

M. Sc-CHEMISTRY
SCHOOL OF CHEMICAL AND LIFE SCIENCES
SEMESTER I EXAMINATION 2019
PAPER TITLE: ORGANIC CHEMISTRY - I
PAPER CODE: MCHCC-102

(Write your roll no. at the top immediately after receipt of this question paper.)

Time: 3h

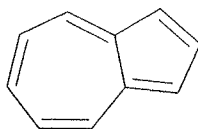
Max Marks: 75

Attempt all the questions. All parts of a question must be attempted in continuation.
Start answer of a fresh question on a new page.

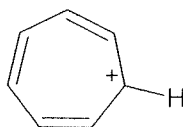
Q1. Attempt ALL of the following:

5 x 1 = 5

- A. What is Prochirality?
- B. What is Optical purity?
- C. What do you understand by the term Cross conjugation?
- D. What is Smile rearrangement?
- E. Following compound is Non-alternant hydrocarbon. How?



- F. Following compound is aromatic in nature. Give reason.



- G. What is S_Ni ?
- H. What is Non-classical carbocation?
- I. What are stereospecific reactions?
- J. What do you understand by enantiotopic ligands?

Q2. Attempt ANY THREE of the following:

3 x 5 = 15

- A. Aromaticity in benzenoid compounds
- B. Crown ether
- C. Annulene
- D. Hyperconjugation
- E. Anti-aromaticity

3. Attempt ANY THREE of the following:

3 x 5 = 15

- A. How would you resolve racemic acids or base?
- B. Write a short note on *Threo* and *Erythro* notation.
- C. Write a short note on Atropoisomerism.
- D. Draw Newman projection formula of *trans*- and *cis*- Decalins. Why *cis*-isomer of 9-methyl decalin is more stable than *trans* 9-methyl decalin.
- E. Solvolysis (Hydrolysis) rate of the *cis*-isomer of 4-*ter*-butylcyclohexyl tosylate is greater than that of *trans* isomer. Explain.

Q4. Attempt ANY TWO of the following:

2 x 7.5 = 15

- A. Explain any two rearrangements mediated by carbocation.
- B. Write a detailed note on Hammond's postulate.
- C. Explain the factors influencing the stability of carbocations.
- D. Explain Curtin-Hammett principle.

Q5. Attempt ANY THREE of the following:

3 x 5 = 15

- A. 2-Chloroethyl ethylsulphide is hydrolysed in aqueous acetone about 10000 times faster than the corresponding ether. Why?
- B. Write a note on ammonolysis of esters.
- C. Explain aromatic Substitution *via* Benzyne mechanism with suitable example.
- D. Write a short note on Nucleophilic substitution on allylic or trigonal carbon.
- E. Sketch the mechanism of following reaction.

