

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 $-\text{NO}_2$ 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) $\text{Pb}(\text{CH}_3\text{COO})_4$
 - (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) $-\text{NH}_2$ and
- (b) $-\text{NO}_2$. 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 $\text{CH}_3 - \overset{\text{O}}{\parallel}{\text{C}} - \text{CH}_2 - \text{CH}_3$. 1
- (viii) Complete the following reaction :
- $$\text{H} - \overset{\text{H}}{\underset{|}{\text{C}}} = \text{O} + [\text{O}] \xrightarrow[\text{H}_2\text{SO}_4]{\text{K}_2\text{Cr}_2\text{O}_7} ?$$
- 1
- (ix) Find 'A' compound :
- $$'A' + \text{H}_2 \xrightarrow{\text{Pd/BaSO}_4} \text{CH}_3 - \overset{\text{H}}{\underset{|}{\text{C}}} = \text{O} + \text{HCl}$$
- 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