

DEPARTMENT OF PHYSICS

Course Outcomes

Paper	Paper Name (Paper code)	Outcomes After completion of the course the student should be able to
SEMESTER I		
PAPER – I	Mechanics, Waves and Oscillations	<p>CO 1 : Understand variable mass system,application to motion of Rocket and the principle and working of Gyroscope and its applications.</p> <p>CO 2 : Comprehend the general characterisits of Central forces and Keplar laws to describe the motion of planets and satellite in circular orbit,GPS.</p> <p>CO 3 :Understand postulates of special theory of Relativity and its consequences of length contraction,Time dilation and Einstein Mass Energy Relation.</p> <p>CO 4 : Understand the motion of Simple Harmonic Oscillator,Damped Oscillator and Forced Oscillator and phenomenon of Quality</p> <p>CO 5 :Understand the knowledge of Ultrasonics waves their production ,detection and applications of Ultrasonics.</p> <p>PRACTICAL</p> <ul style="list-style-type: none"> • Perform experiments on Properties of matter such as the determination of moduli of elasticity viz., Young's modulus, Rigidity modulus of certain materials • Know how to determine the acceleration due to gravity at a place using Compound pendulum and Simple pendulum. • Verify the laws of transverse vibrations in a stretched string using sonometer and comment on the relation between frequency, length and tension of a stretched
SEMESTER II		
PAPER – I	Wave optics	<p>CO 1 :Understand the phenomenon of Interference of light and its formation in Lloyd's mirror Newtons Rings and Michelson Interferometer.</p>

II		<p>CO 2 :Distinguish between Fresnel and Fraunhofer Diffraction and observe the diffraction patterns in case of single slit and Diffraction Grating. Describe the construction and working of Zoneplate and comparison with convex lens</p> <p>CO 4 : Explain the various methods of production of circular and elliptical polarized light and concept of optical activity.</p> <p>CO 5 : Comprehend the basic principle of Laser, the working of He-Ne Laser and Ruby Lasers and their applications in different fields. Understanding the basic properties of Fibre optic communication, principle of Holography and their Applications.</p>
<p>PRACTICAL</p> <ul style="list-style-type: none"> • Know the techniques involved in measuring the resolving power of telescope and dispersive power of the material of the prism, dispersive power of the material of the prism. • Verify the laws of transverse vibrations in a stretched string using sonometer and comment on the relation between frequency, length and tension of a stretched 		

SEMESTER III

PAPER – III	Heat and Thermodynamics	<p>CO 1 : Understand the basic aspects of kinetic theory of gases, Maxwell-Boltzmann distribution law, mean free path, the transport phenomenon in ideal gases</p> <p>CO 2 : Understand the working of Carnot's ideal heat engine, Carnot cycle and its efficiency</p> <p>CO 3 : understanding of concept of Thermodynamic potentials, the formulation of Maxwell's equations and its applications</p> <p>CO 4 : Understand methods to produce low temperature and also understand the practical applications of substances</p> <p>CO 5: Examine the nature of blackbody radiations and the basic theories.</p>
<p>PRACTICAL</p> <ul style="list-style-type: none"> • Perform some basic experiments in thermal Physics, viz., determinations of Stefan's constant, coefficient of thermal conductivity, variation of thermo-emf of a thermocouple with temperature difference at its two junctions, calibration of a thermocouple and Specific heat of a liquid. 		

