

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

CLASS: MSC  
BRANCH: CHEMISTRY

SEMESTER : I  
SESSION : MO/18

SUBJECT: CH405 PRINCIPLES OF ORGANIC SYNTHESIS

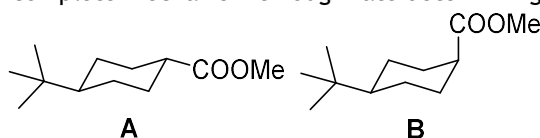
TIME: 3:00 HRS.

FULL MARKS: 50

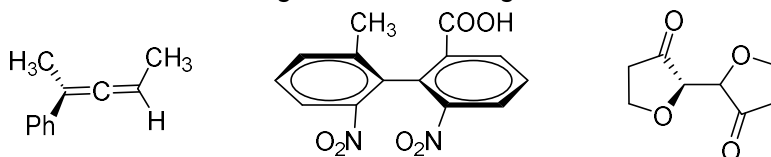
INSTRUCTIONS:

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.
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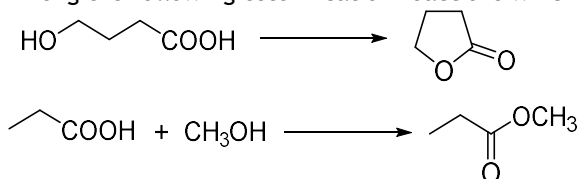
- Q.1(a) Draw and discuss the conformational properties of Cyclohexanone. NaBH<sub>4</sub> reduction of cyclohexanone is much faster in comparison to acyclic ketone. Explain [3+2]
- Q.1(b) Explain the sterically retarded reaction with the example of saponification of the following ester A & B. Draw and explain the complete mechanism through rate determining step. [5]



- Q.2(a) What is Optical Resolution? Discuss the methods of optical resolution. [5]
- Q.2(b) Determine the R/S configure of the following molecules [5]



- Q.3(a) Among the following esterification reactions which will be faster? Explain why. [5]



- Q.3(b) Discuss Curtin-hammett principle with properly labeled energy profile diagram. [5]

- Q.4(a) Discuss Hammond's postulate with energy profile diagram. [5]
- Q.4(b) Define Hammett's  $\sigma_x$  and  $\rho$  values. Discuss their physical significance through-conjugation. [5]

- Q.5(a) From the PMO and FMO theory predict the allowed electrocyclic process for  $4n\pi$  system under photochemical condition. [5]
- Q.5(b) Write short note on Cope rearrangement. Describe the regioselectivity of Diels-Alder reaction with example. [5]

:::::07/12/2018 M:::::