

**Bachelor of Science (B.Sc.) Semester—III Examination**  
**CHEMISTRY (ORGANIC CHEMISTRY)**  
 (New & Old)  
 Compulsory Paper—II

Time : Three Hours]

[Maximum Marks : 50

N.B. :— (1) All FIVE questions are compulsory and carry equal marks.

(2) Give diagrams and chemical reactions wherever necessary.

1. (A) What are activating and deactivating groups ? Explain o-, p- directive influence of  $-NH_2$  group in aniline for further electrophilic substitution. 5
- (B) Explain the alkaline hydrolysis of tert butyl bromide with reference to :
- (i) Reaction
  - (ii) Kinetics
  - (iii) Mechanism
  - (iv) Energy profile diagram. 5

OR

- (C) Write Ullmann synthesis of biphenyl. How it reacts with conc.  $HNO_3$  in presence of conc.  $H_2SO_4$  ? 2½
- (D) How is chlorobenzene obtained from :
- (i) Phenol and
  - (ii) Benzene diazonium chloride ? 2½
- (E) Give synthesis and uses of DDT. 2½
- (F) How will you prepare following :
- (i) Phosgene and
  - (ii) Freon from Carbon tetrachloride ? 2½
2. (A) How is ethylene glycol obtained from (i) Ethylene (ii) 1, 2-dibromoethane ? How will you convert glycerol into (i) Isopropyl iodide (ii) Trinitroglycerine ? 5
- (B) Discuss structure and Bonding in Phenol. Explain its acidic character. What is the action of phenol with :
- (i) Conc.  $H_2SO_4$  at  $100^\circ C$
  - (ii) Diazonium chloride ? 5

OR

- (C) Write a note on Gatterman Synthesis. 2½
- (D) What are alcohols ? Explain the classification of alcohols with suitable example. 2½

(E) Explain Carboxylation and acylation reaction of phenol.

(F) What is the action of ethylene glycol with :

2½

(i)  $\text{HIO}_4$  and

(ii) Conc  $\text{H}_2\text{SO}_4$  ?

3. (A) Explain the structure of carbonyl group. How will you prepare following :

2½

(i) Acetaldehyde from acetyl chloride

(ii) Acetophenone with Benzonitrile ?

5

(B) What is Knoevenagel Reaction ? Explain the mechanism of Knoevenagel condensation

5

OR

(C) What is action of dil. alkali solution on aldehyde containing  $\alpha$ -hydrogen ? Name the reaction.

2½

(D) Write a note on Wittig reaction.

2½

(E) Write a note on Baeyer-Villiger oxidation of Ketones.

2½

(F) What is Mannich Reaction ? Explain with reaction.

2½

4. (A) Discuss the acidity of Carboxylic acids. What is the effect of Electron donating and electron withdrawing group on acidity of carboxylic acid ?

5

(B) Give the following conversion :

(i) Acetyl chloride to acetic acid

(ii) Acetic anhydride to acetamide

(iii) Ethyl acetate to acetone

(iv) Acetamide to methyl amine and

(v) Succinic acid to succinic anhydride.

5

OR

(C) Write a note on claisen condensation reaction of ester.

2½

(D) What is the action of crotonic acid with (i)  $\text{KOH}$  (ii)  $\text{PCl}_5$  ?

2½

(E) Explain acidic hydrolysis of ester.

2½

(F) How will you prepare phthalic acid from O-xylene ? What is the action of heat on phthalic acid ?

2½

5. Attempt any TEN of the following :—

1

(i) Give the uses of BHC.

1

(ii) How is toluene obtained from benzene ?

AHK/KW/19/1080

- (iii) What is the action of sunlight and air on chloroform ? 1
- (iv) What is action of  $\text{PCl}_5$  on Ethylene glycol ? 1
- (v) How is phenol obtained from chlorobenzene ? 1
- (vi) Write the structure and IUPAC name of glycerine. 1
- (vii) Write IUPAC name of  $\text{CH}_3\text{CH}_2\text{CH}_2\overset{\text{H}}{\underset{|}{\text{C}}}=\text{O}$ . 1
- (viii) Give the reduction reaction of Acetaldehyde with  $\text{NaBH}_4$ . 1
- (ix) What is the action of Fehling solution on aldehydes ? 1
- (x) What happens when acetic acid is reacted with ethanol ? 1
- (xi) What is the action of thionyl chloride on carboxylic acid ? 1
- (xii) What happens when succinic acid is heated ? 1