTROMAGNETIC INDUCTION

Laws of electromagnetic induction-Relation between induced emf and mutual induction – self-induction by Rayleigh’ method – mutual induction – coefficient of coupling – absolute determination of M (B.G) – Transformer principle, construction and working.

Unit 5: ALTERNATING CURRENT

Circuit with RL, RC, and LC measurement of current and voltages – Parallel and series resonant circuits – power in an AC circuit – Power factor – Choke coil.

BOOKS FOR STUDY:

1. Applied physics – Paper I –A.Sundaravelusamy – Priya publications Karur 2012.
2. Electricity and Magnetism – Brijlal and Subramanian, Ratan Prakashan Mandir, New Delhi 2000.

Question Paper Pattern:

Maximum Marks : 75

Exam Duration : 3 Hours

Part A $10 \times 2 = 20$ Answer **All** Questions (Two questions from each unit)

Part B $5 \times 5 = 25$ Answer **All** Questions (Either or Type - Two questions from each unit)

Part C $3 \times 10 = 30$ Answer Any **THREE** (One question from each unit)

Signature of the HOD

Credits : 4
Hours/Week : 4
Medium : English
Semester : 4

Code:RR4ACSP2

(For students admitted from 2015)

APPLIED PHYSICS-II

Unit 1: SEMICONDUCTOR PHYSICS

Theory of energy bands in crystals -Distinguish between Conductors - Insulators and semiconductors - Hall effect in semiconductors -Junction diode –Half wave rectifier-Full wave rectifier -Zener diode - Zener diode as voltage regulators.

Unit 2: TRANSISTORS

PNP and NPN Transistors-Transistor Action-DC characteristics of CE and CB configuration-Hybrid Parameters- Transistors as an amplifier, Oscillator- FET - N channel and P channel FET -performance –Characteristics.

Unit 3: LASER AND MASERS

Basic concepts of stimulated emission – Optical pumping - population inversion and meta stable state - Ammonium Maser - Ruby laser and He - Ne laser production – Application of laser.

Unit 4: OPTO ELECTRONIC DEVICES

Photo electric effect - Laws of Photo electric emission - Einstein's Photo Electric Equation - Photo electric cell - Photo voltaic cell - Applications - Light Emitting Diode - photo Transistors - Electronic Watches - Seven segment display - LCD.

Unit 5: OPERATIONAL AMPLIFIERS AND INTEGRATED CIRCUITS

The Basic Operational amplifier - Inverting and Non inverting Operational amplifier - Differential Operational amplifier - CMRR- Basic uses of Operational amplifier - Adder - Subtractor -Integrator-Differentiator - D/A Converter - R-2R ladder method - A/D converter successive approximation method - Integrated circuit - Fabrication.

LIST OF BOOKS FOR STUDY / REFERENCE:

1. Applied Physics - Paper II- A.Sundaravelusamy -Priya Publications Karur 2012
2. Basic Electronics(solid state) - B.L. Theraja, S.Chand (2007)
3. Principles of Electronics – V.K.Mehta, Rohit Mehta, S.Chand & Co New Delhi (2013)

Question Paper Pattern:

Maximum Marks : 75

Exam Duration : 3 Hours

Part A $10 \times 2 = 20$ Answer **All** Questions (Two questions from each unit)

Part B $5 \times 5 = 25$ Answer **All** Questions (Either or Type - Two questions from each unit)

Part C $3 \times 10 = 30$ Answer Any **THREE** (One question from each unit)

Signature of the HOD

Code:RR4ACSPP

Credits : 4
Hours/Week : 3
Medium : English
Semester : 4

(For students admitted from 2015)

APPLIED PHYSICS PRACTICAL

(Choose any Fourteen only)

1. Carey Foster's Bridge – resistance and specific resistance.
2. Potentiometer – Resistance and specific resistance.
3. Potentiometer – calibration of ammeter.
4. Field along the axis of the coil-determine the magnetic flux using deflection magnetometer.
5. Moment of a magnet using a coil carrying current.
6. Series and parallel resonant circuit.
7. Characteristic of a diode.
8. Zener diode - Characteristics.
9. Static characteristic of transistor – common emitter configuration.
10. Bridge rectifier.
11. Zener controlled voltage regulator.
12. Characteristics of FET.
13. AND, OR, NOT, gates using discrete components
14. Single stage RC coupled transistor amplifier.
15. Astable multivibrator.
16. Determination of energy gap of a thermister and determination of energy.
17. Potentiometer – low range voltmeter calibration
18. Op Amp – Adder, subtractor

List of Reference Books:

1. A textbook of practical physics – M.N Srinivasan and others – Sultan Chand & sons, New Delhi.
2. Practical Physics – A. Dhana Lakshmi and K.R. Paramasivam– Apsara Publication, Trichy.

