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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
III	PART-III	CORE	U21CH305	ORGANIC CHEMISTRY-II

Date & Session: 08.11.2025/AN

Time: 3 hours

Maximum: 75 Marks

Course Outcome	Bloom's K-level	Q. No.	SECTION – A (10 X 1 = 10 Marks) Answer <u>ALL</u> Questions.
CO1	K1	1.	Carbonyl groups of aldehyde and ketone readily undergo _____. a) Electrophilic substitution b) Nucleophilic substitution c) Electrophilic addition d) Nucleophilic addition
CO1	K2	2.	Which of the following does not have an alpha hydrogen _____. a) HCHO b) CH ₃ CHO c) CH ₃ COCH ₃ d) all of these
CO2	K1	3.	Malonic acid on heating gives _____. a) Formic acid b) Acetic acid c) Formaldehyde d) Oxalic acid
CO2	K2	4.	Which of the following is least acidic? a) Acetic acid b) Propionic acid c) Butanoic acid d) Fluoro acetic acid
CO3	K1	5.	Frankland reagent is _____. a) (C ₂ H ₅) ₂ Zn b) (C ₂ H ₅) ₂ Sn c) (C ₂ H ₅) ₂ ZnI d) (C ₂ H ₅) ₂ SnI
CO3	K2	6.	Thioalcohols react with ketones to give _____. a) Thioethers b) Mercaptides c) Sulphones d) Maercaptols
CO4	K1	7.	The type of tautomerism exhibited by RCONH ₂ and RC(OH)=NH is _____. a) keto-enol b) amido-imido c) nitro-acinitro d) oxime-nitroso
CO4	K2	8.	Malonic ester can be used to prepare _____. a) Carboxylic acids b) Ketoacids c) Aminoacids d) all of these
CO5	K1	9.	Least stable cycloalkane is _____. a) Cyclopropane b) Cyclobutane c) Cyclopentane d) Cyclohexane
CO5	K2	10.	The number of bands in the NMR spectrum of cyclohexane is _____. a) 1 b) 2 c) 6 d) 12

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.	Apply electronic structure concept to explain why aldehydes are generally more reactive than ketones toward nucleophilic addition. (OR)
CO1	K3	11b.	Predict the product formed when propanal reacts with sodium bisulfite (NaHSO ₃) and explain the stepwise process.
CO2	K3	12a.	Write the preparation method and a use of lactic acid in the food or pharmaceutical industry. (OR)
CO2	K3	12b.	Provide a method of preparation of urea and explain one use in the agricultural industry.
CO3	K4	13a.	Explain why Grignard reagents must be prepared and used under anhydrous conditions. (OR)
CO3	K4	13b.	Explain the use of sulphonal and sulphones in medicinal chemistry.
CO4	K4	14a.	Differentiate between keto-enol and amido-imido tautomerism. (OR)
CO4	K4	14b.	Given the structure of nitroethane, draw and explain its nitro-acinitro tautomerism.
CO5	K5	15a.	Explain the general methods of preparation of cycloalkanes. (OR)
CO5	K5	15b.	Explain the synthesis and structure of civetone.

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 aldol condensation mechanism to predict the product of self-condensation of ethanal under basic conditions. (OR)
CO1	K3	16b.	Predict the final product formed from the Wolff-Kishner reduction of butanone, and explain the mechanism.
CO2	K4	17a.	Explain why carboxylic acids are more acidic than alcohols. (OR)
CO2	K4	17b.	Analyze the resonance structures of the amide group and explain why urea is less basic than typical amines.
CO3	K4	18a.	Analyze the mechanism of the Reformatsky reaction. (OR)
CO3	K4	18b.	Compare the properties of thioalcohols and alcohols in terms of boiling point, odor, and reactivity.
CO4	K5	19a.	Explain the preparation and uses of diethyl malonate. (OR)
CO4	K5	19b.	Explain the different types of tautomerism.
CO5	K5	20a.	Evaluate Bayer Strain theory in determination of relative stability of cycloalkanes. (OR)
CO5	K5	20b.	Explain the conformations of cycloalkanes.