

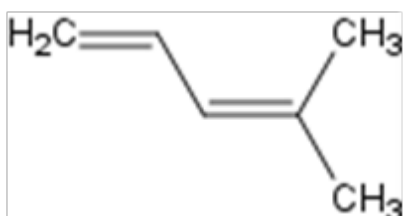
**M. Sc. DEGREE END SEMESTER EXAMINATION : MARCH 2023**  
**SEMESTER 2 : CHEMISTRY / PHARMACEUTICAL CHEMISTRY**  
**COURSE : 21P2CHET06 / 21P2CPHT06: ORGANIC REACTION MECHANISM**  
*(For Regular - 2022 Admission and Supplementary - 2021 Admission)*

Duration : Three Hours

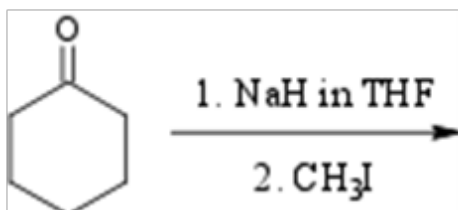
Max. Weights: 30

**PART A****Answer any 8 questions****Weight: 1**

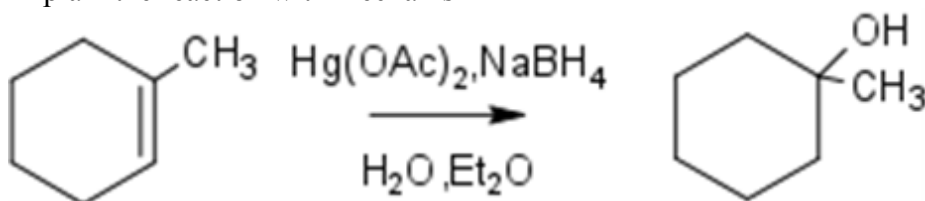
- "The kinetic order of a solvolysis reaction cannot be used as a criterion of its mechanism". Comment on the statement. (A, CO 1)
- Suggest a suitable method for the synthesis of the following molecule.



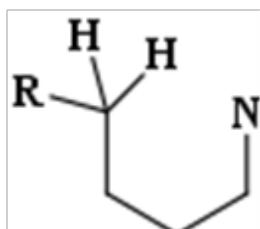
- Predict the product formed in the following reaction. Rationalise your answer



- Explain the reaction with mechanism



- The photolysis of the following will give



- Complete the reaction:-



- Cyclohexene reacts with dichlorocarbene generated by treating chloroform with potassium t-butoxide to give a bicyclic product. Give its structure (A)

8. **What is Barton deoxygenation?** (U)  
 9. **What is Barton decarboxylation?** (E, CO 3)  
 10. Draw the  $\pi$ -Molecular Orbitals of 1, 3-Butadiene and assign symmetry descriptors. (A)

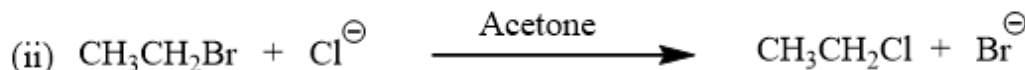
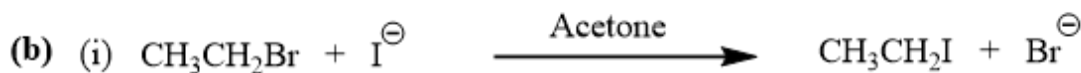
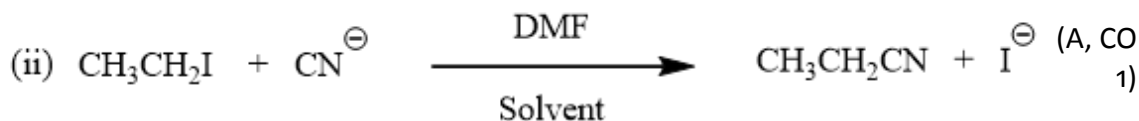
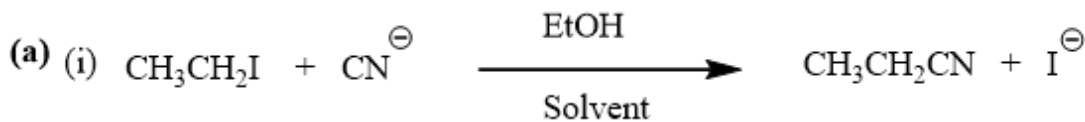
(1 x 8 = 8)

