

# BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI

## Second Semester 2022-2023

### Mid-Semester Examination (CLOSED BOOK)

Course Name: Pharmaceutical Chemistry

Course No: PHA F241

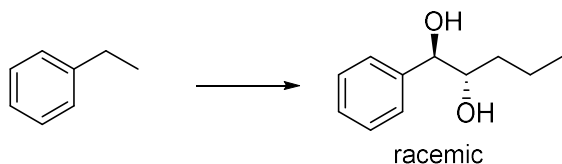
Total Marks: 30

Date: 13-03-2023

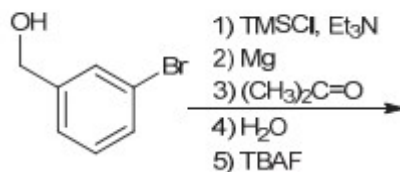
Duration: 90 (min)

**Instructions:** a) All questions are compulsory; b) Maximum marks are mentioned in the square brackets; c) Handwriting should be legible; d) Give the answers for all sub-parts together in one place; e) Answers must be based on the reagents/reactions discussed in the lectures.

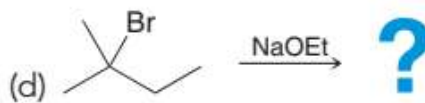
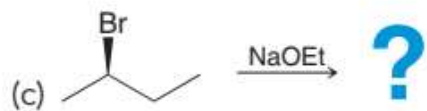
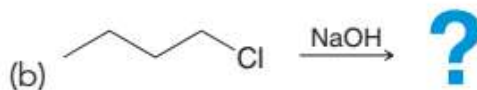
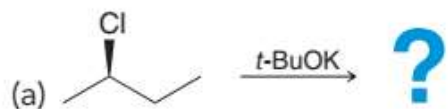
1) Provide the efficient synthesis of following transformation. You must use epoxide and Grignard's reagent chemistry at least once. [6]



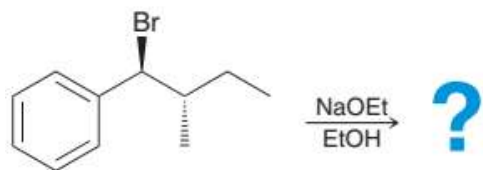
2) Draw the product of the following reaction and explain what would happen if first step in not used in this synthesis? [2]



3) Identify the major product for each of the following reactions (draw stereochemistry where applicable). [4]

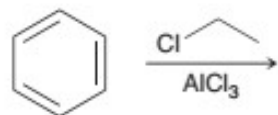


4) Draw the major product of the following stereospecific reaction with proper stereochemistry and structures. Briefly explain the steps that you have followed (e.g. bond rotation, etc.) to arrive at your answer. [3]



5) Using acetylene as your only source of carbon atoms, design a synthesis of pentanal. [5]

6) Draw the product of the following reaction. Explain why nitrobenzene doesn't undergo same reaction with the help of mechanism (draw all resonance forms of intermediate with curved arrows). [4]



7) A drug was synthesized using following reaction sequence. Provide the structures of **A-D** with proper stereochemistry. What is the stereochemical relationship between **C** and **D**? [6]

