BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI
First Semester 2022-2023
Mid-Sem Examination (Closed Book)

Course Name: Retrosynthetic Analysis   **Course No: PHA G618**

**Total Marks: 30**   **Date: 02-11-2022**   **Duration: 90 Min**

Instructions: a) All questions are compulsory; b) Give the answers for all sub-parts together in one place; c) Figures to right in square bracket indicates maximum marks; d) Handwriting should be legible e) All rough work must be done on the last sheet.

1) Give an example of the following:
a) **a3** synthon and its synthetic equivalent b) **d3** synthon and its synthetic equivalent c) two-carbon acyl anion and its synthetic equivalent d) synthesis of alcohols using 1,2-diX disconnection e) synthesis of ether using one-group C-X disconnection f) supra-retron [6]
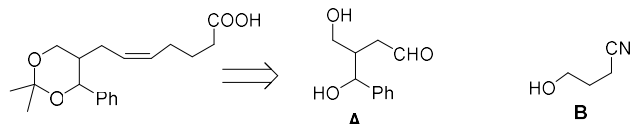
2) Provide the retrosynthetic analysis of following aromatic compound leading to a phenol derivative. Provide justification for each step. [4]
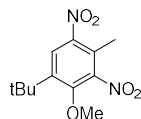
3) What problem do you foresee for the following retrosynthesis and how can you solve it? [4]
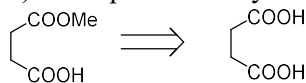
4) Following molecule is required for the synthesis of thromboxane drug. Provide its retrosynthesis leading to the **A** and **B**. [4]

5) Provide synthons and corresponding synthetic equivalents for 1,2-diCO, 1,3-diCO and 1,5-diCO disconnections. [6]

6) a) Provide the disconnection of a 1,4-diketone that requires **a1** synthon and provide the synthetic equivalents for the disconnection. [3]

b) provide the retrosynthesis of following cyclic amine using 1,4-diCO disconnection strategy. [3]