QP CODE: 24018928

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Reg No : .....

Name : .....

MSc DEGREE (CSS) EXAMINATION , APRIL 2024

Second Semester

CORE - CH500202 - ORGANIC REACTION MECHANISMS

M Sc ANALYTICAL CHEMISTRY,M Sc APPLIED CHEMISTRY ,M Sc CHEMISTRY,M Sc PHARMACEUTICAL CHEMISTRY,M Sc POLYMER CHEMISTRY

2019 Admission Onwards

6821DDBB

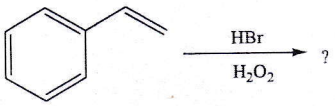
Time: 3 Hours

Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

*Weight **1** each.*

1. 

   Draw the major product. Draw the mechanism leading to it.

2. Draw the mechanism for alkylation of an enolate and an enamine(No explanation is required)

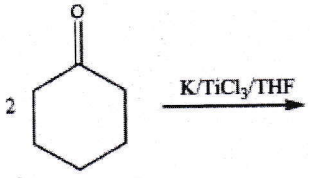
3. What is a non-calssical carbocation?

4. Among iodolactonisation and chlorolactonisation, which is more efficient? Justify your answer.

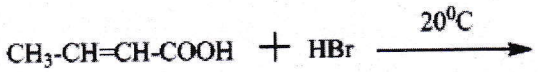
5. What are nitrenes? Why nitrenes are more stable than carbenes?

6. Chlorobenzene reacts with sodamide to give aniline via, benzyne formation. However, 2,6-dimethylchlorobenzene does not react. Explain why?

7. Indicate the product in the following transformation.



8. Give the structure of the product of below reaction.



9. Explain ene reaction using suitable example.

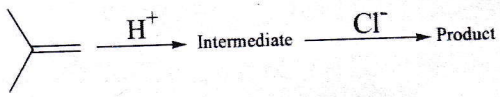
10. What is Chugaev elimination? Illustrate with an example.

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

*Weight **2** each.*

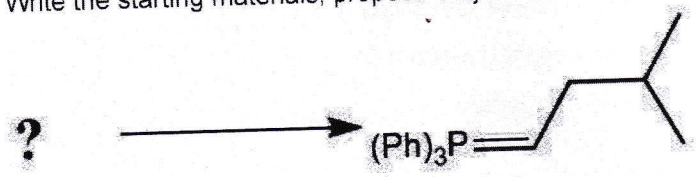
11. 

What is the intermediate and product for the above reaction. Draw the mechanism.

12. Draw the mechanism of Darzen and Knoevenagel condensations .Write salient features of both reactions.

13. Draw the mechanism of Wagner-Meerwein and pinacol-pinacolone rearrangements. Write salient features of both reactions.

14. Write the starting materials, propose a synthetic mechanism for the conversion and name the reaction.



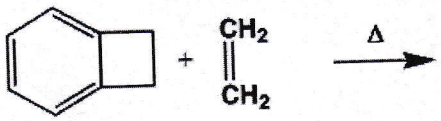
15. Explain autooxidation with an example. Indicate any two applications.

16. Indicate the products in the following reactions. Suggest suitable mechanism.

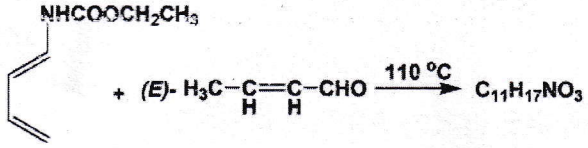
a) $C_2H_5\text{-}CHO + N2H4 \xrightarrow[DMSO]{KOH}$

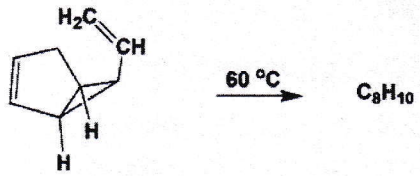
b) $CH_3\text{-}CHO + NH_3 \longrightarrow A \xrightarrow[-H_2O]{Heat} B$

17. a) Propose a mechanism for the following reaction. b) What would be the reaction product if trans -2-butene was used instead of ethene?



18. Predict the products of the following reactions on the basis of the reaction mechanism and anticipated transition structure with correct stereochemistry.

a) 

b) 

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

*Weight **5** each.*

19. Write a brief account of the effect of substrate, reagent, leaving group, solvent and neighbouring group on S_N1 and S_N2.

20. Explain the mechanisms for Schmidt and Lossen rearrangement reactions. What are the similarities observed?

21. Discuss in detail the mechanism of a)Aldol condensation b)Cannizzaro reaction, c) Grignard reagent addition to carbonyl compounds with examples and applications.

22. Predict the feasibility of thermal and photochemical closure of E,Z,E-1,6-dimethyl hexa-1,3,5-triene to 5,6-dimethyl cyclohexa-1,3-diene on the basis of FMO method and correlation approach.

(2×5=10 weightage)