JAI HIND COLLEGE

Basantsing Institute of Science & J. T. Lalvani College of Commerce.
and Sheila Gopal Raheja College of Management.
Autonomous

Program Name: Bachelor of Science (B.Sc in Physics)

PROGRAM OBJECTIVES:

PO1: To inculcate various scientific and research problems.

PO2: To train and manage research work and design of experimental setups / electronic circuits / theoretical problems.

PO3: To develop ideas on Compare/ differentiate between the formulation/ applications of the laws of Classical as well as Quantum Physics through scientific reasoning.

PO4: To inculcate knowledge in physics principles to explain natural and physical phenomena.

PO5: To prepare students for professional ethics and norms of scientific development.

PO6: To train students to Communicate effectively in both verbal and written forms.

PO7: To make them aware about Function individually and in teamwork.

PO8: To engage students for practice of lifelong learning of physics.

PO9: To train students to modern ICT tools and software / simulators, and programming languages.

PO10: To sensitize students for applying the physics knowledge in competitive exams at national/international levels.

COURSE OUTCOMES:

CO1: Apply Newton's laws, write the balance of force and solve the equation of force and first law of

thermodynamics to physical situation and study the effect.

CO2: Use of fluid dynamics Enhance problem forming and problem-solving skills

CO3: Differentiate between scalar and vector fields. and Apply divergence and curl of vector fields to physical situations and capable to and describe the properties of nuclei.

CO4: Analyze basic electrical network theorems and basic electronic components and use them to design simple electronic circuits 3.

CO5: Draw input output characteristics of CB, CE, CC mode also Recognizes half-wave, full-wave and bridge rectifier circuits and explains the operation of these circuits

CO6: Apply list applications of optical fibre and Describe properties of laser beam

CO7: Comprehend the concepts of diffraction, polarization and digital circuits. and

CO8: Apply them in their observations/experiments.

CO9: Analyze research problems involved in optics and binary arithmetic.

CO10: Interpret applications of quantum mechanics in atomic physics and Construct space quantization, energy spectrum and energy level diagrams and differentiate between rotational, electronic, Raman and microwave spectroscopy.

CO10: Implement special techniques to solve problems in electrostatics such as Gauss law, Laplace's equations, Method of images

CO11: Analyze the effect of electromagnetic fields in material medium and Understand Ampere's Law for magnetized materials, Maxwell's equations, displacement current and magnetization

CO12: Apply Maxwell's equations to obtain electromagnetic wave equation, energy and momentum.

CO13: Describe the properties of magnetic materials

CO14: Calculate the magnetic fields and magnetization of magnetized materials.

CO15: Apply to the basic mathematical concepts.

CO16: Apply differential equations for physical situations and recognize and use a mathematical oscillator equation and wave equation

CO17: Comprehend the principle of superposition of waves.

CO18: Describe several phenomena which we observe every day that can be explained using wave phenomena

CO19: Differentiate between various types of waves and Construct Lissajous figures

CO20: Develop problem solving skills for competitive examinations

CO21: Comprehend the basic concepts in vector differentiation, vector calculus, spherical and cylindrical coordinates.

CO22: Apply these concepts in various problems in Physics and Understand the methods of transistor biasing and types of amplifiers and oscillators and feedback.

CO23: Characterize the properties of OP-AMPS and distinguish the different types of amplifiers, oscillators and OP-AMP configurations.

CO24: Practice the concepts learned in the laboratory as well as real-life situations

CO25: Explain nuclear structure.

CO26: Derive the properties of nucleus from various nuclear models Formulate theory of alpha, beta and gamma decay

CO27: Develop basic knowledge of elementary particles and quark model.

CO28: Differentiate between fusion and fission

CO29: Construct decay schemes

CO30: Compare particle accelerators