NKT/KS/17/5113

Bachelor of Science (B.Sc.) Semester—III (C.B.S.) Examination

CHEMISTRY

(Organic Chemistry)

Paper—II

Time : Three Hours] [Maximum Marks : 50

N.B. :— (1) All **FIVE** questions are compulsory.

(2) Write chemical equations and draw diagrams wherever necessary.

1. (A) What are activating and deactivating groups ? Explain o, p-directive influence of $-NO_2$ group in nitrobenzene for further electrophilic substitution. 5

(B) Explain the alkaline hydrolysis of ter. butyl bromide with reference to :

(i) Reaction

(ii) Kinetics

(iii) Mechanism

(iv) Energy profile diagram. 5

OR

(C) How will you prepare biphenyl from iodobenzene ? Name the reaction. 2½

(D) How is chlorobenzene obtained by :

(i) Sandmayer's reaction and

(ii) Raschig's process. 2½

(E) Give the preparation of chloroform from ethanol. 2½

(F) Give synthesis and uses of DDT. 2½

2. (A) What is the action of following on ethylene glycol :

(i) $Pb(CH_3COO)_4$

(ii) Dilute HNO_3

Write note on Pinacol-Pinacolone rearrangement. 5

(B) Discuss the mechanism of Reimer-Tiemann Reaction. 5

OR

(C) How will you convert glycerol into following compound :

(i) Glycerol triacetate

(ii) Trinitroglycerine. 2½

(D) Explain Gatterman synthesis reaction. 2½

(E) What are Alcohols ? How monohydric alcohols are classified ? 2½

(F) Discuss acidic nature of Phenol on the basis of resonance stabilization of Phenoxide ions. 2½

3. (A) What is Knoevenagel reaction ? Explain the mechanism of Knoevenagel condensation. 5

(B) How will you obtain :

(i) Benzaldehyde from benzoyl chloride and

(ii) Acetophenone from benzonitrile ?

What is the action of $LiAlH_4$ on :

(i) Acetaldehyde

(ii) Acetone ? 5

OR

(C) Explain the structure of carbonyl group in aldehydes and ketones. 2½

(D) Write a note on Cannizzaro's reaction. 2½

(E) What is the action of following on acetaldehyde :

(i) Tollens Reagent

(ii) Fehling solution ? 2½

(F) Explain Wolf-Kishner reaction. 2½

4. (A) Explain the acidity of carboxylic acids. What is the effect of substituents on it ? 5

(B) Give following conversions :

(i) Acetyl chloride to acetic acid

(ii) Acetamide to ethyl amine

(iii) Acetic anhydride to ethyl acetate

(iv) Ethyl acetate to acetamide

(v) Ethyl acetate to acetic acid. 5

OR

(C) What is the effect of heat on :

(i) Succinic acid and

(ii) Phthalic acid ? 2½

(D) Explain Esterification reaction with suitable example. 2½

(E) Write a note on Hell-Volhard-Zelinsky reaction. 2½

(F) Write a note on Claisen Condensation reaction. 2½

5. Solve any **ten** of the following :

(i) What is the effect of fuming HNO_3 on Toluene ? 1

(ii) Give the uses of BHC. 1

(iii) Identify activating and deactivating groups :

(a) $-NH_2$ and

(b) $-NO_2$. 1

(iv) Draw the structure of 3,3-dimethyl butane-2-one. 1

(v) Give the uses of glycerine. 1

(vi) Draw resonance structure of phenoxide ion. 1

(vii) Give the IUPAC name of $CH_3 - \overset{\overset{O}{\|}}{C} - CH_2 - CH_3$. 1

(viii) Complete the following reaction :

$$H-\overset{\overset{H}{|}}{C}=O+[O] \xrightarrow[H_2SO_4]{K_2Cr_2O_7} \quad ?$$ 1

(ix) Find 'A' compound :

$$\text{'A'} + H_2 \xrightarrow{Pd/BaSO_4} CH_3\overset{\overset{H}{|}}{C}=O + HCl$$ 1

(x) What is the action of Bromine on Cinnamic acid ? 1

(xi) How will you prepare Phthalic acid from o-xylene ? 1

(xii) Name any two derivatives of carboxylic acid. 1