

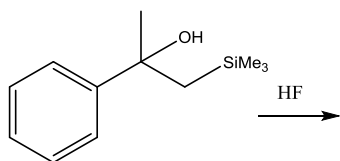
**THIRD SEMESTER M.Sc. DEGREE EXAMINATION, NOVEMBER 2020**  
**CHEMISTRY**  
**FCHE3E01 - SYNTHETIC ORGANIC CHEMISTRY**

Time: Three Hours

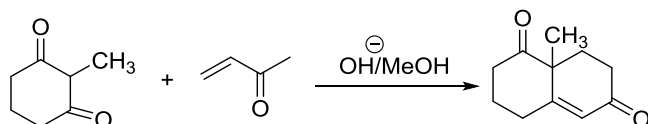
Maximum Weightage: 30

Section A: Short answer questions. Answer any *eight* questions. Each carries *one* weightage.

1. Identify the product and mention the reaction involved:

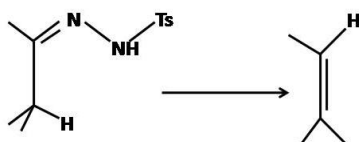


2. Suggest a mechanism for following reaction.



3. Explain functional group transposition with an example.

4. Predict suitable reagent and suggest mechanism for:

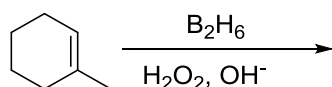


5. Give a method for the conversion of ketone to ester. Depict the mechanism.

6. Identify a coupling reaction that involves organozinc compounds. Brief the mechanism involved.

7. Comment on the advantages of using DMSO as an oxidising agent.

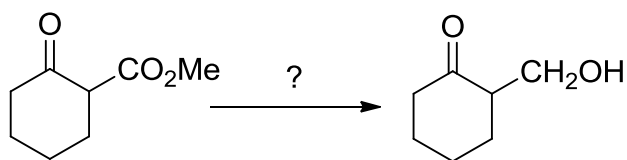
8. Predict the product of the reaction:



9. How will you synthesize epoxides from alkenes?

10. How would you carry out the following transformations?

(P.T.O.)

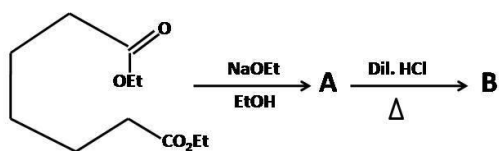


11. Differentiate the terms 'synthon' and 'synthetic equivalent'. Identify the synthons and synthetic equivalents of following compound-  $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$  (1-Propanol).
12. What is meant by umpolung? Illustrate with an example.

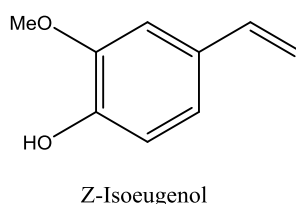
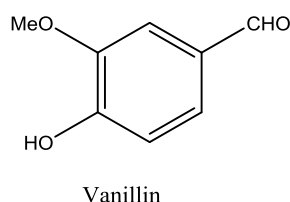
(8 × 1 = 8 weightage)

**Section B: Short essay questions. Answer any four questions. Each carries three weightage.**

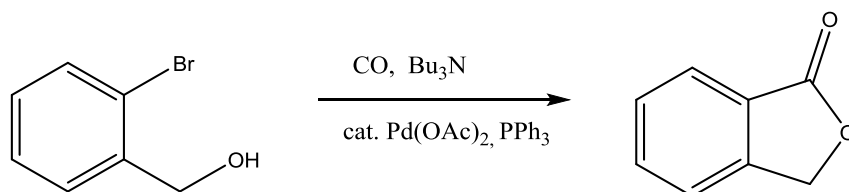
13. Predict the product and suggest suitable mechanism.



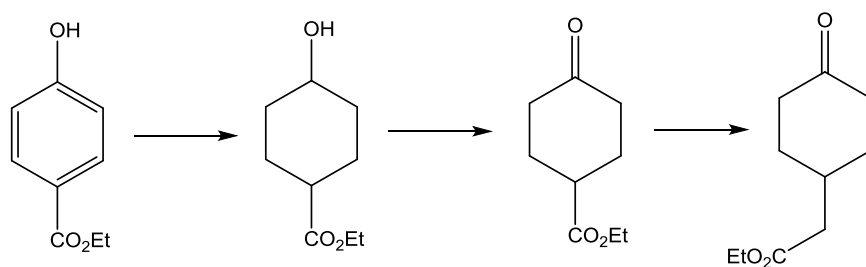
14. Suggest any preparatory method for Gilman's Reagent. What are the advantages of Gilman's reagent over organo magnesium and lithium reagents?
15. Z-iso Eugenol, the flavoring principle of cloves can be synthesised from vanillin. How can you effect this transformation?



16. Identify the coupling reaction and suggest a mechanism for the lactone synthesis.



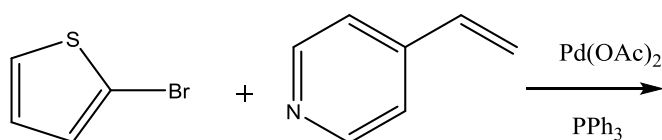
17. Illustrate the utility of  $\text{Al}(\text{O}^i\text{Pr})_3$  in oxidation and reduction reactions.
18. One group and two group C-X, C-C disconnections are particularly important in retrosynthetic analysis. Detail this statement with appropriate examples.
19. How can you carry out the following reactions?



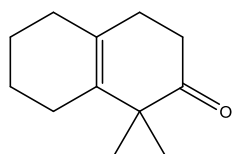
(4 × 3 = 12 weightage)

**Section C: Essay questions. Answer any *two* questions. Each carries *five* weightage.**

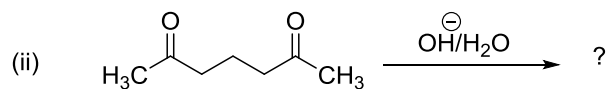
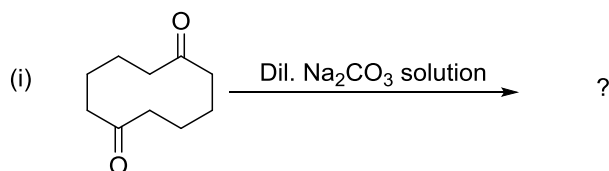
20. Predict and arrive at the products of the following transformations. **a)** The oxidation of propan-2-ol by Dess Martin reagent **b)** The conversion of 3-pentanone to 2-pentene via a hydrazone intermediate. **c)** The reduction of ethyl acetoacetate with  $\text{NaBH}_4$ .
21. a) Identify the reaction and predict the products:



- b) Comment on the Palladium catalysed reactions involving Carbon-Oxygen bond formation.
22. a) Discuss in detail about the use of trimethyl silyl groups in synthetic organic chemistry.
- b) Illustrate how Robinson annulation can be used in the synthesis of:



23. a) Predict the products of the following reactions and provide mechanism that accounts for their formation.



- b) Discuss in detail Wittig Reaction and Horner Wadsworth Emmons modification of the same.

(2 × 5 = 10 weightage)