MANIPAL
ACADEMY of HIGHER EDUCATION
(Deemed to be University under Section 3 of the UGC Act, 1956)

Reg. No.										

DEPARTMENT OF SCIENCES, I SEMESTER M.Sc. (CHEMISTRY)
END SEMESTER EXAMINATIONS, DECEMBER 2018

SUBJECT: Organic Chemistry I [CHM - 4103]
(REVISED CREDIT SYSTEM-2017)
Make-up

Time: 3 Hours Date:26-12-2018 MAX. MARKS: 50

Note: (i) Answer **ALL** questions
(ii) Draw diagrams, and write equations wherever necessary

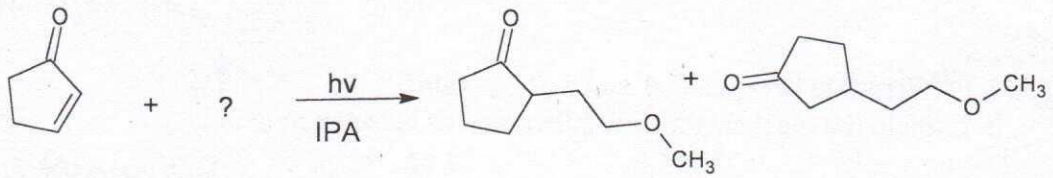
1. **A. i.** Explain the use of Prelogs rule by taking an example.
ii. Explain the terms enantioselectivity and diastereoselectivity using suitable examples.

B. What are atropaisomers? Write energy level diagram and explain their stability. Explain nomenclature method used for such isomers.

C. What is axial haloketone rule? Write its significance.

[4+4+2]

2. **A.** Identify the reactant and explain the mechanism for the following reaction. Comment on their regioselectivity and the possible major product.



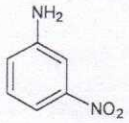
B. i. Explain the Norrish type II reaction. What are the factors influencing β-cleavage Vs cyclization reaction.
ii. Describe the mechanism of Barton reaction. Write its importance in synthetic chemistry.

C. Give reasons for the following;
i. Though photochemical reactions occur at room temperature, many times reaction system gets heated up.
ii. Excited singlet state is more common than triplet state.

[4+4+2]

3. **A.** Derive Winstein Eliel equation. Explain one of its applications. Write limitation of this method in analyzing conformational reactivity.

B. i. Discuss the mechanism involved in the Friedel Crafts alkylation of nitrobenzene.
ii. Compare and explain the basicities of the following molecules.

a. 

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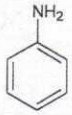
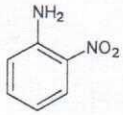
c. 

d. 

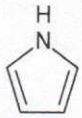
C. Explain the oxidation of acetaldehyde to acetic acid using alkaline $KMnO_4$.

[4+4+2]

4. **A. i.** Justify the following;
a. Electrophilic substitution in pyrrole occurs predominantly at α-position rather than β.
b. Benzoic acid is a weaker acid than salicylic acid.
ii. Explain the aromaticity of the following molecules;

a. 

b. 
c. 

d. 

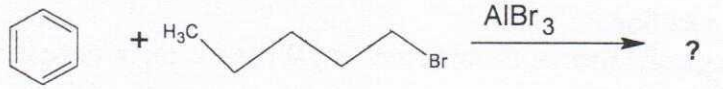
B. i. Discuss the role of periodic acid in oxidation reactions with illustrative example.
ii. Define Baeyer-Villiger oxidation. Write its general mechanism.

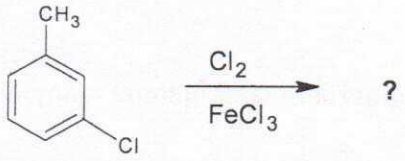
C. Explain the general mechanism of Meerwin-Ponndorf-Verley reduction in detail.

[4+4+2]

5. **A. i.** Differentiate between S_N1 and S_N2 reactions.
ii. Explain the mechanism of sulphonation of benzene in detail.

B. Predict the product/s and write the mechanism for the following reactions.

i. 

ii. 

C. Give two examples each for addition and elimination reactions.

[4+4+2]

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