SRI ADICHUNCHANAGIRI FIRST GRADE COLLEGE
CHANNARAYAPATNA-57311
Department of Physics Even sem-(2023-24)

Semester – II Electricity & Magnetism:

Programme Outcomes(Pos):

- Discipline Knowledge: Knowledge of science and ability to apply to relevant areas. Problem solving:
- Problem solving: Execute a solution process using first principles of science to solve Problems related to respective discipline.
- Modern tool usage: Use a modern scientific, engineering and IT tool or technique for solving problems in the areas of their discipline.
- Ethics: Apply the professional ethics and norms in respective discipline.

1. Individual and teamwork: Work effectively as an individual as a team member in a multidisciplinary team.
2. Communication: Communicate effectively with the stake holders, and give and receive clear instructions.

Course Outcomes (COs)

- Demonstrate Gauss law, Coulomb's law for the electricfield, and apply it to systems of point charges as well asline, surface, and volume distributions of charges.
- Explain and differentiate the vector (electric fields,Coulomb's law) and scalar (electric potential, electricpotential energy) formalisms of electrostatics.
- Apply Gauss's law of electrostatics to solve a variety of problems.
- Describe the magnetic field produced by magnetic dipolesand electric currents.
- Explain Faraday-Lenz and Maxwell laws to articulate the relationship between electric and magnetic fields.
- Describe how magnetism is produced and list exampleswhere its effects are observed.
- Apply Kirchhoff's rules to analyze AC circuits consisting of parallel and/or series combinations of voltage sources and resistors and to describe the graphical relationship of resistance, capacitor and inductor.

- Apply various network theorems such as Superposition,Thevenin, Norton, Reciprocity, Maximum Power Transfer, etc. and their applications in electronics,electrical circuit analysis, and electrical machines.

VI-Semester:

PAPER 7: ELEMENTS OF CONDENSED MATTER & PHYSICS

Course Outcome (COs) :After the successful completion of the course, student will able to

- Explain the basic properties of nuclear and get the idea of its inner information.
- Understand the concepts of binding energy per nucleon v/s mass number graph.
- Describe the processes of alpha, beta, gamma decays based on well –established theories.
- Explain the basic aspects of interaction of gamma radiation with matter by photoelectric effect, Compton scattering and pair of production.
- Explain the different nuclear radiation detectors suchbas ionization chamber, Geiger-mueller counter etc.
- Explain the basic concept of scintillation detectors, photo-multiper tube and semiconductor detectors.

PAPER 8: ELECTRONIC INSTRUMENTATION & SENSORS(THEORY):

Course Outcome (COs) :After the successful completion of the course, student will able.

- Identify different types of measuring instruments used in practice and understand their basic working principles.
- Get hands on training in wiring a circuit , soldering , making a measurement using an electronic circuit used in instrumentation.
- Have an understand of the basic electronic components viz, resistors, capacitors, inductors, discrete and intergrated circuits, colour codes, values,and pin diagram their practical use.
- Identify and understand the different types of transducers and sensors used in robust and hand –held instruments.
- Understand and give a mathematical treatment of the working of rectifiers, filter,data, converters and different types of transducers.
- Develop basic hand –on skills in the usage of oscilloscopes, multimeters, rectifiers, amplifiers,oscillators, and high voltage probes, generators,and digital meters.

Head of the Department of Physics
SAFG College, C.R.Patna-573116

Principal
Sri Adichunchanagiri First Grade College
Channarayapatna

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COURSE OUTCOMES:

Students are expected to acquire core knowledge in physics, including the major fields of classical mechanics, quantum mechanics, electromagnetic theory, electronics, optics, special theory of relativity and modern physics. This course will provide a theoretical basis for doing experiments in related areas. Students should learn how to design and conduct an experiment demonstrating their understanding of the physics concepts. The student should effectively communicate their knowledge of physics from basic concepts to specific detailed presentations through oral and written modalities.

SEMESTER-I : MECHANICS, PROPERTIES OF MATTER AND ELECTROSTATICS

• Know the fundamentals of different types of frames of references and Galilean transformation

• Understand the basics of properties of matter, how Young's modulus and rigidity modulus are defined, how they are evaluated for different shapes of practical relevance

• Gain knowledge about the properties of fluids especially of viscosity and surface tension which help the students in their daily life.

• Know conservation laws of energy, linear and angular momentum and apply them to solve problems

• Learn the basics of potentials and fields, central forces and Kepler's laws

• Have basic knowledge of moving coil and Helmholtz galvanometer, electric pressure on a charged surface and attracted disc electrometer

SEMESTER-V

PAPER V: CLASSICAL MECHANICS AND QUANTUM MECHANICS

Course Outcome (COs) :After the successful completion of the course, student will able to

- Identify the failure of classical physics at the microscopic level.
- Find the relationship between the normalization of a wave function and ability to correctly calculate expectation values or probability densities.
- Explain the minimum uncertainty of measuring both observables on any quantum state.

- Describe the time dependent and time-independent schrodinger equation for simple potentials like for instance one-dimensional potential well and harmonic oscillator.
- Apply Hermitian operators, their eigen values and eigen vectors commutation and uncertainty relation

PAPER VI: ELEMENTS OF ATOMIC, MOLECULAR & LASER PHYSICS

Course Outcome (COs) :After the successful completion of the course, student will able to

- Describe atomic properties using basic atomic models.
- Interpret atomic spectra of elements using vector model.
- Interpet molecular spectra of compounds using basic of molecular physics,
- Explain laser systems and their applications in various fields.

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