BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI

Second Semester 2022-2023

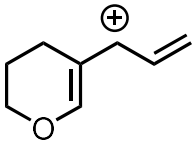
END-Semester Examination (CLOSED BOOK)

Course Name: Pharmaceutical Chemistry **Course No: PHA F241**

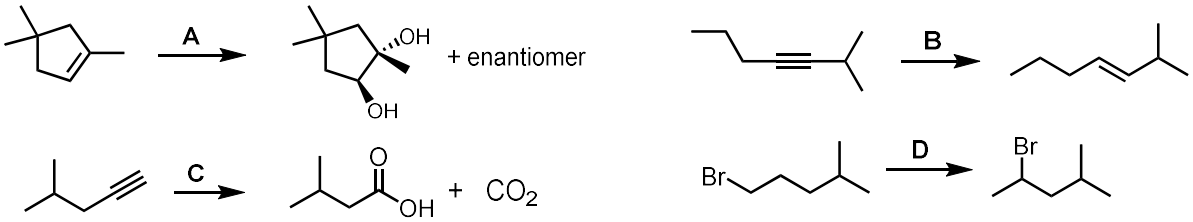
Total Marks: 15 **Date: 06-05-2023** **Duration: 60 (max)**

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.

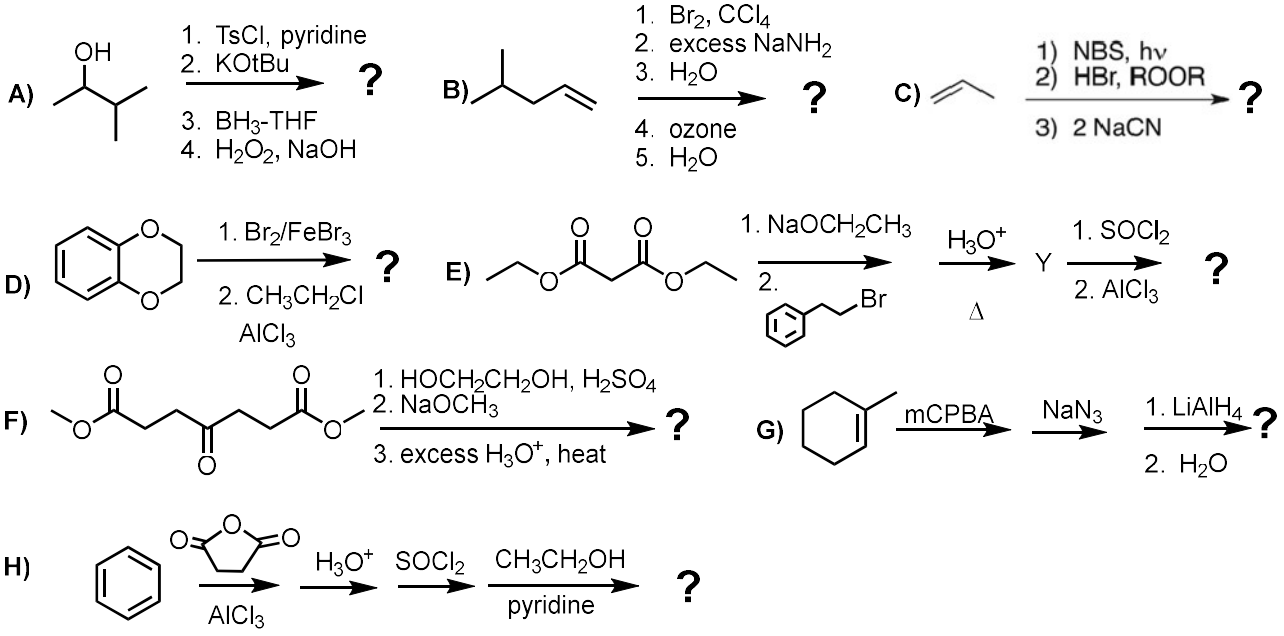
1) Draw all significant resonance structures for the following compound. Which of these is the most significant resonance structure? Explain why. [3]



2) Provide the reagents and conditions A-D in following reactions. It may involve 1or 2 separate steps. [4]



3) Provide ONLY the final product in the following reaction sequences. Draw stereochemistry wherever relevant. [8]



BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI

Second Semester 2022-2023

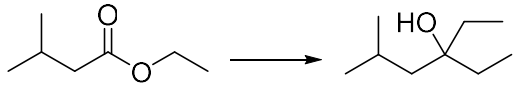
END-Semester Examination (OPEN BOOK)

Course Name: Pharmaceutical Chemistry **Course No: PHA F241**

Total Marks: 20 **Date: 06-05-2023** **Duration: 120 (min)**

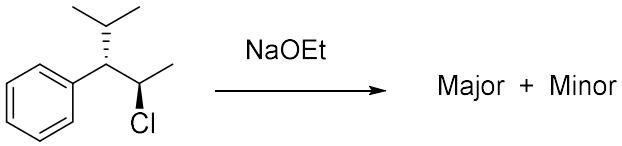
Instructions: a) All questions are compulsory, b) Maximum marks are mentioned in the square brackets, c) Handwriting should be legible, d) Give the answers for all sub-parts together in one place; e) Answers must be based on the reagents/reactions discussed in the lectures.

1) Using ethyl 3-methylbutanoate as your only source of carbon and using any other reagents necessary, propose a stepwise synthesis for the following conversion. [4]



ethyl 3-methylbutanoate

2) Following E2 reaction gives a major and a minor product. Provide their structures and explain the regio- and stereoselectivity of the reaction. [4]



3) Provide the efficient synthesis of the following transformations. [3+4+2+3 = 12]