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

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

UG DEGREE END SEMESTER EXAMINATIONS - APRIL 2025.

(For those admitted in June 2021 and later)

PROGRAMME AND BRANCH: B.Sc., PHYSICS

SEM	CATEGORY	COMPONENT	COURSE CODE	COURSE TITLE
V	PART-III	CORE	U21PH510	ATOMIC PHYSICS

Date & Session: 29.04.2025/AN **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.	Force on charge q in an electric field E is _____. a) q/E b) E/q c) q2E d) qE
CO1	K2	2.	In Aston's mass spectrograph, the mass scale is _____. a) linear b) exponential c) non-linear d) both linear and non-linear
CO2	K1	3.	The minimum energy required to remove an electron is called_____. a) Stopping potential b) Kinetic energy c) Work function d) Potential energy
CO2	K2	4.	What happens to the wavelength of a photon after it collides with an electron? a) Increases b) Decreases c) Remains the same d) Infinite
CO3	K1	5.	Periodic classification of elements is done on the basis of _____. a) mass number b) Pauli's exclusion principle c) Uncertainty principle d) neutron number
CO3	K2	6.	The series of limit of Bohr's series of wavelength is _____. a) 4R b) 4/R c) R/4 d) infinity
CO4	K1	7.	Orientation of plane of electron orbit in space around atomic nucleus is determined by _____. a) spatial quantization b) spin of electron c) L-S coupling d) j-j coupling
CO4	K2	8.	Magnetic moment of electron is due to _____. a) spin b) charge c) spin and charge d) nucleus
CO5	K1	9.	Bragg's law is _____. a) d sinθ =nλ b) d sinθ =λ c) d sinθ =nλd d) 2d sinθ =nλ
CO5	K2	10.	In scintillation detectors the scintillator converts x-rays energy into ___. a) gamma ray energy b) thermal energy c) burst energy d) light energy

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.	What are positive rays? List out the properties of positive rays. **(OR)**
CO1	K3	11b.	Determine the value of e/m using Dunnington's method.
CO2	K3	12a.	Outline the laws of Photoelectric emission. **(OR)**
CO2	K3	12b.	Explain the relation between photoelectric current and retarding potential.
CO3	K4	13a.	Write about Rutherford's nuclear model of atom? State its drawbacks. **(OR)**
CO3	K4	13b.	Illustrate Thomson's atom model and its drawbacks.
CO4	K4	14a.	Discuss about the magnetic dipole moment due to orbital motion of the electron. **(OR)**
CO4	K4	14b.	Describe with relevant theory about L-S Coupling.
CO5	K5	15a.	Give an account of the production of X – rays. **(OR)**
CO5	K5	15b.	With a neat sketch, explain Laue's method

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.	Explain with relevant theory, the method of determining atomic mass using Aston's mass spectrograph. **(OR)**
CO1	K3	16b.	Demonstrate Millikan's oil drop experiment to find the value of electronic charge.
CO2	K4	17a.	Derive Einstein's photoelectric equation. **(OR)**
CO2	K4	17b.	Explain Lenard's method to determine e/m for photoelectrons.
CO3	K4	18a.	Illustrate Sommerfield's relativistic atom model. **(OR)**
CO3	K4	18b.	Briefly explain Pauli's exclusion principle and its application to electronic configuration of elements.
CO4	K5	19a.	Describe the theory of normal Zeeman effect. **(OR)**
CO4	K5	19b.	Derive an expression for Lande's splitting factor and explain the anomalous Zeeman effect.
CO5	K5	20a.	Describe with a neat sketch, Bragg's X- ray spectrometer and the method of determining wavelength of X- rays with it. **(OR)**
CO5	K5	20b.	Discuss about the principles used in the scintillation detector.