

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

P. Pages : 3

Time : Three Hours



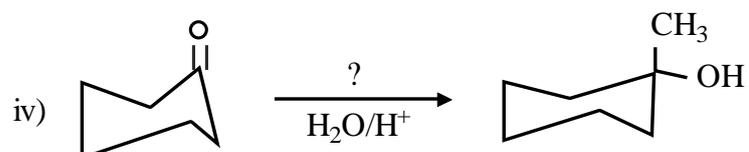
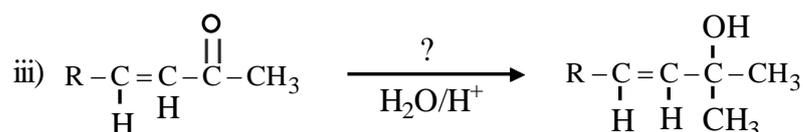
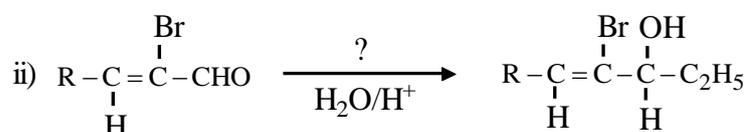
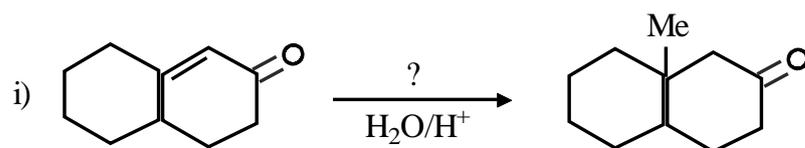
GUG/S/23/11229

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
 [$\text{CH}_3\text{MgBr} / \text{Cu} - \text{Br}_2$, $(\text{C}_2\text{H}_5)_2\text{Zn}$, $(\text{H}_3\text{C} - \text{Li})$]



- 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

- 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 E₂ elimination reaction. 2
- g) Explain solvent free reaction with example. 2
- h) Discuss the choice of solvent in green chemistry. 2
