

॥ संहती कार्य साधिका, शिलं परम भूषणं ॥

**Shetkari Shikshan Prasarak Mandal's  
KRISHNA MAHAVIDYALYA RETHARE BK.**

**Department of Physics**  
**PROGRAM SPECIFIC OUTCOMES**  
**AND**  
**COURSE OUTCOMES**  
**FOR OUTCOME-BASED EDUCATION**  
**ACADEMIC YEAR**  
**2021-2022**

Shetkari Shikshan Prasarak Mandal's

**KRISHNA MAHAVIDYALAYA, RETHARE BK**

**DEPARTMENT OF PHYSICS**

**PROGRAMME OUTCOMES**

**Academic Year 2021-2022**

After completion of the B. Sc programme, the students will develop ability:

- A. The B.Sc Programme develops an insight into scientific inquisitiveness among students.
- B. It increases **scientific** temperament and attitude among science graduates.
- C. It creates a systematic method of study ie. Observation, Experiment, and Conclusion which is a basic principle of scientific research.
- D. The qualities of a science – observation, precision, analytical mind, logical thinking, clarity of thought and expression, systematic approach, and qualitative and quantitative decision making are enlarged.
- E. The program also empowers the graduates to appear for various competitive examinations or choose the postgraduate programme of their choice.
- F. It trains the learners to extract information, formulate a scientific method of study and solve problems in a systematic and logical manner
- G. This programme enables the learners to perform jobs in diverse fields such as agriculture, industries, engineering, survey, education, banking, development-planning, business, public service, self-business, etc. efficiently.
- H. The programme also helps the students to perform their carrier in the field of basic and applied research.
- I. Understood the basic concepts, fundamental principles, and scientific theories related to various scientific phenomena and their relevancies in today's life.

After completion of the programme, the students will develop ability:

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**DEPARTMENT OF PHYSICS**

**PROGRAMME SPECIFIC OUTCOMES**

**Academic Year 2021-2022**

**PSO-A:** To understand the core knowledge of Physics and the basic concepts which help them in understanding physical phenomenon in nature.

**PSO-B:** It Identifies their area of interest and further specialization in the subject and develops skills and competencies to conduct scientific experiments related to Physics.

**PSO-C:** The study inculcates a rigorous understanding of the core theories & principles of physics, which includes mechanics, electromagnetism, thermodynamics, & quantum mechanics.

**PSO-D:** It helps to understand the set of physical laws, describing the motion of bodies, under the influence of the system of forces.

**PSO-E:** It provides knowledge about material properties and their application for developing technology to solve society's problems.

**PSO-F:** To learn the structure of solid materials & their different physical properties along with metallurgy, cryogenics, electronics & material science.

**PSO-G:** To understand the fundamental theory of nature & levels of atom & sub-atomic particles.

**PSO-H:** It provides advanced knowledge and skills for technical work in industries along with their knowledge and skills in carrying out independent work.

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**DEPARTMENT OF PHYSICS**  
**PHYSICS COURSE OUTCOMES**

**Academic Year 2021-2022**

**B.Sc. (Physics)**

**Annexure-C**

**Course Outcomes: B.Sc. I Paper I: DSC- 1 A MECHANICS-I**

By the end of this Course students should be able to know about:

- CO1. Different types of motions in nature.
- CO 2. Difference between translational motion and rotational motion.
- CO 3. Different laws of motion.
- CO 4. Differential equations and their applications.

**B.Sc. I Paper II: DSC- 2 A MECHANICS-II**

By the end of this Course students should be able to know about:

- CO 1. Oscillations and waves and their properties.
- CO 2. Use of waves in general life.
- CO 3. Various elastic constants and properties of elasticity.
- CO 4. Surface tension and their applications.
- CO 5. Applications of GPS and Satellite.

**Paper III: DSC- B ELECTRICITY AND MAGNETISM-I**

By the end of this Course students should be able to know about:

- CO 1. Scalar vectors and their mathematical Applications.
- CO 2. Dielectric phenomenon.
- CO 3. Difference between polar and non-polar molecules.
- CO 4. Various types of Condensers and calculation of capacity.

**Paper IV: DSC- 2B ELECTRICITY AND MAGNETISM-II**

By the end of this Course students should be able to know about:

- CO 1. What is the origin of the magnetic property of material?
- CO 2. Complex numbers and their application in solving problems in Ac circuits.
- CO 3. Biot savart's law and its applications.
- CO 4. Maxwell's equations and electromagnetic waves propagation in vacuumed and isotropic dielectric medium.

