

CHE 504N

M.Sc. (Ist SEMESTER) EXAMINATION, 2024-25

(CBCS MODE)

CHEMISTRY

Organic Reaction Mechanism



1427

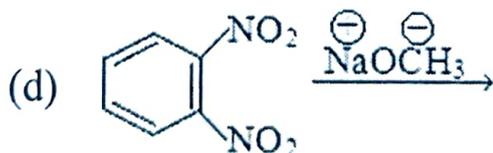
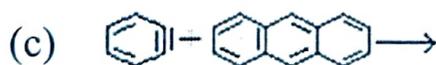
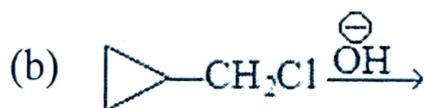
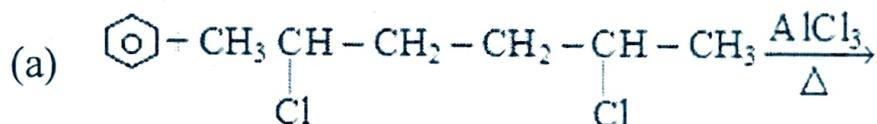
Time : Three Hours]

[Maximum Marks : 75

Note: There are **three** sections (A, B and C) and Candidate has to attempt questions from all sections. Marks are indicated against each section.

Section-A

1. Answer all parts of this question : $5 \times 3 = 15$



- (e) Explain the isotope effect for the following reaction.



Section-B

Note: Answer all questions of the following : $4 \times 5 = 20$

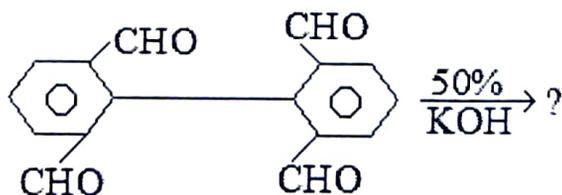
2. (a) Identify the three products that are formed when 2-bromo-2-methyl propane is dissolved in a mixture of 80% ethanol and 20% water.

Or

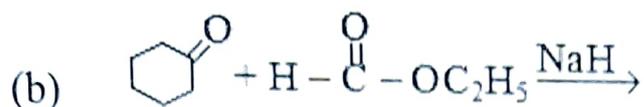
- (b) Explain products A, B, C with proper reason.



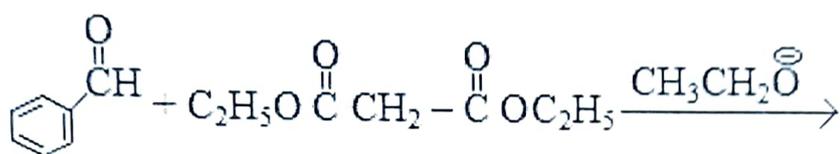
3. (a) Give the products and mechanism of the following reaction.



Or

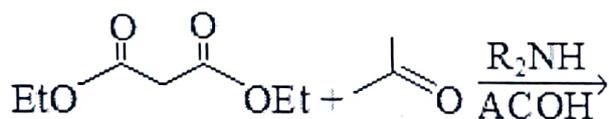


4. (a) Give the mechanism of the following reaction.

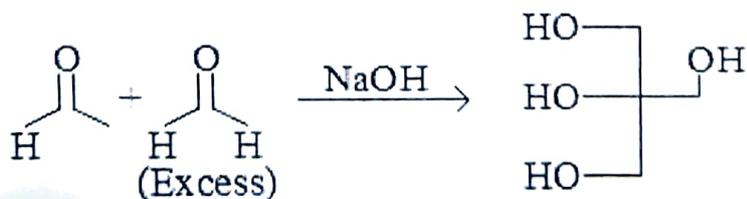


Or

- (b) Explain product formation with mechanism

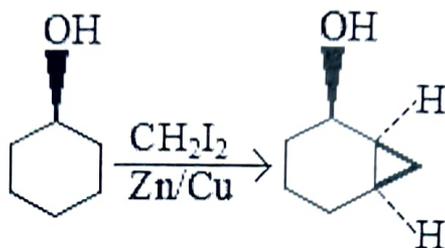


5. (a) Explain the product formation with mechanism.



