61902

Reg. No. | | | | | | | | |

I Semester M.Sc. Degree Examination, June/July - 2022

CHEMISTRY

Organic Chemistry-I

(CBCS Syllabus Scheme - 2019-20 Onwards)

Paper: CH-102

Time : 3 Hours **Maximum Marks : 70**

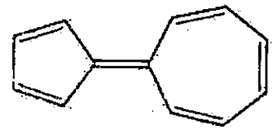
***Instructions to Candidates*:**

1) Answer question **No. 1** any **Ten** and any **Five** from remaining questions.
2) Figures to the right indicate marks.

Answer any TEN of the following: **(10×2=20)**

1. a) What is cross-conjugation? Give an example.

b) Write two resonance forms for the following compound. Comment on their stability and aromaticity.



c) What are crown-ethers? Give any two examples.

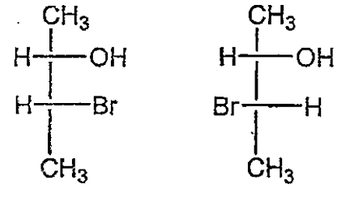
d) Give reasons why triplet methylene is more stable than singlet?

e) Outline any two methods of generation of carbanions.

f) Arrange the following separately as hard and soft acids and bases.

$H_2O, Na^+, OH^-, Cu^+, SCN^-, H^-$

g) Assign R/S configuration to the following chiral compounds.



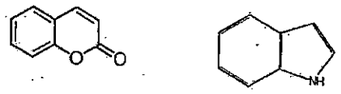
[P.T.O.

h) Outline prochirality with suitable example.

i) Comment on the optical activity of allenes.

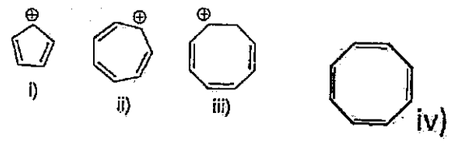
j) Sketch the structures of gentiobiose and meliobiose.

k) Give the IUPAC names and numbering for the following compounds.



l) What are deoxysugars? Give an example.

2. a) Comment on the aromaticity of the following:



b) Account the aromaticity of the alternant and non-alternant hydrocarbons, with suitable examples. **(4+6=10)**

3. a) Sketch and explain the potential energy diagrams, transition state and intermediates in an S_N1 reaction.

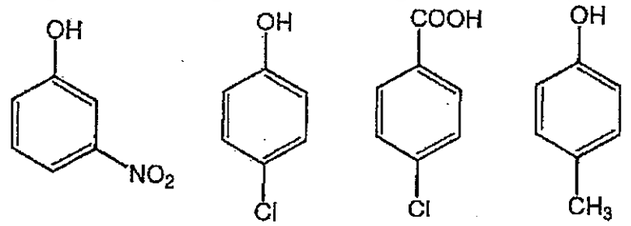
b) In spite of having $[4n+2\pi]$ electrons [10] annulene is not aromatic? Why?

c) Citing examples, highlight optical activity of allenes. **(4+3+3=10)**

4. a) Discuss briefly the generation, stability and chemical reaction of carbenes.

b) How the reaction mechanism is determined by isotopic labelling? Explain with suitable example. **(6+4=10)**

5. a) Arrange the following in the increasing order of acidity. Justify.



i) ii) iii) iv)

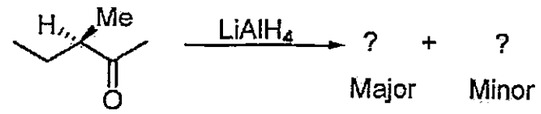
b) Write short notes on:

i) Taft equation.

ii) SEZ reaction.

iii) Anchimeric effect. **(4+6=10)**

6. a) Predict the stereochemistry of the product using Cram's rule with suitable explanation.



b) Write a note on conformational analysis of 1-methyl cyclohexane. **(6+4=10)**

7. a) Write the Fischer, Sawhorse, Newman and Flying wedge representation structures for 2-bromo-3-butanol.

b) Outline the structural elucidation of sucrose. **(5+5=10)**

8. a) Describe briefly the photosynthesis of carbohydrates.

b) Discuss any one synthesis and any one reaction of the following heterocycles:

i) Isoxazole.

ii) Benzimidazole. **(4+6=10)**