

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

CLASS: IMSC
BRANCH: CHEMISTRY

SEMESTER : III
SESSION : MO/2023



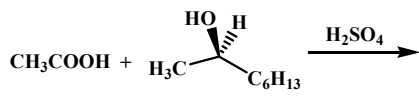

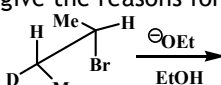
SUBJECT: CH216 ORGANIC CHEMISTRY II

TIME: 3 Hours

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. NO Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

- | | [Marks] | CO | BL |
|---|---------|----|----|
| Q.1(a) Describe Wittig reaction. Explain the general mechanism for addition of bromine to the alkene and hence arrange the reactivity order towards bromination for following compounds
$\text{CH}_2=\text{CH}_2$, $\text{CH}_2=\text{CHBr}$, $\text{MeCH}=\text{CH}_2$, $\text{MeCH}=\text{CHMe}$, $\text{Me}_2\text{C}=\text{CMe}_2$ | [2+2+2] | 1 | 2 |
| Q.1(b) Predict the product stereochemistry with mechanistic explanation for following reaction | [2+2] | 1 | 3 |
|  | | | |
| Q.2(a) Write the product obtained from the following oxymercuration-demercuration (a) and hydroboration-oxidation (b). Which one of them is following anti- Markovnikov addition of H_2O ? | [3+2] | 2 | 3 |
|  | | | |
| Q.2(b) Discuss Markownikoff and anti-Markownikoff addition. | [5] | 2 | 1 |
| Q.3(a) Write short note on condensation of ketone with ammonia and its derivatives. What happen when formaldehyde heated with sodium hydroxide? | [3+2] | 3 | 1 |
| Q.3(b) Compare the reactivity of Collins reagent and PDC (with structure). Explain the stereochemistry of the product with the help of the mechanism for the following reaction. | [2+3] | 3 | 4 |
|  | | | |
| Q.4(a) Describe Wittig reaction. Explain the general mechanism for addition of bromine to the alkene and hence arrange the reactivity order towards bromination for following compounds
$\text{CH}_2=\text{CH}_2$, $\text{CH}_2=\text{CHBr}$, $\text{MeCH}=\text{CH}_2$, $\text{MeCH}=\text{CHMe}$, $\text{Me}_2\text{C}=\text{CMe}_2$ | [5] | 4 | 2 |
| Q.4(b) Predict the product stereochemistry with mechanistic explanation for following reaction | [5] | 4 | 3 |
|  | | | |
| Q.5(a) Outline the generalized E1CB mechanism. Show the ANTI and SYN elimination product for the following E2 reaction and give the reasons for favorable pathway. | [2+3] | 5 | 4 |
|  | | | |
| Q.5(b) Write a short note on Diazonium coupling reaction. | [5] | 5 | 1 |