

19

580153

114540

(Pages : 3)

Name.....

Reg. No.....

**FIRST SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY)  
EXAMINATION, NOVEMBER 2024**

(CBCSS)

Chemistry

CHE 1C 03—STRUCTURE AND REACTIVITY OF ORGANIC COMPOUNDS

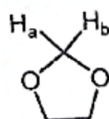
(2019 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

**Section A***Answer any eight questions.**Each question carries a weightage of 1.*

1. Is the statement "both HOMO and LUMO of benzene is doubly degenerate" true or false ?
2. What happens when cyclooctatetraene is treated with sulphuric acid ?
3. Give the structure of a non-classical carbocation.
4. Depict the conformation of trans-1, 3 -diethyl cyclohexane.
5. Depict the Newman projection of meso-2, 3-butanediol.
6. What product is formed when 1-chloro cyclopentane is treated with cyanide anion in DMSO solvent ?
7. Designate the topicity of  $H_a$  and  $H_b$  in :



8. Depict the structure of 2E, 4E-hexadiene.
9. Identify and show the prochiral faces of acetaldehyde.
10. Give an example of a chiral auxiliary.

(8 × 1 = 8 weightage)

**Turn over**

580153

## Section B

Answer any **six** questions.

Each question carries a weightage of 2.

11. Draw the structure of the product formed on E2 elimination of (1S, 2S)-1, 2-dichlorodiphenylethane.
12. Give the structures of cyclodextrin and 18-crown-6.
13. Depict the most stable conformer for (i) 2-fluoro ethanol and (ii) trans-1, 4-dimethyl cyclohexane.
14. Give an example for neighbouring group participation.
15. A 3.20 g sample of morphine ( $[\alpha]_D = -132^\circ$ ) was dissolved in 10.0 mL of acetic acid ( $[\alpha]_D = +19^\circ$ ) it is put into a sample tube with a path length of 2.00 cm, what would be its observed  $(\alpha)$  ?
16. How is the Felkin-Anh model different from Cram's model ?
17. Explain atropisomerism providing a suitable example.
18. Provide structures of 2 non-carbon chiral centered molecules.

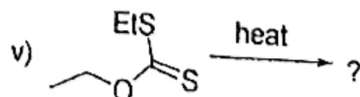
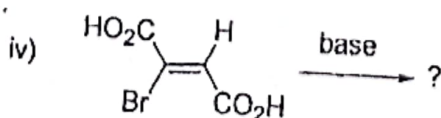
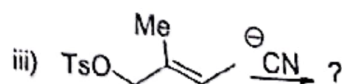
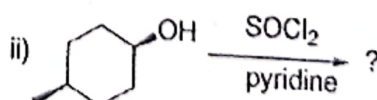
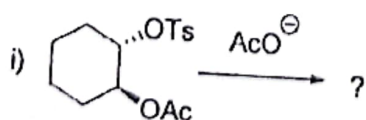
(6 × 2 = 12 wei

## Section C

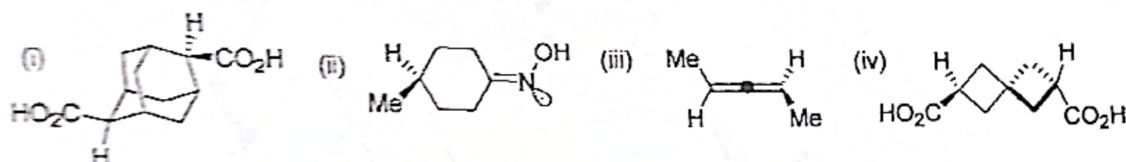
Answer any **two** questions.

Each question carries a weightage of 5.

19. Elimination of meso-2, 3-dibromo butane leads to trans alkene while its dl-mixture yields alkene. Justify the statement with suitable illustration.
20. Predict the products formed from the following reactions :



Give R/S designations for the following molecules and name the class of chirality to which they belong.



What are linear free energy relationships? Explain any *one* of them in detail providing suitable example.

(2 × 5 = 10 weightage)