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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 nitroacentanilide ? 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

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(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 benezene ?

(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

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