Reg. No ..... Name **25P120**

M.Sc. DEGREE END SEMESTER EXAMINATION - NOVEMBER 2025

SEMESTER 1 : CHEMISTRY / PHARMACEUTICAL CHEMISTRY

COURSE : **24P1CHET02 / 24P1CPHT02 : BASIC ORGANIC CHEMISTRY**

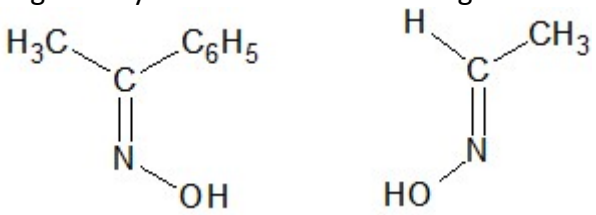
(For Regular 2025 Admission & Improvement/Supplementary 2024 Admission)

Time : Three Hours Max. Weights: 30

PART A

Answer any 8 questions **Weight: 1**

1. Explain kinetic control of a reaction taking a suitable example. (U, CO 2)
2. Describe on the conformational aspects of deamination of *cis* 2- amino cyclohexanol. (A)
3. Explain the term phosphoresence (U, CO 3)
4. What is butane gauche interaction? Explain taking a suitable example. (U)
5. Discuss the optical isomerism observed in spiran compounds. (U, CO 4)
6. List down one of the products formed during the photolysis of cyclohexanone. (U, CO 3)
7. What is hyperconjugation? Give an example. (A)
8. Explain S_NAr mechanism? (R)
9. Assign the syn & anti and E & Z configuration to the following molecules.



(A, CO 4)

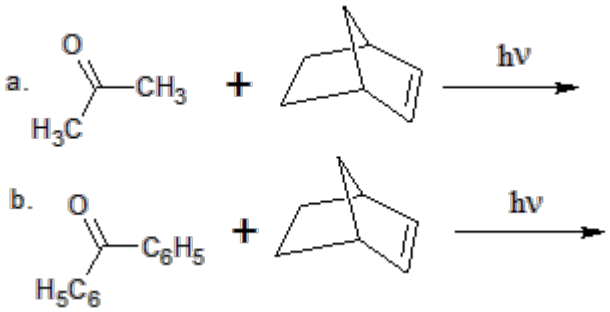
10. How can NMR be used as a tool in studying aromaticity? (A)

(1 x 8 = 8)

PART B

Answer any 6 questions **Weights: 2**

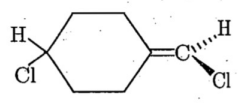
11. Complete the following reactions with suitable mechanism.

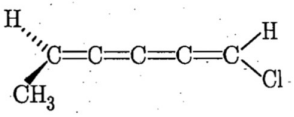


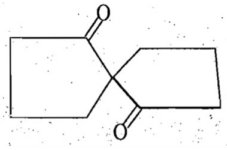
(A, CO 3)

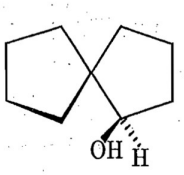
12. Write a short note on threo and erythro nomenclature of compounds with two adjacent chiral centres. (U, CO 4)
13. Discuss the conformations and stereochemistry of 1,2 and 1,3 dimethyl cyclohexanes. (U)

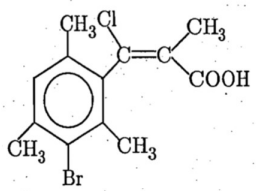
14. List down the element of chirality present in each of the following molecules (A, CO 4)

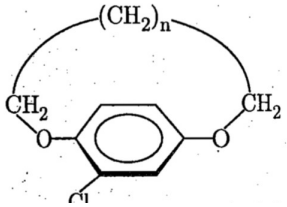
a) 

b) 

c) 

d) 

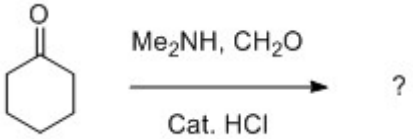
e) 

f) 

15. State and explain Curtin -Hammet principle. (U)

16. Discuss the mechanism of
(i) Di -π- methane rearrangement and (ii) Photo Fries rearrangement (A, CO 3)

17. Complete the following reaction and explain the mechanism?



(Cr, CO 1)

18. Aniline is ortho & p-directing,whereas nitrobenzene is meta directing towards aromatic electrophilic substitution reactions.Why? (U, CO 1)

(2 x 6 = 12)

PART C

Answer any 2 questions **Weights: 5**

19. Explain HSAB principle and its applications in organic reactions (A, CO 2)

20. Discuss prostereoisomerism giving emphasis on stereoheterotopic ligands and faces, prochirality and the use of NMR spectroscopy as a tool for the identification of stereo heterotopic hydrogens. (U, CO 4)

21. Discuss in detail the effect of conformation on dehydration, dehydrohalogenation and pyrolitic eliminations taking any two examples for each type of reactions. (A)

22. (a) Write notes on (i) Mesoionic compounds and (ii) arenium ion intermediates.
(b) Discuss the electrophilic and nucleophilic addition reactions of α,β-unsaturated carbonyl compounds. ( )

(5 x 2 = 10)

OBE: Questions to Course Outcome Mapping

CO	Course Outcome Description	CL	Questions	Total Wt.
CO 1	Explain the basic concepts of organic chemistry.	R	17, 18	4
CO 2	Illustrate the principles of physical organic chemistry.	U	1, 19	6
CO 3	Recognize the importance of organic photochemical reactions.	U	3, 6, 11, 16	10
CO 4	Demonstrate the reactivity and stability of organic molecules based on structure, including conformation and stereochemistry.	U	5, 9, 12, 14, 20	11

Cognitive Level (CL): Cr - CREATE; E - EVALUATE; An - ANALYZE; A - APPLY; U - UNDERSTAND; R - REMEMBER;