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Reg. No.

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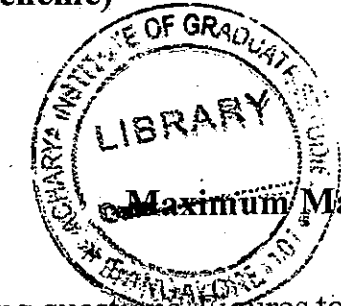
III Semester M.Sc. Degree Examination, April/May - 2022

CHEMISTRY

Organic Reaction Mechanisms

(CBCS : 2019-20 onwards Scheme)

Paper : CH - 301 OC



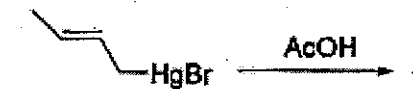
Time : 3 Hours

Instructions:

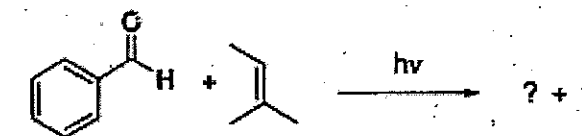
Answer question No. 1 and any five of the remaining questions. Figures to the right indicate marks.

1. Answer any Ten of the following. (10×2=20)

- The conversion of chiral alcohols to halides in presence of SOCl_2 proceeds with stereoretention. Sketch the mechanism for this reaction.
- Indicate the effect of doubling the concentration of Nu^- and doubling the concentration of substrate on the rate of SN^1 and SN^2 reactions.
- Predict the product and mention the reaction type.



- What is photo sensitization? Give an example.
- Complete the reaction. Which one of the product gives acetaldehyde upon acidolysis?



- Write the FMOs of 1,3 - butadiene.

[P.T.O.]



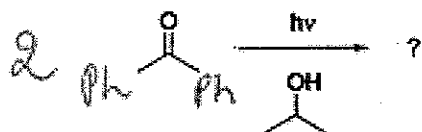
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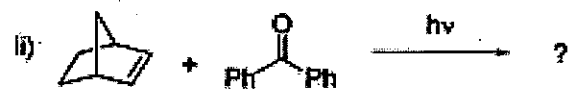
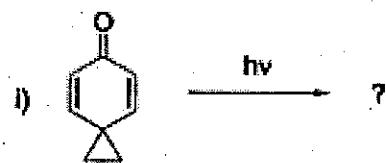
g. What is the major product of the following reaction?



- h. Illustrate Claisen rearrangement with an example.
 i. Write an example for endo - selective Diels - Alder reaction.
 j. Give the mechanism for allylic bromination with NBS.
 k. What is transamination? Mention the enzyme and coenzyme involved in this.
 l. Write the structure of lipoic acid. Mention its role in biochemical reactions.
2. a. Discuss the $B_{AC}2$ mechanism of ester hydrolysis. How is the mechanism supported by ^{18}O labeling studies?
 b. Describe any two synthetic applications of diazo - transfer reaction. (5+5=10)
3. a. Sketch the basic and modified Jablonski diagrams. Highlight their significance.
 b. Complete the following reaction and provide the mechanism. (6+4=10)



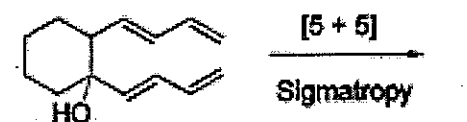
4. a. Discuss photodimerization of cyclopentenone.
 b. What are the products of the following reactions? Outline the mechanism of their formation. (5+5=10)



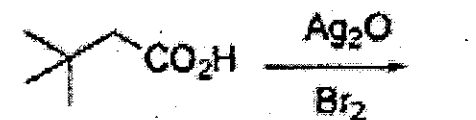
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5. a. Describe the preparation of singlet molecular oxygen. Highlight the difference between triplet and singlet states. Write a note on cycloadditions involving singlet molecular oxygen.
 b. Account for the stereospecificity of conrotatory and disrotatory electrocyclic reactions by using Woodward - Hoffmann correlation diagrams. (5+5=10)
6. a. Mention the rules for thermally and photochemically allowed sigmatropic shifts.
 b. Explain why Walk rearrangement are termed as (1,n) sigmatropic shift?
 c. Write the structure of the product. (4+3+3=10)



7. a. Complete the reaction, furnish the mechanism and give name reaction



- b. Discuss the synthetic utility of Fenton's reagent.
 c. Write examples for Sandmeyer reaction and Meerwin arylation reaction. (4+3+3=10)
8. a. What is 'one - carbon pool'? Explain the synthesis of methionine using N^5 - methyl - THF.
 b. Illustrate the mechanistic role of TPP in decarboxylation of α - ketoacids. (5+5=10)