**PART B**

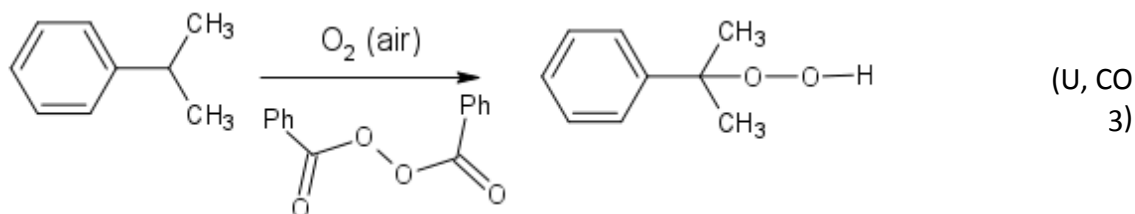
**Answer any 6 questions**

**Weights: 2**

11. Explain which reaction will take place faster than the other in the following pairs. (Assume  $S_N2$  pathway in all the cases)



12. Explain Dieckmann reaction with mechanism. Give its synthetic application. (U)  
 13. Explain the mechanism of Wittig reaction and explain how strategically we plan the synthesis of an E-alkene. (A)  
 14. Treating cyclohexene with 1,1 diiodoethane and a zinc copper couple leads to two isomeric products. What are their structures? (A)  
 15. Write in detail about barton-McCombie reaction and McMurry coupling (U)  
 16. Discuss the mechanism of the reaction.



17. **Predict the mechanism of cheletropic elimination and cope elimination.** (U)  
 18. Outline PMO approach for analyzing a [4+2] cycloaddition. (A)

(2 x 6 = 12)

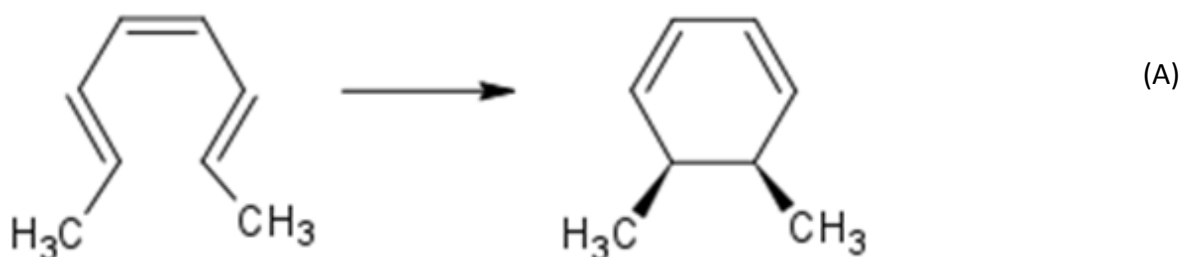
**PART C**

**Answer any 2 questions**

**Weights: 5**

19. Write a short note on the following  
 a) Constitutional orientation of electrophilic addition to a C=C bond. (U, CO 1)  
 b) Neighboring group participation  
 c) Effect of various alkyl substrates on  $S_N1$  and  $S_N2$  reaction  
 20. Give brief notes on:  
 a) Pinacol-pinacolone rearrangement  
 b) Prins reaction (A)  
 c) Wagner-Meerwein rearrangement  
 d) Dienone-Phenol rearrangement

21. Analyse and suggest the reaction condition for the following reaction using orbital correlation diagram.



22. **What is click chemistry ? Write any five applications of click chemistry reactions in detail** (E, CO 4)  
(5 x 2 = 10)

OBE: Questions to Course Outcome Mapping

CO	Course Outcome Description	CL	Questions	Total Wt.
CO 1	Describe the mechanisms of different types organic reactions.	A	1, 11, 19	8
CO 3	Understand the chemistry of radical reactions and its applications.	A	9, 16	3
CO 4	Explain the basics and applications of concerted reactions	A	22	5

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