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I Semester M.Sc. Degree Examination March/April - 2025

CHEMISTRY

Organic Chemistry - I

(CBCS Scheme 2019-20 Onwards)

Paper : CH - 102



Time : 3 Hours

Maximum Marks :70

Instructions to Candidates:

Answer question No. 1 and any Five of the remaining questions.

Answer any TEN of the following questions.

(10×2=20)

1.
 - a) Give an example for imine-enamine tautomerism.
 - b) State Huckel's rules of aromaticity.
 - c) Cite examples for crown ethers that chelate with Li^+ and Na^+
 - d) Distinguish between singlet and triplet carbenes.
 - e) What are hard and soft acids? Give examples.
 - f) Define Taft equation and explain the terms
 - g) Write 1,2-dichloroethane in all projection formulae and name the conformers
 - h) Draw the structure of meso-tartaric acid. Comment on its optical activity.
 - i) Distinguish between enantiotopic and diastereotopic atoms.
 - j) Write a synthesis of benzimidazole.
 - k) Outline the synthesis of uronic acid
 - l) What are aminosugars? Give an example

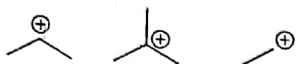
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61902

2. a) Explain the stability order of the following carbocations by hyperconjugation effect:



- b) Write HMO diagram of benzene
c) What are cyclophanes? Give an example with its synthesis. (3+3+4)
3. a) Outline any three methods of generation of carbon free radicals.
b) How isotopic labeling is helpful in determining the reaction mechanism?
c) Distinguish between S_N1 and S_N2 reactions. give examples (3+3+4)
4. a) Explain atropisomerism in biphenyls with examples.
b) Write a note on the conformational structures of three to six membered cycloalkanes
c) Sketch the conformers of decalins and indicate their stabilities. (4+3+3)
5. a) Elucidate the structure of sucrose.
b) Sketch any two Synthesis of Coumarins. (5+5)
6. a) What is anti-aromaticity? Give examples for anti-aromatic compounds.
b) How trapping of intermediates is useful in determining reaction mechanisms?
c) Write a note on Cram's rule of diastereoselectivity (3+3+4)
7. a) Outline Fischer indole synthesis
b) Write a synthesis and any two reactions of Pyrazole (5+5)
8. a) Discuss the generation, structure, stability and reactivity of nitrenes.
b) Explain the conformational analysis of dialkyl-cyclohexanes. (5+5)