QP CODE: D3BCH2402	**(Pages: 2)**	**Reg. No**	**:** .....
		Name	**:** .....

THIRD SEMESTER FYUGP EXAMINATION, NOVEMBER 2025

Discipline Specific Core (DSC) Courses - Major

CHE3CJ202 : ORGANIC CHEMISTRY- I

(Credits: 4)

Time: 2 Hours **Maximum Marks: 70**

Section A

Answer the following questions. Each carries 3 marks (Ceiling: 24 marks)

1.	What are anti-aromatic compounds? Give two examples.	BL1	CO1
2.	Drawing all the π-molecular orbital of buta-1,3-diene, find out the number of nodes present in its highest energy π-molecular orbital.	BL1	CO1
3.	Explain on the basis of hydrogen bonding why salicylic acid is a stronger acid than benzoic acid.	BL2	CO1
4.	What are electrophiles? Give two examples.	BL1	CO1, CO2, CO3
5.	What is hyperconjugation? How does it help the electron releasing character of $-CH_3$ group in benzene?	BL2	CO1, CO2, CO3
6.	Explain the role of steric effect in determining the order of basicity of methylamine, dimethylamine and trimethylamine.	BL2	CO1, CO2, CO3
7.	What do you mean by dihedral angle? What is the dihedral angle in staggered and eclipsed Newman projections of ethane?	BL3	CO4
8.	Draw the Sawhorse projections of fully eclised, anti and gauche conformations of n-butane.	BL2	CO4
9.	Draw the E and Z isomers of 2-butene and 1-bromo-1-chloropropene.	BL3	CO4
10.	What is the mobile phase used in Gas Chromatography? Mention any two applications of it.	BL1	CO6

Section B

Answer the following questions. Each carries 6 marks (Ceiling: 36 Marks)

11.	Discuss the bonding in ethane with the help of orbital diagrams. Mention the hybridisation of each carbon atom and the type of bonds formed.	BL1	CO1
12.	Compare the hybridisation of carbenes and nitrenes.	BL2	CO1, CO2, CO3

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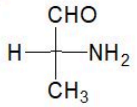
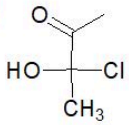
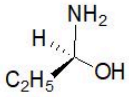
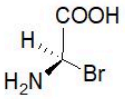
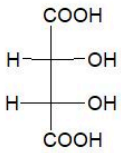
13.	How does geometical isomerosm arise in cycloalkanes. Draw the gemometrical isomers of: (i) 1,2-dimethylcyclohexane; (ii) 1,3-dimethylcyclohexane; (iii) 1,4-dimethylcyclohexane.	BL3	CO4
14.	Do as directed: (a) Convert into Flying-Wedge projections: (i)  (ii)  (b) Convert into Fischer projections: (i)  (*S*)-1-aminopropan-1-ol (ii)  (*R*)-2-amino-2-bromoacetic acid (c) Draw the Sawhorse and Newman projections of *anti* conformer: 	BL3	CO4
15.	What are carbanions? Discuss the formation, structure and stability of carbanions.	BL2	CO1, CO2, CO3
16.	Compare the basic strengths of (i) p-anisidine and (ii) p-nitroaniline.	BL3	CO1, CO2, CO3
17.	Explain the aromaticity of pyrrole and furan with reference to Hückel's rule.	BL2	CO1
18.	Illustrating examples, explain Huckel's (4n+2) π–electron rule.	BL1	CO1
	Section C		
	Answer any one question. Each carries 10 marks (1 x 10 = 10 Marks)		
19.	Giving the conformtions of cyclohexane and methylcyclohexane, explain their confomational analysis.	BL2	CO4
20.	Write a detailed account on the principle and procedure of: (i) Simple distillation; (ii) Vacuum distillation; (iii) Fractional distillation.	BL2	CO6
	CO : Course Outcome		
	BL : Bloom's Taxonomy Levels (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)		