

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)**

CLASS: MSC/IMSC
BRANCH: CHEMISTRY

SEMESTER : III/IX
SESSION : MO/18

SUBJECT: SAC3005 ADVANCED ORGANIC CHEMISTRY

TIME: 3 HRS.

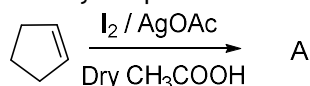
FULL MARKS: 60

INSTRUCTIONS:

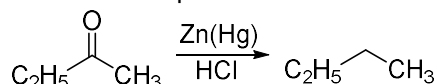
1. The question paper contains 7 questions each of 12 marks and total 84 marks.
 2. Candidates may attempt any 5 questions maximum of 60 marks.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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Q.1(a) Discuss the KMnO₄ Oxidative Mechanism for dihydroxylation and oxidative cleavage (under acidic condition) of cis-2-butene separately. [6]

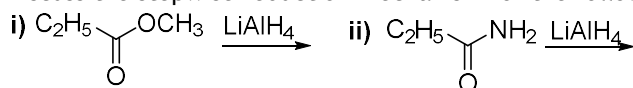
Q.1(b) Draw the stepwise mechanism and identify the product A. [6]



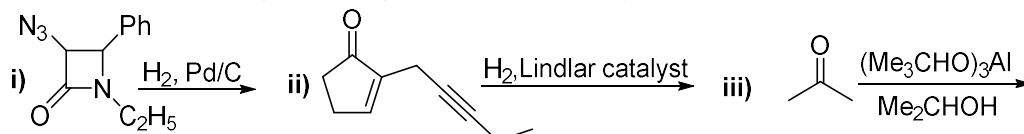
Q.2(a) Write down stepwise carbenoid mechanism for the following Clemmensen reduction. [6]



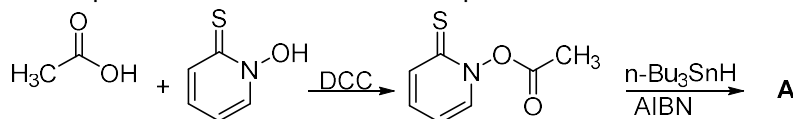
Q.2(b) Discuss the stepwise reduction mechanism for the following reduction reactions. [6]



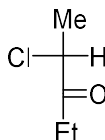
Q.3(a) Write the structure of product expected from following reactions. [6]



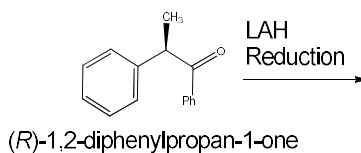
Q.3(b) Predict product A and write down the stepwise mechanism of the Barton decarboxylation reaction. [6]



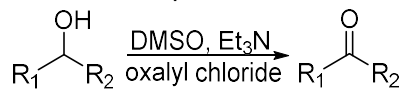
Q.4(a) Briefly explain about 1,2-asymmetric induction by Cram's Model, Cram's Chelation Model, Cram's Deviation Model and Flekin-Anh model using the following structure. [6]



Q.4(b) Describe with Newmann projection for the formation of major product from LiAlH₄ reduction of (R)-1,2-diphenylpropan-1-one through Cram's Model. [6]



Q.5(a) Discuss the stepwise mechanism of following Swern oxidation reaction. [6]



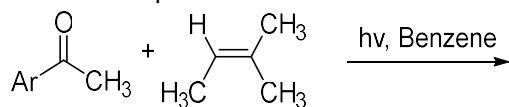
Q.5(b) What is Oppenauer oxidation? Explain the catalytic cycle for the process. [6]

Q.6(a) Write brief note on Sharpless Asymmetric Epoxidation on allyl alcohol. [6]

Q.6(b) Define and distinguish between sterically accelerated reaction and sterically retarded reaction with an example. [6]

Q.7(a) Discuss Norrish Type II process with suitable example. [6]

Q.7(b) Write the stepwise mechanism of the following Paterno-Buchi reaction. [6]



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