Or

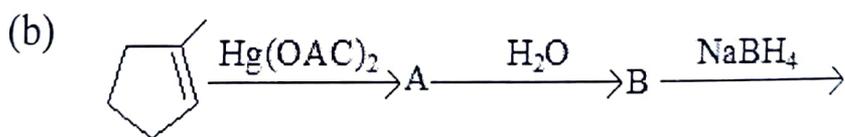
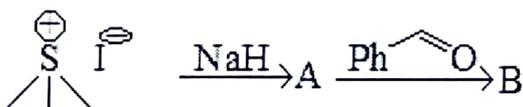
- (b) What is the product formed with following reaction. Give its mechanism also.



Section-C

Note: Answer any two questions of the following : $2 \times 20 = 40$

6. (a) Name the product formed in the following reaction along with its mechanism.



- (c) Define Ortho/Para ratio with suitable examples.

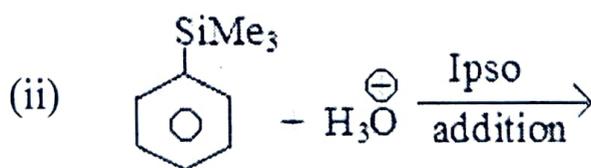
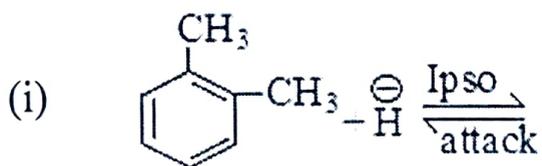
- (d) Discuss participation of π -bonds as NGP



7. (a) What is open chain Cram's model for diastereoselectivity in addition of nucleophiles to carbonyl compounds? Explain with examples.

(b) Trapping of intermediate is a versatile method of determination of organic reaction mechanism. Justify it with example.

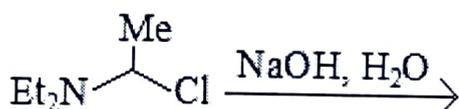
8. (a) Give the product and mechanism of the reactions given below:



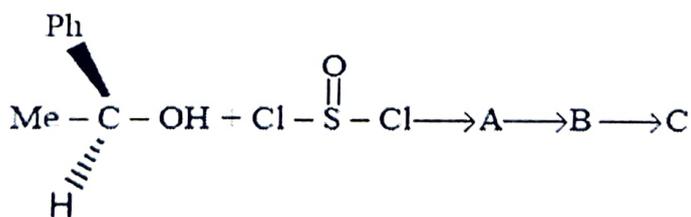
(b) What is Sharpless Asymmetric epoxidation (SAE)? Give its mechanism.

- (c) What are the conditions that favour E_1C_b mechanism in an elimination reactions ? Illustrate with two examples.
- (d) When $CH_3-CH_2-CH_2-CHBr-CH_3$ and $CH_3-CH_2-CH_2-CH(N^+Me_3)-CH_3$ are separately subjected to E_2 -reaction, the Hofmann product in the former case is 31% While that in the latter case is 98% Give explanation for these results.

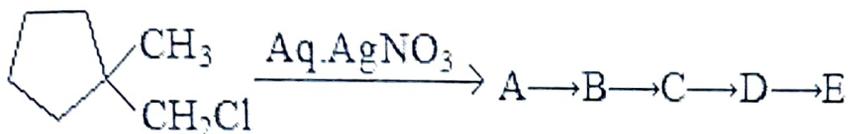
9. (i) Explain mechanism with product in the case of the following reaction.



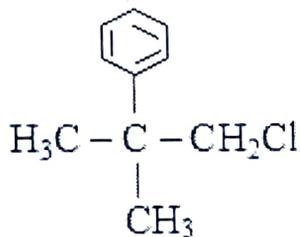
- (ii) Define S_Ni -mechanism. Give its application in the following reaction.



- (iii) Outline a suitable mechanism for the following transformation :



- (iv) Discuss participation of the phenyl ring as NGP.



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