

This question paper contains 4 printed pages]

NEPWT—117—2024

FACULTY OF SCIENCE AND TECHNOLOGY

M.Sc. (First Year) (First Semester) EXAMINATION

NOVEMBER/DECEMBER, 2024

CHEMISTRY

Paper—SCHEC-402

(Organic Chemistry)

(Saturday, 14-12-2024)

Time : 10.00 a.m. to 1.00 p.m.

Time—3 Hours

Maximum Marks—80

N.B. :— (i) Question No. 1 is compulsory.

(ii) Solve any *three* questions from remaining five questions.

(iii) Figures to the right indicate full marks.

1. Solve the following : 20

(i) Explain the terms homoaromaticity and antiaromaticity with examples.

(ii) Explain with example homotopic, enantiotopic groups and faces.

(iii) Write a note on Anchimeric Assistance.

(iv) Explain Arenium ion mechanism with suitable example.

P.T.O.

2. Solve the following :

20

(i) Discuss the following :

(a) Neighbouring group participation by σ and π bonds

(b) Classical and non-classical carbocation.

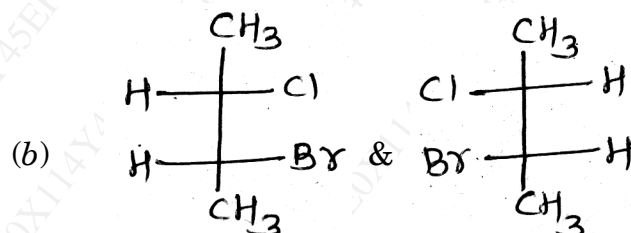
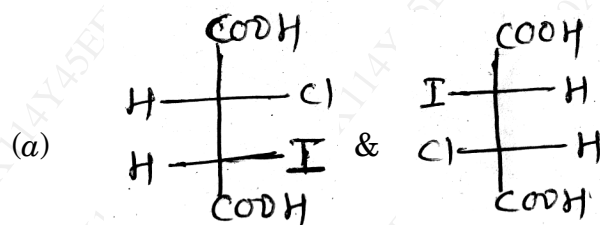
(ii) (a) What are annulenes ? Explain aromaticity of 14 Annulenes.

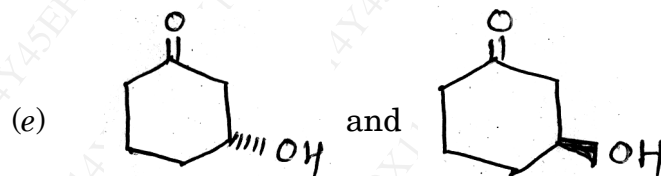
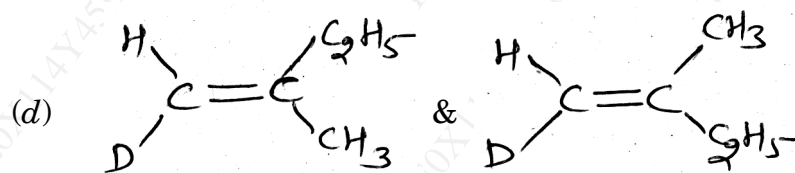
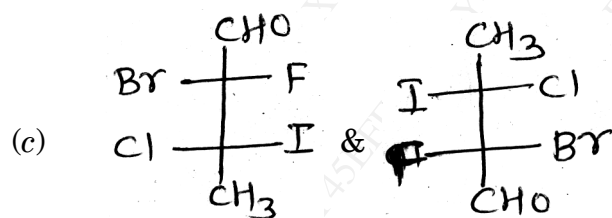
(b) Taft equation.

3. Answer the following :

20

(i) Assign the configuration and describe their relationship :





(ii) Explain the following :

- IPSO substitution
- Gattermann Koch reaction.

4. Explain the following : 20

- Give the generation, structure and stability of carbocation and carbanion
- Explain the confirmation of 1, 2 and 1, 3-dimethyl cyclohexane.

5. Discuss the following : 20

- Explain the following :
 - Ambident Nucleophile
 - Vinyl chloride is unreactive towards S_N^1 and S_N^2 reaction.

P.T.O.

(ii) Explain the orientation and reactivity of aniline and Nitrobenzene towards electrophilic substitution reaction.

6. Write short notes on the following : 20

(i) Stereoselective and stereospecific reactions

(ii) Sommet-Hauser rearrangement

(iii) Diazonium coupling reaction

(iv) Cross-conjugation.