Reg.No										

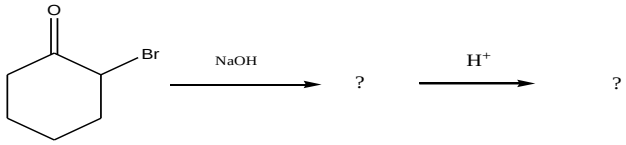
MANIPAL UNIVERSITY, MANIPAL

SECOND SEMESTER M.Sc. (CHEMISTRY)
END SEMESTER EXAMINATION, June-July, 2016
SUB: ORGANIC CHEMISTRY-II (CHM-604)

Time : 3 Hrs. **Date:** 29/06/2016 **Max. Marks :** 50

Note : a) Answer any five full questions. b) Write structures and reactions wherever necessary.

1. **A**. i) Describe the mechanism of Meerwein-Ponnndorf-Verley reduction.
ii) Predict the product and explain the mechanism for the following reaction

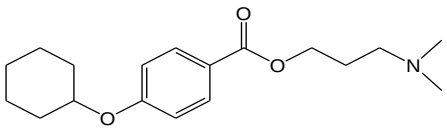


B. Explain the mechanism of the following reactions;
i) Wittig ii) Fevorsky rearrangement

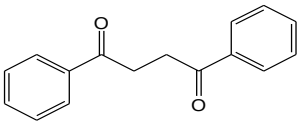
C. Give reasons for the following;
i) Oppenaur oxidation is not a good method to prepare aldehydes
ii) In Curtius rearrangement isocyanates are isolable, while in Hoffmann rearrangement non-isolable

[4+4+2]

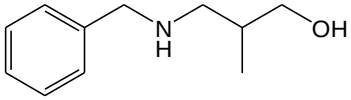
2. **A**. i) What is chemoselectivity? Predict the disconnection strategy and suggest a synthetic scheme for the following compound.



ii) Suggest suitable retrosynthetic strategy for the following 1,4-difunctional compound.



B. i) Explain the retrosynthetic method for the following compound using this 1,3-diX disconnection.



ii) Explain one group C-X disconnection and two groups C-X disconnection strategies used in retrosynthetic analysis with suitable example.

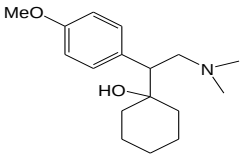
C. Why are protecting groups used in organic synthesis. List the qualities of a good protecting group.

[4+4+2]

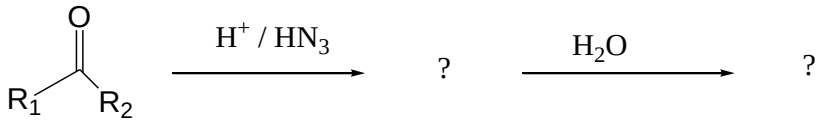
3. **A**. i) Explain the factors that would influence the migratory aptitude of different substituents in rearrangement reactions.

ii) What is Diels-Alder reaction? Explain the effect of substituents on the rate of the reaction

B. i) Propose a retrosynthetic analysis of the following drug Vanlafaxine.



ii) Predict the product and explain the mechanism of the following reaction.



C. What is Birch reduction? Explain the mechanism.

[4+4+2]

4. **A**. Describe the advantages and limitations of chiral pool and chiral auxiliary techniques used in asymmetric synthesis.

B. Predict the products and write the mechanism of the following reactions;

i) Reaction of benzophenone with cis-2-butene under 254 nm.

ii) Reaction of benzophenone with trans-2-butene under 254 nm.

C. What are the experimental evidences for the mechanism of Photo-Fries rearrangement?

[4+4+2]

5. **A**. Describe the application and mechanism of metal-ligand complexes in asymmetric synthesis.

B. How do you convert D-mannose to swainsonine? Write the synthetic steps involved.

C. Explain the term quantum yield. Write its significance.

[4+4+2]

6. **A**. Explain the factors affecting Norrish type I and Norrish type II reactions. Illustrate with examples.

B. How is organic dyes useful for energy conversion and storage? Explain structural features of some of the dye types.

C. Describe photochemical isomerization reaction. How is it related to functioning of retina?

[4+4+2]

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