BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION MO2022)

CLASS: IMSC/ MSC/ PRE-PHD — **SEMESTER : IX/III**
BRANCH: CHEMISTRY — **SESSION : MO 2022**

SUBJECT: CH504 ADVANCED ORGANIC SYNTHESIS

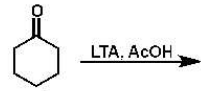
TIME: 03 HOURS — **FULL MARKS: 50**

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. **Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates**

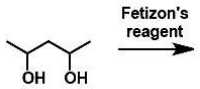
Q.1(a) Give one example of protecting group for hydroxyl group. [2]
Q.1(b) Discuss the process for protection and deprotection of hydroxyl group with one example. [3]
Q.1(c) Write how you can protect and deprotect carboxyl and amino group. Discuss with suitable example. [5]

Q.2(a) How does the borane commercially available in the market? [2]
Q.2(b) What are the advantages and disadvantages of use of organoboranes in organic synthesis? [3]
Q.2(c) Discuss about the stereospecificity and regioselectivity of hydroboration to C=C. [5]

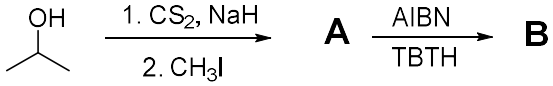
Q.3(a) What are the advantages of the use of PDC over PCC for oxidation? [2]
Q.3(b) Write the mechanism for following process. [3]



Q.3(c) Write the mechanism of oxidation by Jones reagent. What are the disadvantages of Jones reagent? Explain with mechanism for following reaction pathway. [5]

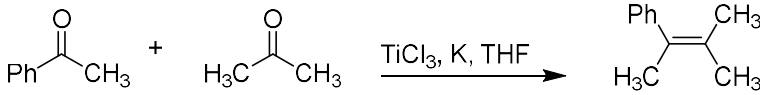


Q.4(a) Explain why we get *syn* product from heterogeneous reduction of alkenes. [2]
Q.4(b) Identify A and B. Write the stepwise mechanism for their formation. [3]

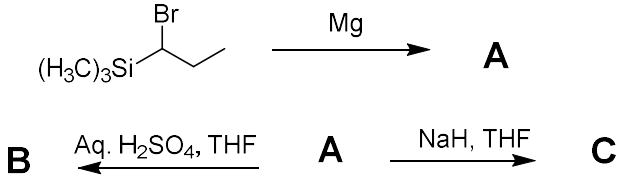


Q.4(c) Discuss the mechanism of luche reduction. [5]

Q.5(a) Define Olefination reaction. [2]
Q.5(b) Write the stepwise mechanism of the following olefination reaction. [3]



Q.5(c) Identify product A and write the stepwise mechanism for the formation of product C and B. [5]



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