Reg. No. | | | | | | | | |

G. VENKATASWAMY NAIDU COLLEGE (AUTONOMOUS), KOVILPATTI – 628 502.

UG DEGREE END SEMESTER EXAMINATIONS - APRIL 2025.

(For those admitted in June 2023 and later)

PROGRAMME AND BRANCH: B.Sc., MATHEMATICS

SEM	CATEGORY	COMPONENT	COURSE CODE	COURSE TITLE
II	PART-III	ELECTIVE GENERIC-2	U23PH2A2	ALLIED PHYSICS-II

Date & Session:03.05.2025/FN **Time : 3 hours** **Maximum: 75 Marks**

Course Outcome	Bloom's K-level	Q. No.	SECTION – A (10 X 1 = 10 Marks) Answer ALL Questions.
CO1	K1	1.	The main principle used in Interference is _____. a) Heisenberg's Uncertainty Principle b) Superposition Principle b) Quantum Mechanics d) Fermi Principle
CO1	K2	2.	If the phase difference between two rays is π/2 and the angle of incidence is equal to π/4, the emergent light is _____. a) Linearly Polarized b) Elliptically Polarized c) Circularly Polarized d) Non-Polarized
CO2	K1	3.	The size of the atom is proportional to which of the following? a) A b) $A^{1/3}$ c) $A^{2/3}$ d) $A^{-1/3}$
CO2	K2	4.	The minimum energy required to remove an electron is called a) Stopping Potential b) Kinetic Energy c) Work function d) None of theses
CO3	K1	5.	The atomic number is not changed by which type of radioactive decay? a) Beta b) Gamma c) Alpha d) Both a and b
CO3	K2	6.	When two atomic nuclei combine it is called as. a) Chain reaction b) Nuclear fusion c) Nuclear decay d) Nuclear fission
CO4	K1	7.	Which scientist proposed the General Theory of Relativity? a) Isaac Newton b) Albert Einstein c) Max Planck d) Stephen Hawking
CO4	K2	8.	What is the effect of gravity on time according to General Relativity? a) Time dilation b) Length contraction c) Quantum entanglement d) Wave interference
CO5	K1	9.	A zener diode can be used as a. a) reference voltage b) voltage regulator c) peak clipper d) all of these
CO5	K2	10.	Junction breakdown occurs. a) under high temperature condition b) with forward bias c) under reverse bias d) because of manufacturing defect

Course Outcome	Bloom's K-level	Q. No.	**SECTION – B (5 X 5 = 25 Marks)** **Answer ALL Questions choosing either (a) or (b)**
CO1	K3	11a.	Determine the diameter of a thin wire using Air Wedge. **(OR)**
CO1	K3	11b.	Explain the concept of polarization of light, describing how a polarizer works and providing examples of its applications.
CO2	K3	12a.	Explain about the Bohr atom model with neat diagram **(OR)**
CO2	K3	12b.	State and explain Zeeman Effect.
CO3	K4	13a.	Discuss the nuclear structure by liquid drop model **(OR)**
CO3	K4	13b.	Define radioactivity and explain the process by which a radioactive substance emits radiation.
CO4	K4	14a.	Illustrate the postulates of special theory of relativity. **(OR)**
CO4	K4	14b.	State the formula for length contraction and explain the terms used in the formula.
CO5	K5	15a.	With a neat diagram explain the forward and reverse biasing in a P-N junction diode **(OR)**
CO5	K5	15b.	Explain the principle and working of a USB cell phone charger.

Course Outcome	Bloom's K-level	Q. No.	**SECTION – C (5 X 8 = 40 Marks)** **Answer ALL Questions choosing either (a) or (b)**
CO1	K3	16a.	Write the theory of interference fringes and derive an expression for fringe width. **(OR)**
CO1	K3	16b.	How do you determine the wavelength of light using diffraction grating?
CO2	K4	17a.	Write a short note on i) mass number ii) atomic number iii) nucleons iv) isotopes. **(OR)**
CO2	K4	17b.	State and derive Einstein's Photoelectric equation.
CO3	K4	18a.	Define a chain reaction in the context of nuclear fission. Explain the difference between a controlled and an uncontrolled chain reaction. **(OR)**
CO3	K4	18b.	Differentiate nuclear fission and nuclear fusion reaction.
CO4	K5	19a.	Derive an expression for Lorentz transformation? **(OR)**
CO4	K5	19b.	What is the meaning of mass-energy equivalence? Obtain Einstein's mass energy relation.
CO5	K5	20a.	Describe an experiment to draw I-V characteristics of Zener diode. **(OR)**
CO5	K5	20b.	Explain about the construction and working of voltage regulator with neat diagram.