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., CHEMISTRY

SEM	CATEGORY	COMPONENT	COURSE CODE	COURSE TITLE
VI	PART-III	CORE	U21CH612	PHYSICAL CHEMISTRY-IV

Date & Session: 26.04.2025/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.	What is the degree of freedom of a system with two phases and one component? a) 1 b) 2 c) 3 d) 4
CO1	K2	2.	Write the number of a component in a system with 3 degrees of freedom with 2 phases are a) 1 b) 2 c) 3 d) 4
CO2	K1	3.	What is the atomic number of silicon? a) 12 b) 15 c) 14 d) 16
CO2	K2	4.	Enumerate the types of solar cells_____. a) 5 b) 2 c) 3 d) 1
CO3	K1	5.	Who is the father of spectroscopy? a) Newton b) Chadwick c) Dalton d) Bohr
CO3	K2	6.	Write the full form of IR. a) Infrared Radiation b) Ionising Radiation c) Interfere Radiation d) Inter Radiation
CO4	K1	7.	What is the unit of NMR? a) MHz b) Cm c) Meter d) nm
CO4	K2	8.	Write the molecular formula of benzene. a) C_6H_6 b) C_6H_7 c) C_6H_4 d) C_6H_8
CO5	K1	9.	Who is the father of group theory? a) Albert Einstein b) Lavoisier c) Newland d) Evariste Galosis
CO5	K2	10.	Express the number of rules of group theory. a) 5 b) 3 c) 4 d) 2

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.	Write the definition of the following: (i) Component (ii) Degrees of freedom. **(OR)**
CO1	K3	11b.	Write any five applications of two component systems.
CO2	K3	12a.	Illustrate any one method of dye sensitised solar cell. **(OR)**
CO2	K3	12b.	Write any five applications of solar PV systems.
CO3	K4	13a.	Examine in detail born-oppenheimer approximations. **(OR)**
CO3	K4	13b.	Illustrate the principle and applications of UV-Visible spectroscopy.
CO4	K4	14a.	Explain the principle and applications of Raman spectroscopy. **(OR)**
CO4	K4	14b.	Illustrate a brief note on mutual exclusion principle.
CO5	K5	15a.	Evaluate the concept of symmetry in chemistry. **(OR)**
CO5	K5	15b.	Discuss the abelian and cyclic groups.

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 phase diagram of water and sulphur systems. **(OR)**
CO1	K3	16b.	Compute the applications of the distribution law.
CO2	K4	17a.	Illustrate the types of solar cells with suitable examples. **(OR)**
CO2	K4	17b.	Discuss on photo chemical cells.
CO3	K4	18a.	Classify the various types of molecular spectra. **(OR)**
CO3	K4	18b.	Illustrate the factors affecting vibrational frequencies.
CO4	K5	19a.	Evaluate the basic principles and applications of mass spectroscopy. **(OR)**
CO4	K5	19b.	Formulate the ESR spectrum for methyl, benzene radicals and deuterium. Give its applications.
CO5	K5	20a.	Predict the point group of water and ammonia with suitable explanations. **(OR)**
CO5	K5	20b.	Justify the term group multiplication tables.