

KNT/KW/16/5113

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

**CHEMISTRY (CH-302)**

**(Organic Chemistry)**

**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 –OH group in benzene for further electrophilic substitution reaction. 5
- (B) Discuss mechanism of  $\text{SN}^1$  reaction with its energy profile diagram. 5

**OR**

- (C) Write Ulmann synthesis of biphenyl. How it reacts with conc.  $\text{HNO}_3$  in presence of conc.  $\text{H}_2\text{SO}_4$  ? 2½
- (D) How is ethane obtained by :
- (i) Wurtz reaction, and
- (ii) Kolbe's reaction ? 2½
- (E) What happens when Toluene is reacted with :
- (i) Fuming  $\text{HNO}_3$ , and
- (ii) Chlorine in diffused sunlight ? 2½
- (F) Give synthesis and uses of B.H.C. 2½
2. (A) How will you prepare ethylene glycol from :
- (i) Ethylene bromide, and
- (ii) Ethylene oxide ?
- Write note on Pinacol-Pinacolone rearrangement. 5
- (B) Discuss mechanism of Reimer-Tiemann reaction. 5

**OR**

- (C) Write note on Hydrogen Bonding with suitable example. 2½
- (D) Explain acidic nature of Phenol. 2½
- (E) What is the action of excess of HI on glucerol ? 2½
- (F) Write a note on structure and bonding in Phenol. 2½
3. (A) Discuss the mechanism of Perkin reaction. 5
- (B) Explain the structure of carbonyl group. How will you prepare following :
- (i) Acetaldehyde from acetyl chloride, and
- (ii) Acetophenone from benzonitrite ? 5

**OR**

- (C) Write a note on Cannizzaro's reaction. 2½
- (D) Give the reaction of acetaldehyde with :
- (i) Tollens Reagent and
- (ii) Fehling solution. 2½
- (E) Write a note on Wittig reaction. 2½
- (F) Give the general mechanism of nucleophilic addition to carbonyl group. 2½
4. (A) What is the effect of following on carboxylic acid :
- (i) Electron donating group and
- (ii) Electron withdrawing group ? 5
- (B) What is the action of following on acetic acid ?
- (i)  $\text{PCl}_3$  and
- (ii)  $\text{SOCl}_2$  ?
- What happens when :
- (i) Acetyl chloride reacts with ethyl amine,
- (ii) Acetyl chloride reacts with acetic acid ? 5

**OR**

(C) Write short accounts on Hell-Volhard-Zelinsky reaction. 2½

(D) Write names and give examples of any four derivatives of carboxylic acids. 2½

(E) What is the action of heat on :

(i) Succinic acid, and

(ii) Phthalic acid ? 2½

(F) Give Claisen-condensation reaction of ethyl acetate. 2½

5. Attempt any **TEN** of the following questions :—

(i) Classify the following as activating and deactivating groups :

(a)  $-\text{NH}_2$  and (b)  $-\text{NO}_2$  1

(ii) Give the uses of DDT. 1

(iii) How will you prepare Carbon tetrachloride from methane ? 1

(iv) Name and draw the structure of Polyhydric alcohol. 1

(v) Draw resonance structure of Phenoxide ion. 1

(vi) Give chemical reaction of Phenol with bromine water. 1

(vii) Give the structural formula of 2-methyl propanal. 1

(viii) Complete the following reaction :



(ix) Draw orbital structure of carbonyl group. 1

(x) Give the IUPAC name of  $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOH}$ . 1

(xi) Give the products of hydrolysis ethyl acetate. 1

(xii) How crotonic acid is obtained from crotonaldehyde ? 1