

KNT/KW/16/5133

Bachelor of Science (B.Sc.) Semester—III (C.B.S.) Examination**INDUSTRIAL CHEMISTRY (ICH-302)****Paper—II**

Time : Three Hours]

[Maximum Marks : 50

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

(2) Draw diagrams and write equations wherever necessary.

1. (A) Explain the mechanism of conversion of benzene to m-dinitrobenzene. 5
- (B) How will you convert the following :
 - (i) Chlorobenzene to para nitrobenzene.
 - (ii) Acetanilide to para nitroacetanilide ? 5

OR

- (C) Write a note on nitration of paraffinic hydrocarbon. 2½
- (D) Discuss the kinetic of nitration and toluene. 2½
- (E) Explain mechanism of Nitration of Acetanilide. 2½
- (F) How will you distinguish continuous and batch nitration ? 2½
2. (A) How is commercial chlorobenzene and chloral manufacture ? 5
- (B) Explain with suitable reagents and examples used for halogenation of aromatic side chain and nuclear halogenation. 5

OR

- (C) How will you manufacture dichlorofluoro-methane. commercially ? 2½
- (D) Write a note on kinetic of halogenation with suitable example. 2½
- (E) How will you prepare dichloromethane industrially ? 2½
- (F) Describe the method of manufacturing of monochloro acetic acid. 2½
3. (A) Discuss the mechanism of sulphonation of alkyl benzene. 5
- (B) How is Benzoic acid prepared industrially ? 5

OR

- (C) Give the mechanism of sulphonation of Naphthalene. 2½
- (D) Give the physical factor affecting sulphonation. 2½
- (E) How is Acetaldehyde synthesised ? 2½
- (F) Distinguish between Batch vs Continuous sulphonation. 2½
4. (A) Discuss the mechanism for alkylation of benzene. Explain the thermodynamic aspects of the reaction. 5
- (B) Explain the process of hydrogenation of oil with the help of flow sheet diagram. 5

OR

- (C) What are different catalysis used for hydrogenation reaction ? 2½
- (D) How is methanol manufacture from carbon monoxide and hydrogen ? 2½
- (E) Explain role of hydrogenating agent in reaction. 2½
- (F) Draw the flow sheet diagram of continuous process for manufacture of alkyl benzene. 2½
5. Attempt any **TEN** of the following :
- (i) How will you form the nitronium ion in the reaction of conc HNO_3 and conc H_2SO_4 ?
 - (ii) What is the role of conc H_2SO_4 during nitration ?
 - (iii) Write any two properties of nitro paraffins.
 - (iv) Give any two chlorinating agents.
 - (v) How will you differs iodination from chlorination ?
 - (vi) Write the structural formula of dichlorofluoromethane.
 - (vii) Define oxidation reaction.
 - (viii) Give the reaction where ozone is used as an oxidising agent.
 - (ix) Which electrophile is used for sulphonation of benzene ?
 - (x) Define hydrogenation of acid.
 - (xi) How many types of alkylation ?
 - (xii) Why fat is solid and oil is liquid at room temperature ? 10×1=10