SEMESTER IV

<p>PAPER – IV:</p>	<p>Electricity. Magnetism and Electronics</p>	<p>CO 1: Understand the Gauss law and its application to obtain electric field in different cases and formulate the relationship between electric displacement vector, electric polarization, Susceptibility, Permittivity and Dielectric constant.</p> <p>CO 2: Understand Biot and Savart’s law and Ampere’s circuital law to describe and explain the generation of magnetic fields by electrical currents.</p> <p>CO 3: Develop an understanding on the unification of electric and magnetic fields and Maxwell’s equations governing electromagnetic waves.</p> <p>CO 4 : Describe the operation of p-n junction diodes, zener diodes, light emitting diodes and transistors</p> <p>CO 5 : Understand the operation of basic logic gates and universal gates and their truth tables</p> <hr/> <p>PRACTICAL</p> <ul style="list-style-type: none"> • adder and full adder and verify their truth tables. Further, the student observe the resonance condition in LCR series and parallel circuit • Learn how a sonometer can be used to determine the frequency of AC-supply. • Understand the operation of PN junction diode, Zener diode and a transistor and their V-I characteristics. • Construct the basic logic gates, half will understand how NAND and NOR gates can be used as universal building blocks
<p>PAPER – V:</p>	<p>MODERN PHYSICS</p>	<p>CO 1 : Understanding Stern Gerlach experiment and Raman Effect.</p> <p>CO 2 : Develop critical understanding of concept of Matter waves and Uncertainty principle.</p> <p>CO 3 : Get familiarized with the principles of quantum mechanics and the formulation of Schrodinger wave equation and its applications.</p> <p>CO 4 : Examine the basic properties of nucleus and salient features of Nuclear models and different nuclear radiation detectors.</p> <p>CO 5 : Get familiarized with the nano materials, their unique properties and applications. Increase the awareness and appreciation of superconductors and their practical applications</p>

		<p>PRACTICAL</p> <ul style="list-style-type: none"> • Measure charge of an electron and m value of an electron by Thomson method. • Understand how the Planck's constant can be determined using Photo cell and LEDs. • Study the absorption of α-rays and β-rays, Range of β-particles and the characteristic of GM counter • Determine the Energy gap of a semiconductor using thermistor and junction diode.
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SEMESTER V

<p>PAPER – VI(B)</p>	<p>LOW TEMPERATURE PHYSICS & REFRIGERATION</p>	<p>CO 1 : Identify various methods and techniques used to produce low temperatures in the Laboratory.</p> <p>CO 2 : Acquire a critical knowledge on refrigeration and air conditioning.</p> <p>CO 3 : Demonstrate skills of Refrigerators through hands on experience and learns about refrigeration components and their accessories. CO 4 : Understand the classification, properties of refrigerants and their effects on environment.</p> <p>CO 5 : Comprehend the applications of Low Temperature Physics and refrigeration.</p>
		<p>PRACTICAL</p> <ul style="list-style-type: none"> • List out, identify and handle equipment used in refrigeration and low temperature lab. • Learn the procedures of preparation of Freezing Mixtures. • Demonstrate skills on developing various Freezing mixtures and materials and their applications in agriculture, medicine and day to day life. • Acquire skills in observing and measuring various methodologies of very low temperatures • Perform some techniques related to Refrigeration and Freezing in daily life.
<p>PAPER – VII(B)</p>	<p>Solar Energy and Applications</p>	<p>CO 1 : Understand Sun structure, forms of energy coming from the Sun and its measurement.</p> <p>CO 2 : Acquire a critical knowledge on the working of thermal and photovoltaic collectors.</p> <p>CO 3 : Demonstrate skills related to callus culture through hands on experience</p> <p>CO 4 : Understand testing procedures and fault analysis of thermal collectors and PV modules.</p> <p>CO 5 : Comprehend applications of thermal collectors and PV modules.</p>

		<p>PRACTICAL</p> <ul style="list-style-type: none">• List out and identify various components of solar thermal collectors and systems, solar photovoltaic modules and systems.• Learn the procedures for measurement of direct, global and diffuse solar radiation, I - V characteristics and efficiency analysis of solar cells and modules.• Demonstrate skills acquired in evaluating the performance of solar cell / module in connecting them appropriately to get required power output. 4. Acquire skills in identification and elimination of the damaged panels without affecting the output power in a module / array.• Perform procedures and techniques related to general maintenance of solar thermal and photovoltaic modules.
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