

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

CLASS: IMSC  
BRANCH: CHEMISTRY

SEMESTER : VIII  
SESSION : SP/19

SUBJECT SAC2003 SYNTHETIC ORGANIC CHEMISTRY

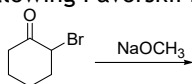
TIME: 3 Hours

FULL MARKS: 60

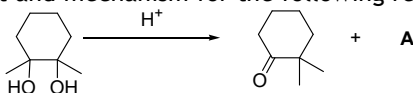
INSTRUCTIONS:

1. The question paper contains 7 questions each of 12 marks and total 84 marks.
  2. Candidates may attempt any 5 questions maximum of 60 marks.
  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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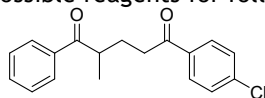
Q.1(a) Draw the complete reaction with mechanism on Benzilic Acid Rearrangement using Benzil as a starting material. Determine the product of the following Favorskii reaction. [6]



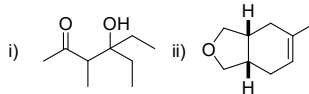
Q.1(b) Propose a rearrangement product and mechanism for the following reaction. [6]



Q.2(a) Write a note on i) Disconnection and ii) Synthons with examples. Write down the retro-synthetic analysis with synthetic scheme along with the possible reagents for following compound: [6]



Q.2(b) Write down the retro-synthetic analysis with synthetic scheme along with the possible reagents for following two compounds: [6]



Q.3(a) Define and discuss classification of metallocenes with examples. [6]

Q.3(b) Discuss two methods for synthesis of any nonbenzenoid aromatics and polycyclic aromatic compounds and their synthetic applications. [6]

Q.4(a) What are different types of cyclization reactions for constructing heterocyclic ring? Give one example of each type along with its reaction mechanism. [6]

Q.4(b) Discuss Bartoli Indole synthesis with one example and stepwise mechanism. [6]

Q.5(a) Discuss the medicinal values of Quinine. [6]

Q.5(b) Write and discuss all the synthetic steps involved in Stork synthesis of Reserpine. [6]

Q.6(a) What is Grignard Reagents? "If the Grignard reagent has a hydrogen in the  $\beta$ -position, reduction of the carbonyl group by hydride transfer may compete with the addition reaction"-discuss the statement. [6]

Q.6(b) What are the important properties of organomercury compounds? Write short note on the Li-metalation of benzene ring and heteroatom containing group substituted benzene ring. [6]

Q.7(a) What is Furukawa's reagent? Give one example of important use of organo-cadmium reagent. [6]

Q.7(b) Write short note on oxymercuration and demercuration of olefine (with mechanism and example). [6]