

QP CODE: D4BCH2402	(Pages: 2)	Reg. No :
		Name :

FOURTH SEMESTER FYUGP EXAMINATION, APRIL 2026

Discipline Specific Core (DSC) Courses - Major

CHE4CJ204 : ORGANIC CHEMISTRY II

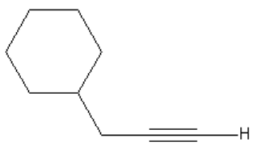
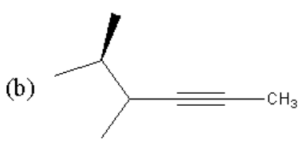
(Credits: 4)

Time: 2 Hours

Maximum Marks: 70

Section A

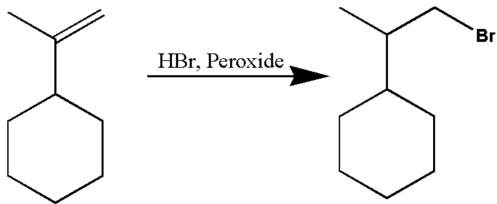
Answer the following questions. Each carries 3 marks (Ceiling: 24 marks)

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|---|-----|-----|
| 1. What is meant by chirality? What is the condition to be satisfied for a compound to be chiral? | BL1 | |
| 2. Explain the electrophilic addition reaction of bromine to an alkene. | BL1 | CO2 |
| 3. Write a note on the chemistry of tests for unsaturation. | BL1 | |
| 4. Write a short note on the optical isomerism of Lactic acid. | BL1 | |
| 5. What is the order of S _N 2 reactivity among primary, secondary, and tertiary alkyl halides? Give reasons for your choice. | BL1 | |
| 6. Explain the E1 mechanism of elimination reactions with a suitable example. | BL2 | CO4 |
| 7. What will be the products obtained from the following alkynes in presence of dil. H ₂ SO ₄ and HgSO ₄ ? | BL2 | CO2 |
| <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>(a)</p>  </div> <div style="text-align: center;"> <p>(b)</p>  </div> </div> | | |
| 8. Predict the major product(s) formed when phenol reacts with bromine (i) in aqueous medium and (ii) in a non-polar solvent such as CS ₂ . | BL2 | CO5 |
| 9. Explain why -NH ₂ group is a strong ortho-para director. | BL2 | CO5 |
| 10. Discuss the stability of the Meisenheimer complex formed during S _N Ar reactions. | BL2 | CO5 |

(PTO)

Section B

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

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|---|--|-----|-----|
| 11. | Give the steps to be followed for assigning R and S configuration to the chiral center. Assign absolute configuration to enantiomers of glyceraldehyde. | BL3 | |
| 12. | Explain the term enantioselective synthesis with a suitable example and bring out the significance of the term enantiomeric excess. | BL3 | |
| 13. | What is meant by resolution of a racemic mixture? Give two methods for resolution. | BL1 | |
| 14. | Compare the physical and chemical properties of enantiomers and diastereomers. | BL2 | |
| 15. | Give ratification for the formation of the following product in HBr addition reaction. | BL3 | CO2 |
|  | | | |
| 16. | Explain the dihydroxylation of Cyclopentene with cold solution of Osmium Tetroxide (OsO ₄) and give mechanism of reaction. | BL1 | CO2 |
| 17. | Define elimination reactions and explain the conditions under which they compete with substitution reactions. | BL3 | |
| 18. | Describe the elimination–addition (benzyne) mechanism for the nucleophilic substitution of chlorobenzene with NaNH ₂ in liquid ammonia, explaining the formation of the benzyne intermediate. | BL2 | CO5 |

Section C

Answer any one question. Each carries 10 marks (1 x 10 = 10 Marks)

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| 19. | Give the mechanism, stereochemistry and kinetics of S _N 1 and S _N 2 reactions for the alkyl halides. | BL2 | |
| 20. | Discuss the mechanisms of Friedel–Crafts alkylation and Friedel–Crafts acylation reactions, and explain the limitations of Friedel–Crafts alkylation and why such limitations are not observed in Friedel–Crafts acylation. | BL2 | CO5 |

CO : Course Outcome

BL : Bloom's Taxonomy Levels (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)