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SARDAR PATEL UNIVERSITY
B.Sc. (V Semester) EXAMINATION
2012

Tuesday, 27th November
2.30 pm to 5.30 pm

US05CICH02 - INDUSTRIAL CHEMISTRY
UNIT PROCESS IN ORGANIC MANUFACTURE

Total Marks : 70

Formatted: Centered

Q.1 MCQs: Write the correct answers in your answer sheet. [10]

1. Which of the following gives conversion of picric acid from benzene ?
(a) oxy-nitration (b) oxidation
(c) nitration (d) hydrolysis
2. During nitration process, H_2SO_4
(a) removes water produced (b) produce nitryl ion
(c) both (a) and (b) (d) none of these
3. The uses of sulfamates are/is.....
(a) Herbicides (b) Sweetening agent
(c) Blood anti co-agulant (d) All of these
4. Fuming sulfuric acid is
(a) $H_2SO_4 + H_2O$ (B) $H_2SO_4 + Cl_2$
(c) $H_2SO_4 + SO_3$ (d) none of these
5. