

M.Sc.-I (Chemistry) (CBCS Pattern) Semester - II
PSCCHT06 - Organic Chemistry

P. Pages : 3

Time : Three Hours



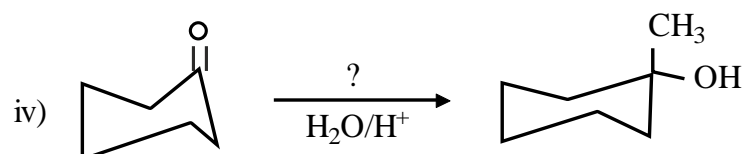
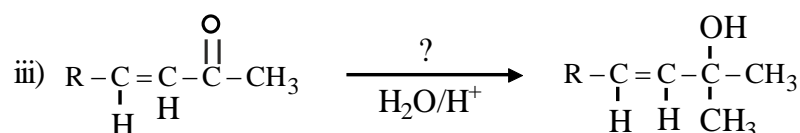
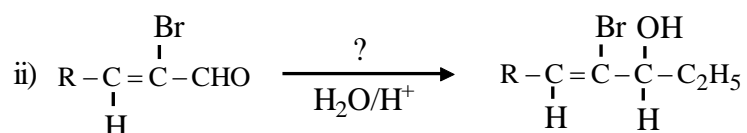
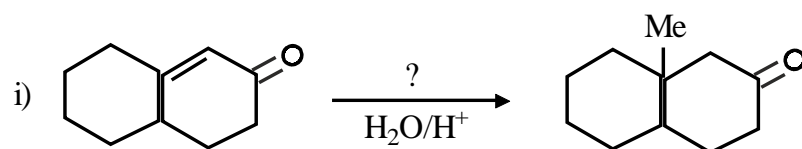
GUG/S/23/11229

Max. Marks : 80

Notes : 1. All questions are compulsory and carry equal marks.

1. a) Explain the following reactions with mechanisms. 8
i) Claisen rearrangement reaction
ii) Birch reduction

- b) 1) Use suitable organometallic reagent in following reaction 8
[CH₃MgBr / Cu - Br₂, (C₂H₅)₂Zn, (H₃C - Li)]



- 2) Explain Knoevenagel condensation with mechanism.

OR

- c) Write a note on 4
i) Hydrolysis of esters ii) Ammonolysis of esters.
d) Explain the term electrophile and nucleophile? Give the mechanism and stereochemistry of addition reaction involving nucleophiles. 4
e) Define chemo selectivity. Give the mechanism of hydrogenation of double and triple bonds. 4
f) Write the note on metal hydride reduction of unsaturated carbonyl compounds with suitable example. 4

2. a) Explain the following rearrangement reaction with mechanisms. 8
 i) Wagner-Meerwein rearrangement.
 ii) Pinacol-Pinacolone rearrangement.
- b) Explain type of free radicals. Discuss free radical substitution mechanism at an aromatic and aliphatic substrate. 8

OR

- c) Write a note on 4
 i) Hoffman rearrangement
- d) Discuss the reactivity of neighbouring group participation for aliphatic and aromatic substrate. 4
- e) What is the effect of solvent on the reactivity of free radical substitution? 4
- f) Explain following rearrangement. 4
 i) Lossen rearrangement
 ii) Beckman rearrangement
3. a) Discuss the following terms. 8
 i) Auto-oxidation
 ii) Hunsdiecker reaction
- b) Explain the Saytzeff's and Hoffman's rules in elimination reaction. 8

OR

- c) Explain : 4
 i) Fenton's reagent
 ii) Chlorosulphonation reaction
- d) Give the mechanism of E_1 reaction. 4
- e) Explain the effect of solvent and leaving group on E^2 elimination reaction. 4
- f) Write short note on Sandmeyer reaction. 4
4. a) Explain the principle of green chemistry. 8
- b) Discuss the following reaction. 8
 i) Biginelli reaction
 ii) Passeneno reaction

OR

- c) Write short note on; 4
 i) Sono chemistry
 ii) Microwave induced reaction

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|-----------|---|---|
| d) | Give green Synthesis of | 4 |
| | i) Paracetamol from phenol | |
| | ii) Ibuprofen | |
| e) | What is Nano chemistry? Explain nanotubes and nanorods. | 4 |
| f) | Explain the following reaction with example | 4 |
| | i) Photochemical reaction | |
| | ii) Rearrangement reaction | |
| 5. | a) Explain the hydrogenation of alkene. | 2 |
| | b) Write Mannich reaction. | 2 |
| | c) Explain Schmidt rearrangement. | 2 |
| | d) Write a note on neighbouring group assistance of free radical reactions. | 2 |
| | e) Explain free radical rearrangement. | 2 |
| | f) What is E ₂ elimination reaction. | 2 |
| | g) Explain solvent free reaction with example. | 2 |
| | h) Discuss the choice of solvent in green chemistry. | 2 |
