(b) What is Hinsberg's reagent ? How can it be used to differentiate primary, secondary and tertiary amines ? **4**

(c) How can we prepare :

(i) *p*-bromoaniline from aniline

(ii) Ethylamine from phthalimide. **4**

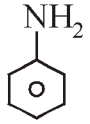
(d) Complete the following reaction. Give the name of the reaction and its mechnism : **4**

$RNH_2 + CHCl_3 + KOH \longrightarrow$

5. (a) Describe Hofmann elimination. What is the difference between Hofmann elimination and Saytzeff's rule. **3**

(b) Complete the following reactions : **3**

(i) $R\text{-}X + NH_3 \longrightarrow$

(ii)  $+ Br_2(aq) \longrightarrow$

(iii) $ArN_2^+X^- + H_2O \longrightarrow$

(c) What is Coupling reaction ? Explain the mechanism and the experimental conditions in this reaction. **4**

Subject Code—52557

B. Sc. EXAMINATION

(Main/Re-appear) (Batch 2018 Onwards)

(Third Semester)

CHEMISTRY

CCL-305 (Course VI)

Organic Chemistry-III

(Functional Group Organic Chemistry-II)

Time : 3 *Hours* *Maximum Marks :* 80

Note : Attempt *Five* questions in all. Q. No. **1** is compulsory. All questions carry equal marks.

1. Compulsory question containing eight parts of equal marks :

(a) What is nucleophilic acyl substitution ?

(b) Why acid amides are weakly basic in nature ?

(c) Out of aliphatic and aromatic diazonium salt, which one is more stable and why ?

(d) Explain why aniline is a weaker base than methylamine.

(e) What are α-amino acids ? Define essential and non-essential amino acids.

(f) Discuss the amphoteric nature of amino acids.

(g) Define epimers and anomers. Give example.

(h) What is glycosidic linkage ? **8×2=16**

Unit I

2. (a) Explain the alkaline hydrolysis of esters with mechanism. Give the evidence in favour of the mechanism. **4**

(b) What are acid derivatives ? Explain the order of stability of different acid derivatives towards nucleophilic acyl substitution. **4**

(c) Explain Perkin reaction wtih mechanism. Give the name of the product formed in this reaction. **4**

(d) Bring the conversion of acid chlorides into :

(i) Esters

(ii) Acetamide. **4**

3. (a) Describe the HVZ reaction with mechanism. **3**

(b) What is the role of acid catalyst in nucleophilic acyl substituion ? **2**

(c) Why acetyle chloride is more reactive than acid anhydrides ? **3**

(d) Discuss Reformatsky reaction with mechanism. **4**

(e) Complete the following reactions : **4**

(i) $CH_3(CH_2)_3COOH + SOCl_2 \longrightarrow$

(ii) Benzoyl Chloride + 1-Butanol $\longrightarrow$

Unit II

4. (a) How would you prepare aniline from benzamide ? Give the mechanism of the reaction. **4**

(d) What is diazotisation ? Explain with mechanism. **4**

(e) How can benzene be prepared from diazonium salt ? **2**

Unit III

6. (a) Explain the enzymatic method for the c-terminal residue analysis of peptides. **3**

(b) Explain solid phase peptide synthesis in detail. **4**

(c) Write the formula of alanine. How can it be synthesised from Gabriel phthalimide reaction ? **4**

(d) Write noted on the following : **5**

(i) Secondary structure of proteins

(ii) Electrophoresis.

7. (a) Explain the synthesis of a dipeptide with explanation of N-protection and C-activation. **4**

(b) Explain the ninhydrin test and formation of metal chelates by amino acids. **4**

(c) Describe the following : **4**

(i) Strecker's synthesis

(ii) Isoelectric point.

(d) Describe the Edmann method for N-terminal residue analysis of amino acids. **4**

Unit IV

8. (a) Explain the following reactions :

(i) Kiliani-Fischer Synthesis

(ii) Wohl degradation. **4**

(b) Explain the process of mutarotation with its mechanism. **4**

(c) What are Oligosaccharides ? Discuss the structure of maltose and sucrose. **4**

(d) Give general properties of monosaccharides and disaccharides. **2**

(e) What are absolute and relative configuration ? **2**

9. (a) Draw the open chain structure of Glucose. What are the limitations of open chain structure ? **4**

(b) Give the cyclic structure and Haworth projection formulae for : **4**

(i) α-D-Glucopyranose

(ii) β-D-fructofuranose.

(c) What are carbohydrates ? How are they classified ? **3**

(d) Explain the following : **3**

(i) Ruff degradation

(ii) Configuration of monosaccharides.

(e) Differentiate between starch and cellulose. **2**