Reg. No.: .....

Name: .....

University of Kerala

U8711

Second Semester FYUGP Degree Examination, April 2025

Discipline Specific Core Course

CHEMISTRY

UK2DSCCHE100 - ORGANIC CHEMISTRY - I

Academic Level: 100-199

Time: 1 Hour 30 Minutes(90 Mins.) **Max. Marks: 42**

Part A. 6 Marks.Time:6 Minutes.(Cognitive Level:Remember(RE)/Understand(UN)) Objective Type. 1 Mark Each.Answer all questions

Qn No.	Question	CL	CO
1	Separation of enantiomers from a racemic mixture is called…	RE	2
2	Draw the E and Z isomers of butene dioic acid.	RE	3
3	Define catenation.	UN	1
4	Glyceraldehyde is CH_2OH-CH(OH)-CHO. Draw the Fischer projection formula of D-glyceraldehyde	UN	2
5	The achiral form of a molecule with two chiral centers are called	UN	3
6	Among aniline and ethylamine, which one is less basic?	UN	4

Part B.8 Marks.Time:24 Minutes.(Cognitive Level:Understand(UN)/Apply(AP))Short Answer. 2 marks each.Answer all questions

Qn No.	Question	CL	CO
7	Compare the acidic strength of chloroacetic acid and acetic acid.	UN	4
8	Puckering in the conformations of cyclobutane improves stability. Discuss.	UN	2
9	Construct examples of compound with two chiral centers and its possible stereoisomeric forms.	AP	3
10	Illustrate the steps involved in a pericyclic reaction and predict the product.	AP	1

Part C. 28 Marks.Time:60 Minutes (Cognitive Level:Apply(AP)/Analyse(AN)/Evaluate(EV)/Create(CR)) Long Answer.7 marks each.Answer all 4 Questions choosing among options * within each question

Qn No.	Question	CL	CO
11	A) Analyze how the differences in hybridization between alkanes (sp^3), alkenes (sp^2), and alkynes (sp) affect their reactivity. Why do you think alkynes are more reactive than alkenes in terms of their electronic structure? OR B) Make use of IUPAC system of rules to name the following polyfunctional molecules a. CH_3-CO-CH(OH)-CH_2-COOH b. CH_3-CH_2-CH(NH_2)-CHO c. CH_3-CH(OH)-CH(Br)-COOH	AP	1, 1
12	A)	AN	2, 2

Qn No.	Question	CL	CO
	Analyze how axis of symmetry, sigma plane, and center of symmetry determines the chirality of a molecule with suitable example. OR B) Evaluate the relevance of Baeyer's strain theory in predicting ring stability. Diagrammatically represent the different conformations of cyclohexane.		
13	A) Sketch all possible stereoisomers of CH_3 - $(CHOH)_2$ - CH_3 and evaluate their optical activity. OR B) Critically evaluate the various methods used for the resolution of racemic mixtures. Which method would you consider most efficient for separating optical isomers and why?	EV	3, 3
14	A) Categorize the following alkenes based on their stability - ethene, propene, but-2-ene, 2-methylbut-2-ene and 2,3-dimethylbut-2-ene. Draw the hyper conjugative structures of each alkene and evaluate their extent of hyperconjugation. OR B) Modify the structure of alkyl and aryl alcohols to make it more acidic. Explain why o-nitro carboxylic acids are more acidic than alkyl and aryl alcohols.	CR	4, 4