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MANIPAL UNIVERSITY, MANIPAL

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

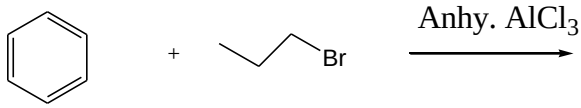
Time : 3 Hrs. **Date: 06/05/2016** **Max. Marks: 50**

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

1. **A**. i) Describe the mechanism of Wolf-Kishner reduction. Give merits and demerits of this reaction.

ii) What is benzidine rearrangement? Explain the mechanism.

B. i) Predict the product in the following reaction. Explain your reasoning.



ii) Describe the mechanism of Baeyer-Villiger reaction. Discuss the migratory aptitude of migrating groups and stereochemistry of the product.

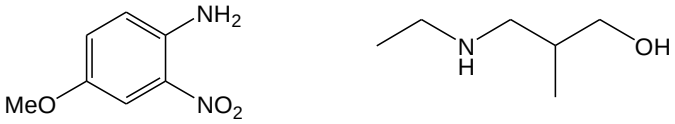
C. Give reason for the following;

i) Hoffmann rearrangement proceeds with the retention of configuration.

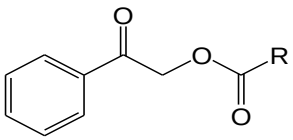
ii) Meerwein-Ponndorf-Verley reduction is highly chemoselective.

[4+4+2]

2. **A**. Suggest a retrosynthetic scheme for the following molecules;



B. i. What is 1,2-diX relationship? Give the retrosynthetic strategy for the following compound.



ii. Give reason: Two group C-X disconnections are better than one group C-X disconnection

C. Describe the general methods for the protection and deprotection of amines.

[4+4+2]

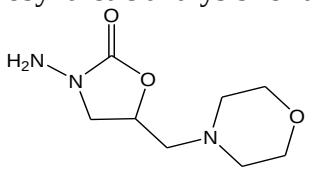
3. **A**. i) Write the conversion of malonic ester into glycine using Curtius rearrangement.

ii) What is Perkin reaction? Describe the mechanism and comment on the stereochemistry of product.

B. i) Describe the mechanism of Reformatsky reaction. What are the merits of this reaction over Grignard reaction?

ii) What is ene reaction? Give an evidence to show that it is concerted.

C. Give suitable retrosynthetic analysis for the following compound

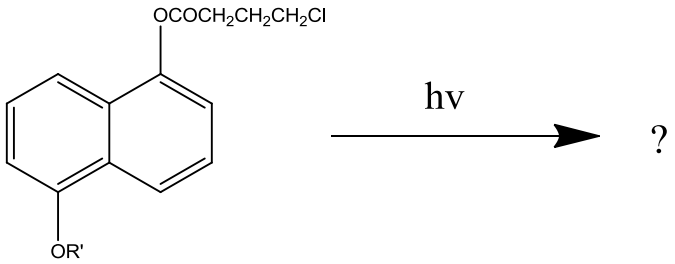


[4+4+2]

4. **A**. Describe the mechanism of Peterno-Buchi reaction. Explain evidences to show that it not stereospecific.

B. i) How is benzodiazepine derivative prepared from α-amino acids? Write its importance.

ii) Predict the product and write the mechansim for the following reaction;



C. Explain the factors affecting photocyclization vs β-cleavage during Norrish type-II reaction.

[4+4+2]

5. **A**. Account for the following observatins.

i) Norbornene reacts with benzophenone to from oxetane where with acetophenone gives dimer of norbornene.

ii) Stability of free radical intermediate can predict the course of photochemical reaction.

. **B**. Write the steps involved in the preparation of tomolol from d-mannitol.

C. Distinguish between the following;

i) Asymmetric synthesis vs conventional synthesis.

ii) Chiral catalysts vs metal halide catalyst.

[4+4+2]

6. **A**. Describe the course of primary and secondary photochemical reaction of 2-butanone. Write the mechanism and account for the various products formed.

B. i) Write the structure of swainsonine. Write two of its properties.

ii) Explain how chiral reducing agents is useful in asymmetric reduction reactions.

C. Write the mechanism of di-pi-methane rearrangement reaction.

[4+4+2]

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