Question Paper Pattern:

Maximum Marks: 60

Exam Duration: 3 Hours

Signature of the HOD

Credits : 4
Hours/Week : 4
Medium : English and Tamil
Semester : 53

Code:RR5PHELO1

(For students admitted from 2015)

DOMESTIC ELECTRICAL APPLIANCES

Unit 1: FUNDAMENTALS OF ELECTRICITY

Electricity – Charge-Electric current –Direction of flow of current-Resistance-Laws of conservation of energy-Effects of electricity-Ohms law-Kirchhoffs law.

Unit 2: ELECTRIC COMPONENTS AND MEASURING INSTRUMENTS

Conductor - Insulator - Resistor -Capacitor -Transformers - Step up and Step down transformers - Galvanometer -Ammeter - Voltmeter - Ohm meter - AVO meter (multimeter) - Watt - Watt hour meter - Commercial electrical billing(problem)-Line tester-Test lamp.

Unit 3: LIGHTING AND HEATING APPLIANCES

Design and working of Incandescent lamp - Fluorescent lamp - Electric iron - Electric hot plate - Room Heater - Immersion heater-Geysers-CFL,LED lamps.

Unit 4: MODERN ELECTRICAL APPLIANCES

Design and working of Water motors and its types - Fan - Refrigerator - Air Conditioning - Wet grinder - Microwave oven - Remote control-Hair drier-Electric bell,Cordless phone-Vacuum cleaner.

Unit 5: SAFETY MEASURES AND STAND BY DEVICES

Switch and its types - Fuse – Standard Wire Gauge - Miniature circuit breaker (MCB) - Ground – Uninterrupted Power Supply - Inverter. Electric shock and its effects -Symptoms and first aid - Safety tips - Home repair safety tips - Tips for conserving electricity-Relay-Thermostat-Voltage regulator-Generator.

LIST OF BOOKS FOR STUDY:

1. Basic Electrical Engineering - M.L.Anwani & I.Anwani Dhanpat Rai and Co. New Delhi (2012).
2. Domestic Electric Appliances - General Interest book from market shelf.
3. Electrical Appliances –Complete Guide to the maintenance and repair of Domestic Electrical Appliances- Graham Dixon.
4. Domestic Electrical Appliances-Thomas Anthony Buchanan Corley-Cape,(1996)
5. Domestic Electrical Appliances (Motor type)-Ministry of Commerce & Industry-Govt. of India.

REFERENCES:

1. <http://www.howstuffworks.com>.
2. <http://www.answers.com>
3. <http://www.wikipedia.org>

Question Paper Pattern:

Maximum Marks : 75

Exam Duration : 3 Hours

Part A 10x2 = 20 Answer **All** Questions (Two questions from each unit)

Part B 5x5 = 25 Answer **All** Questions (Either or Type - Two questions from each unit)

Part C 3x10 = 30 Answer Any **THREE** (One question from each unit)

Signature of the HOD

Code:RR6PHELO2

Credits : 4
Hours/Week : 4
Medium : English and Tamil
Semester : 6

(For students admitted from 2015)

BIO-PHYSICS

Unit 1: PHYSICAL PARAMETERS

Units Dimensions Mechanics - heat & light significant of physical quantities - dimensions significance of units – SI units –speed, velocity acceleration, momentum, force, work, power, energy.

Unit 2: PHOTO BIOLOGY:

Introduction, Refractive index, wave nature of light, Intensity of light.

Radiation:

Solar radiation- ultraviolet radiation - Infrared radiation - Absorption of a light –ground state - excited state, delocalized electron - photo synthesis de-excitation –singlet & triplet state , spin property of electron , fluorescence and phosphorescence.

Unit 3: BIOLUMINESCENCE

Introduction - Types of Bioluminescence – Extra cellular Bioluminescence, Intra cellular Bioluminescence, Symbiotic Bioluminescence, Mechanism of Bioluminescence - physical characteristics – colour ,wave length , intensity of light, luminous efficiency , functions of luminescence - Food collection, protection from predators - sexual attraction.

Unit 4: MEMBRANE CONDUCTIVITY:

Introduction - Diffusion, Active transport - Mechanism of active transport –Osmosis – biological significance of Osmosis – electrical conductivity.

Unit 5: LABELLING TECHNIQUES:

Introduction – Isotopes – Radioactivity - General properties of alpha, beta & gamma radiations - half-life- unit of radioactivity – Detection of radioactivity – photographic film - Geiger-Muller counter, Scintillation counter- Biological uses of radioactivity

LIST OF BOOKS FOR STUDY:

1. Bio-Physics- Dr.S.Thiraviaraj - Saras publication (2000)
2. Bio Physics - Dr.Vasantha Pattabi ,N.Gautham, Alpha Science International, (2002)

Question Paper Pattern

Maximum Marks : 75

Exam Duration : 3 Hours

Part A 10x2 = 20 Answer **All** Questions (Two questions from each unit)

Part B 5x5 = 25 Answer **All** Questions (Either or Type - Two questions from each unit)

Part C 3x10 = 30 Answer Any **THREE** (One question from each unit)

Signature of the HOD