

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

CLASS: IMSC
BRANCH: CHEMISTRY

SEMESTER: V
SESSION : MO/2019

SUBJECT : IMC5003 ORGANIC CHEMISTRY - I

TIME: 1.5 HOURS

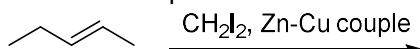
FULL MARKS: 25

INSTRUCTIONS:

1. The total marks of the questions are 30.
 2. Candidates may attempt for all 30 marks.
 3. In those cases where the marks obtained exceed 25 marks, the excess will be ignored.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. The missing data, if any, may be assumed suitably.
-

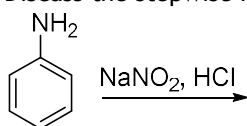
- Q1 (a) Calculate the angle strain (according to Baeyer) in a cyclopentane ring. [2]
(b) Briefly discuss the theory of strainless ring proposed by Sachse-Mohr. [3]

- Q2 (a) Define Cheletropic reaction. [2]
(b) Discuss the stepwise mechanism of the following reaction. [3]

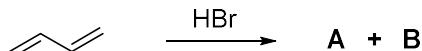


- Q3 (a) Why only addition of HBr to alkene results in anti-Markonikov's product, but not the addition of HCl or HI? [2]
(b) Draw the transition state for the $\text{S}_{\text{N}}2$ mechanism. Explain why nucleophile does backside attack only. [3]

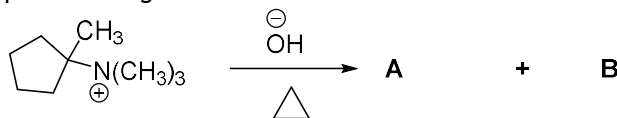
- Q4 (a) The strength of nucleophile affects the rate of a $\text{S}_{\text{N}}2$ reaction. True or false? Explain briefly. [2]
(b) Discuss the stepwise mechanism of the following reaction. [3]



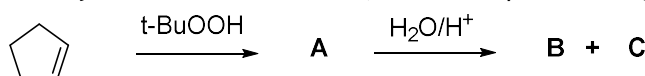
- Q5 (a) Write the structure of A and B in following reaction: [2]



- (b) Explain the fact about major and minor product formation with mechanistic details as per following reaction [3]



- Q6 (a) Identify and draw structure of A, B and C as per following reaction [2]



- (b) Draw and Discuss the mechanisms of Oxymercuration-Reduction for the hydration of propene. [3]