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

CLASS: MSC **SEMESTER : III**
BRANCH: CHEMISTRY **SESSION : MO/19**

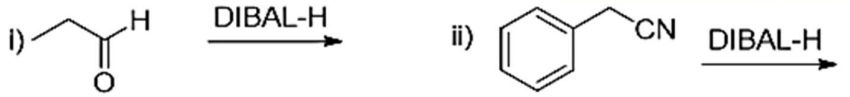
SUBJECT: CH504 ADVANCED ORGANIC SYNTHESIS

TIME: 3 HOURS **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
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.

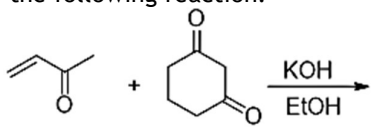
Q.1(a) Discuss the carbenoid mechanism of Clemmensen reduction with a suitable example. [5]

Q.1(b) Write the stepwise mechanism for the following reduction. [5]

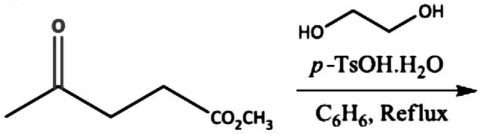


Q.2(a) Discuss the mechanism of Mitsunobu coupling with a suitable example. [5]

Q.2(b) Write the stepwise mechanism for the following reaction. [5]

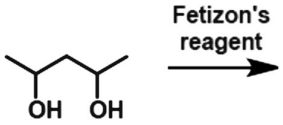


Q.3(a) Write down the mechanism for deprotection of amine protected with 9-Fluorenylmethyl carbamate using piperidine or morpholine reagent. Write the mechanism of following reaction. [5]



Q.3(b) Discuss the protection as well as deprotection of amine and hydroxyl group by p-methoxy benzyl group. [5]

Q.4(a) Write the preparation method and oxidation mechanism of IBX oxidant. Explain with mechanism for following reaction pathway. [5]



Q.4(b) What are the advantages of the use of PDC over PCC for oxidation? Write short note on activated dimethyl sulfoxide oxidation with one suitable example. [5]

Q.5(a) Discuss about the stereochemistry of oxidative hydroboration of alkenes and enantioselectivite asymmetric hydroboration of alkenes. [5]

Q.5(b) What is borane? How does the borane commercially available in the market? Write short note on carbonylation using organoborane. [5]

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