**Paper V : DSC-C1 THERMAL PHYSICS AND STATISTICAL MECHANICS – I**

By the end of this Course students should be able to know about:

- CO 1. General information on various types of gases and theories related to them.
- CO 2. Thermal properties of gases and various laws related to thermodynamics.
- CO 3. Transport phenomena in gases.
- CO 4. Concept of heat and temperature and different types of thermometers.

**Paper VI: DSC-C2: WAVES AND OPTICS - I**

By the end of this Course students should be able to know about:

- CO 1. Use of Cathode ray oscilloscope in oscillations.
- CO 2. Linearity and superposition principles
- CO 3. Coupled oscillatory system.
- CO 4. Oscillations and waves and their properties.
- CO 5. The viscosity of liquid and its mathematical theory related to it.

**Paper VII: DSC-D1 THERMAL PHYSICS AND STATISTICAL MECHANICS – II**

By the end of this Course students should be able to know about:

- CO 1. Study of thermodynamic and different thermodynamically relations
- CO 2. Study of the theory of radiations.
- CO 3. Study of classical and quantum statistics

CO 4. Thermodynamic probability and probability distribution.

CO 5. LASERS and applications in various fields.

### **Paper VIII: DSC- D2 - WAVES AND OPTICS-II**

By the end of this Course students should be able to know about:

CO 1. Lenses and various cardinal points.

CO 2. Formation of Images by Newton's formula.

CO 3. Properties of light like interference, diffraction, and polarization with theory and experiments.

CO4. Resolving the power of different optical instruments

### **Paper IX: Mathematical Physics**

By the end of this Course students should be able to know about:

CO 1. Study of different coordinate systems.

CO 2. Differential equations and their applications.

CO Experimental study of the Black body radiation spectrum.

CO 4. Basic concepts in statistical physics and MB, BE, and FD statistics.

### **Paper X: Quantum Mechanics**

By the end of this Course students should be able to know about:

CO 1. Interpretation of wave function and Schrodinger's wave equation

CO 2. Quantum mechanical treatment of particles in a rigid box.

CO 3. Schrodinger's equation for the hydrogen atom

CO 4. Significance of quantum numbers.

CO 5. Various operators in quantum mechanics.

### **Paper XI: Classical Mechanics and classical electrodynamics**

By the end of this Course students should be able to know about:

CO 1. Study of mechanics of particle and system of particle.

CO 2. Coriolis force and effect of Coriolis force in nature

CO 3. Applications of Long-range equations

CO 4. Study of techniques of calculus of variation

CO 5. The motion of a rigid body in space

### **Paper XII: Digital and Analog Circuits and Instrumentation**

CO 1. Study of basic gates, flip-flops, half and full adders.

CO 2. Working principle of transistors and load line analysis

CO 3. Study of working principle of oscillators and various types of oscillators.

CO 4. Construction and working of CRO, Lissajous figures

CO 5. Study basics of the op-amp, applications of IC-555 as astable and monostable multivibrator

### **Paper XIII: Nuclear and Particle Physics**

By the end of this Course students should be able to know about:

CO 1. Need of accelerators and principal, construction, and working conditions of accelerators.

CO 2. Study of principal, construction, and working conditions of the nuclear detector.

CO 3. Study of the nucleus and its properties.

CO 4. Origin of cosmic rays and their types.

### **Paper XIV: Solid-State Physics**

By the end of this Course students should be able to know about:

CO 1. Study of crystalline and non-crystalline solids.

CO 2. Study of X-ray diffraction method.

CO 3. Elastic vibrations of the diatomic mono-atomic lattice

CO 4. Solid state devices and their applications.

CO 5. Study of metal semiconductors and insulators

### **Paper XV: Atomic and Molecular physics and Astrophysics**

By the end of this Course students should be able to know about:

CO 1. Doublet fine structure and electron spin-orbit interaction

CO 2. Effect of magnetic field on atomic spectra

CO 3. Study the Raman effect and its classical theory.

CO 4. Study of the origin of the solar system.

CO 5. Evidence of geological activities.

### **Paper XVI: Energy Studies and Material Science**

By the end of this Course students should be able to know about:

CO 1. Classification of energy resources and their alternatives.

CO 2. Solar energy from the satellite power station.

CO 3. Study of impurities in solids and defects in solids.

CO 4. Study of superconductivity.

CO 5. Introduction of nanoscience and nanotechnology

*Salani*

**HEAD**  
DEPARTMENT OF PHYSICS  
KRISHNA MAHAVIDYALAYA,  
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*Principal*  
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