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

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

SUBJECT: CH507 SELECTED TOPICS IN ORGANIC SYNTHESIS

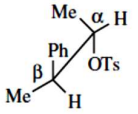
TIME: 3 HOURS **FULL MARKS: 50**

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 briefly the optical isomerism exhibited in allenes and chiral biaryls. What are sufficient conditions for them to become chiral or achiral? [5]

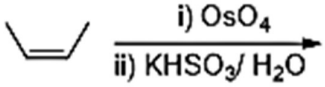
Q.1(b) Explain the chirality in planar chiral ansa compounds. What are helically chiral compounds? [5]

Q.2(a) How does acetolysis of both 4-methoxy-1-pentyl brosylate and 5-methoxy-2-pentyl brosylate (25) give the same mixture of products? Explain the mechanism to explain the fact that solvolysis of following compound in acetic acid give 96% threo isomer with approximately equal amounts of (+) and (-) one. [5]



Q.2(b) Give the example of neighboring-group assistance in free-radical reactions. Show the possible pathways for rearrangement of l-phenyl-l,2-propanediol in presence of acid and explain the structure of the product actually obtained. [5]

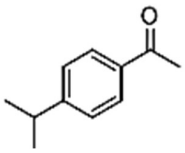
Q.3(a) Identify the product and discuss the reaction mechanism with product stereochemistry. [5]



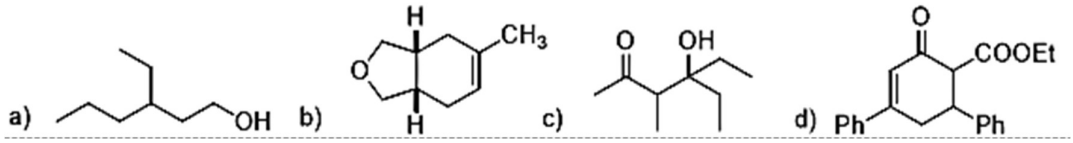
Q.3(b) Discuss the Sharpless Epoxidation and its application. [5]

Q.4(a) Define and Discuss the following term i) Umpolung Strategy ii) Functional Group Inter-conversion (FGI) iii) Synthon & Synthetic equivalent. [5]

Q.4(b) What is retrosynthetic analysis. Explain with two pathways disconnection of the following target compound: [5]



Q.5 Write down the retro-synthetic analysis of any two compounds along with synthetic scheme and possible reagents. [5+5]



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