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

UG DEGREE END SEMESTER EXAMINATIONS - NOVEMBER 2024.

(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:15.11.2024 / 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.	For water system the number of phases at the triple point is. a) 0 b) 1 c) 2 d) 3
CO1	K2	2.	A liquid phase produces two solid phases during _____ reaction up on cooling. a) Monotectic b) Eutectic c) Syntectic d) Peritectic
CO2	K1	3.	Solar cells are made of. a) Conductors b) Superconductors c) Semiconductors d) Non-conductors
CO2	K2	4.	Which of the following metal is used to make solar cells. a) Si b) Au c) Pt d) Ag
CO3	K1	5.	Which one is not identified by UV absorption spectra. a) Functional group b) Conjugation c) Geometrical isomerism d) Optical isomerism
CO3	K2	6.	_____ absorb IR radiation. a) Homonuclear diatomic molecule b) Heteronuclear diatomic molecule c) Both a and b d) Monoatomic molecules
CO4	K1	7.	The chemical shift value of methyl proton in NMR is _____. a) 0.9 b) 1.3 c) 1.5 d) 2.5
CO4	K2	8.	_____ radiation is used in ESR spectroscopy. a) IR b) Radio c) X-ray d) Microwave
CO5	K1	9.	Predict, How many types of symmetry elements are there? a) 1 b) 2 c) 3 d) 4
CO5	K2	10.	In H_2O molecule which statement is true? a) It has no symmetry b) It has C_2 symmetry element c) It has no C_2 symmetry element d) Possess C_2 as well as C_4
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 statement of phase rule. Write its derivation. **(OR)**
CO1	K3	11b.	State distribution law and give its applications.
CO2	K3	12a.	What is meant by solar radiation? Discuss about the principal of solar cell. **(OR)**
CO2	K3	12b.	Write the applications of solar cells.

Course Outcome	Bloom's K-level	Q. No.	
CO3	K4	13a.	Illustrate Born-Oppenheimer approximation.
			(OR)
CO3	K4	13b.	Comment on the importance of finger print region.
CO4	K4	14a.	Compare stokes and anti-stokes lines.
			(OR)
CO4	K4	14b.	Analyse the factors affecting chemical shift in NMR spectrum.
CO5	K5	15a.	Construct the group multiplication table for NH_3 molecule.
			(OR)
CO5	K5	15b.	Justify the following statement. All cyclic groups are Abelian but every abelian group is not cyclic.

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.	Give the neat sketch of the phase diagram of water system with explanations.
			(OR)
CO1	K3	16b.	What is simple eutectic system? Give any one example with explanation.
CO2	K4	17a.	Categorize different types of solar cells.
			(OR)
CO2	K4	17b.	Illustrate the design, fabrication and power conversion efficiency of DSSC.
CO3	K4	18a.	Examine the theory, selection rules for electronic spectra and any two applications of UV-Visible spectroscopy.
			(OR)
CO3	K4	18b.	Conclude the applications of IR spectroscopy.
CO4	K5	19a.	Interpret the principal and applications of Raman spectroscopy.
			(OR)
CO4	K5	19b.	Comment about molecular peak, base peak, isotopic peak and meta stable peak in mass spectroscopy.
CO5	K5	20a.	Interpret the symmetry operations and symmetry elements with suitable examples.
			(OR)
CO5	K5	20b.	Predict the point group of H_2O molecule and construct the group multiplication table.