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

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

UG DEGREE END SEMESTER EXAMINATIONS - NOVEMBER 2025.

(For those admitted in June 2021 and later)

PROGRAMME AND BRANCH: B.Sc., CHEMISTRY

SEM	CATEGORY	COMPONENT	COURSE CODE	COURSE TITLE
V	PART-III	CORE	U21CH509	ORGANIC CHEMISTRY-III

Date & Session: 04.11.2025/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.	dl-tartaric acids are _____. a) Enaniomers b) Diastereoisomers c) Conformers d) None of these
CO1	K2	2.	Which of the following has two fold axis of symmetry _____. a) H_2O b) NH_3 c) CH_4 d) $CHCl_3$
CO2	K1	3.	The electrophile in nitration is a) HNO_3 b) H_2SO_4 c) H_3O^+ d) NO_2^+
CO2	K2	4.	A para disubstituted benzene on further substitution gives _____. a) One isomer b) Two isomer c) Three isomer d) None
CO3	K1	5.	Electrophilic substitution reaction takes place in anthracene at position_____. a) C_1 b) C_2 c) C_6 d) C_9 and C_{10}
CO3	K2	6.	The total number of isomers in naphthols _____. a) 2 b) 3 c) 4 d) 5
CO4	K1	7.	When acetylene is heated with ammonia, it yields _____. a) Furan b) Pyrrole c) Thiophene d) Pyridine
CO4	K2	8.	Furan has _____ as its hetero atom a) O b) N c) S d) Se
CO5	K1	9.	Alizarin is a _____. a) Disperse dye b) Mordant dye c) Vat dye d) Ingrain dye
CO5	K2	10.	Picric acid is an example of _____. a) Azo dye b) Nitro dye c) Anthraquinone dye d) Xanthene dye
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.	Draw the Fischer, Newman, and Sawhorse projections of 1,2-dibromoethane. **(OR)**
CO1	K3	11b.	Define pseudo-asymmetry. Provide an example of a molecule with a pseudo-asymmetric center.

CO2	K3	12a.	Draw and assign the cis–trans and E–Z configurations for the following compounds: (a) 2-butene (b) 1-bromo-1-chloro-2-fluoroethene (c) 2-pentenoic acid. **(OR)**
CO2	K3	12b.	Explain the conformational nomenclature and torsional strain in propane.
CO3	K4	13a.	Differentiate between benzenoid and non-benzenoid aromatic compounds with examples. **(OR)**
CO3	K4	13b.	Why is nitrobenzene more reactive than benzene towards nucleophiles?
CO4	K4	14a.	Compare the aromatic character of pyrrole, furan, and thiophene using Hückel's Rule and molecular orbital diagrams. **(OR)**
CO4	K4	14b.	Discuss the Bischler-Napieralski synthesis of isoquinoline with mechanism.
CO5	K5	15a.	Compare the advantages and limitations of dye classifications based on application. **(OR)**
CO5	K5	15b.	Predict how changes in pH affect the color of methyl orange.

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.	Apply the Cahn-Ingold-Prelog (CIP) priority rules to assign the R/S configuration to the following molecules: (a) 2-chlorobutane (b) 3-bromo-2-pentanol. **(OR)**
CO1	K3	16b.	Differentiate between enantiomers, diastereomers, and epimers using suitable molecular examples.
CO2	K4	17a.	Analyze the relative stabilities of cis-2-butene and trans-2-butene based on heat of hydrogenation and steric interactions. **(OR)**
CO2	K4	17b.	Describe the chair and boat conformations of cyclohexane with the help of diagrams.
CO3	K4	18a.	Analyze how electron-donating and electron-withdrawing substituents influence both the rate and orientation of electrophilic aromatic substitution. **(OR)**
CO3	K4	18b.	Explain why activating groups direct ortho/para, while deactivating groups (except halogens) direct meta. Provide resonance-based explanations.
CO4	K5	19a.	Assess why pyridine is more basic than pyrrole but less basic than piperidine. **(OR)**
CO4	K5	19b.	Evaluate the synthetic utility of the Fischer indole synthesis
CO5	K5	20a.	Explain the structural changes that occur in phenolphthalein at different pH levels, and evaluate how these changes affect its visible color **(OR)**
CO5	K5	20b.	Analyze and compare the aromatic character and electrophilic substitution patterns in naphthalene and anthracene.