

(i) Printed Pages: 4

Roll No. ....

(ii) Questions : 9

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Exam. Code : 

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**B.A./B.Sc. (General) 6<sup>th</sup> Semester**

**1048**

**CHEMISTRY**

**Paper-XXII : Organic Chemistry-B**

**(Same for B.Sc. Microbial and Food Technology)**

**Time Allowed : Three Hours]**

**[Maximum Marks : 22**

**Note :—** Attempt **FIVE** questions in all selecting **ONE** question from each unit. Question No. 9 is compulsory.

**UNIT—I**

1. (a) What are  $\alpha$ -amino acids ? Discuss their classification and chemical reactions involving both the functional groups present in the molecule.  
(b) Write short notes on the following :
  - (i) Isoelectric point of  $\alpha$ -amino acids.
  - (ii) Stereochemistry of  $\alpha$ -amino acids. 2,2
2. (a) Give the details involved in Merrifield solid phase peptide synthesis.  
(b) Give details for terminal residue analysis for determining the sequence of amino acids in a polypeptide chain. 2,2

## UNIT—II

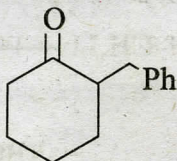
3. (a) What is Ziegler-Natta polymerization ? Discuss the mechanism involved in this polymerisation. Illustrate the mechanism by taking an appropriate example.
- (b) Write a short note on the following vinyl polymers. Discuss their type, preparation and uses :
- (i) Polyethylene
  - (ii) Polyvinylacetate
  - (iii) Polytetrafluoroethylene (PTFE)
  - (iv) Poly(methylmethacrylate). 2,2
4. Give the detailed synthesis for the following :
- (i) Nylon 66
  - (ii) Urea-Formaldehyde resin. 2,2

## UNIT—III

5. (a) Using the malonic ester synthesis to give details for the synthesis of the following compounds :
- (i) 3-Methylbutanoic acid
  - (ii)  $\text{HOOCCH}_2\text{CH}_2\text{COOH}$
- (b) Give the detailed outline for the preparation of 3-methyl-2-pentanone starting from acetoacetate ester. 2,2
6. (a) Explain the phenomenon of tautomerism observed in ethyl acetoacetate. Also give the evidence in support of the keto-form.

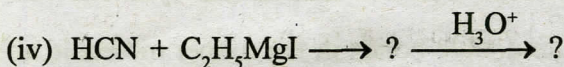
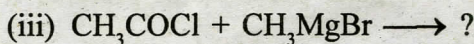
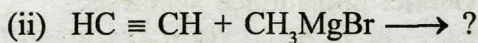


- (b) Give the mechanism involved in the alkylation of enamines. Using this reaction give the preparation of 2-benzylcyclohexanone i.e. 2,2

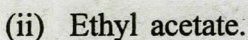
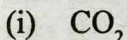


#### UNIT—IV

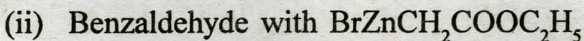
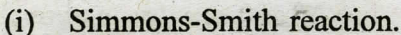
7. (a) Complete the following reactions :



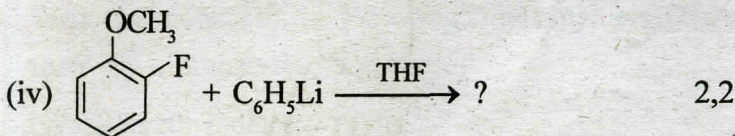
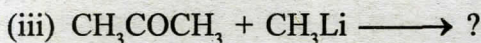
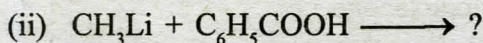
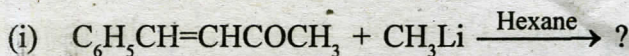
- (b) Give the mechanistic details for the reaction of  $\text{C}_2\text{H}_5\text{MgBr}$  with the following :



8. (a) Discuss the mechanistic details for the following reactions :



(b) Complete the following reactions :



**(Compulsory Question)**

9. (i) Give the mechanistic details for the synthesis of  $\alpha$ -amino acids using Gabriel phthalimide synthesis.
- (ii) What are the biological functions of proteins ?
- (iii) Differentiate between natural and synthetic rubbers.
- (iv) How do double bonds in the rubber molecule affect their structure and reactivity ?
- (v) The conversion of acetone ( $\text{pK}_a = 20$ ) into its enolate anion with  $\text{NaOH}$  is reversible and the equilibrium lies far towards the reactant's side. Account for this observation.
- (vi) Grignard reagents can undergo nucleophilic substitution and nucleophilic addition reactions. Give one example of each. 1×6