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Total Number of Pages : 02

M.Sc.
MCYC202

2nd Semester Back Examination 2017-18

ORGANIC SYNTHESIS

BRANCH : M.Sc.(AC)

Time : 3 Hours

Max Marks : 70

Q.CODE : C710

Question No.1 which is compulsory and any five from the rest

The figures in the right hand margin indicate marks.

Answer all parts of a question at a place.

Q1 Answer the following questions : (2x10)

- Define hydrogenolysis. State some of its applications.
- What is Jones's reagent? Mention some of its synthetic applications.
- In the oxidation of alkenes employing OsO_4 and H_2O_2 , glycol is obtained. The oxygen of glycol is obtained from H_2O_2 or OsO_4 . Differentiate.
- What is regioselectivity? Cite an example.
- What is Chelotropic elimination? Give a reaction.
- What is Wilkinson's catalyst? Describe one of its application in organic synthesis.
- What is the role of hydroxylic solvent in Birch reduction?
- Cite an example of Umpolung concept in organic synthesis.
- Describe the difference between synthon and synthetic equivalent.
- Cite the important features for a good protecting group in organic chemistry.

Q2 a) What types of products arise by the oxidation of olefinic double bonds? Describe their mode of formations. (6)

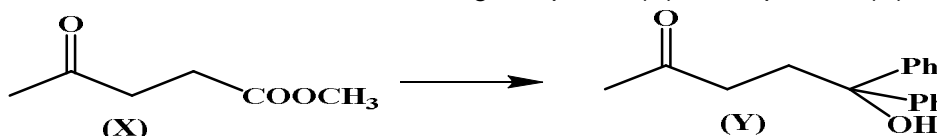
b) Discuss the oxidation of organic compounds employing RuO_4 . (4)

Q3 a) With the help of Correlation diagram and FMO method, show that the Diel's Alder reaction is a thermodynamically allowed process. (6)

b) Depict Cope and Claisen rearrangements as examples of Sigmatropic shifts. (4)

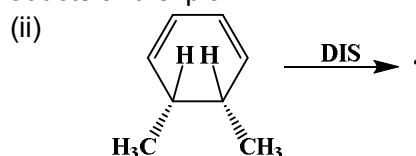
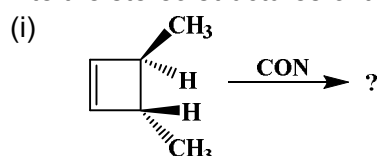
Q4 a) Explain the importance of Protecting group in organic synthesis. Discuss the important methods employed in the protection and deprotection of carboxylic group. (7)

b) Devise a route to convert the following compound (X) to the product (Y). (3)

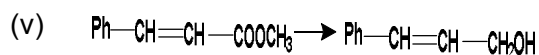
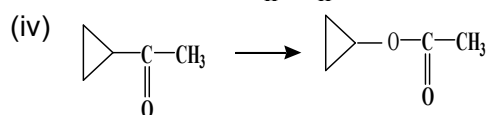
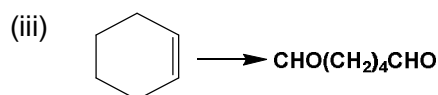
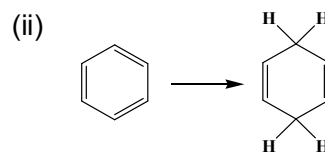
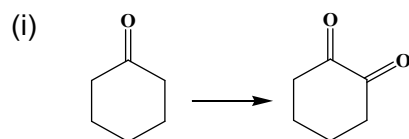


Q5 a) A cycloaddition reaction is photochemically allowed but thermally forbidden. Discuss it in the light of FMO approach. (6)

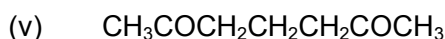
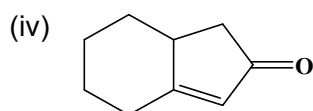
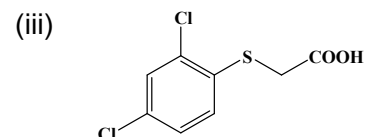
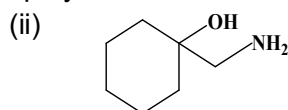
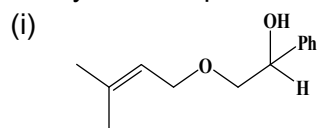
b) Write the stereo structures of the preferred products and explain. (4)



Q6 Suggest suitable reagents for achieving the following transformations. Give mechanism. **(10)**

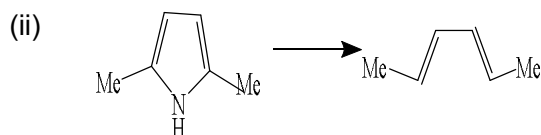
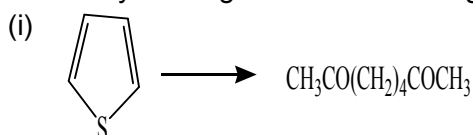


Q7 a) Using disconnection approach, outline the synthesis of the following Target molecules. Identify your choice of disconnections used and indicate the synthons and synthetic equivalent (SE) employed. **(5)**



b) Give a brief account of the use of acetylenes in organic synthesis. **(5)**

Q8 a) How will you bring about the following transformations? **(6)**



b) Applying disconnection approach, suggest synthetic routes for the following molecules. **(4)**

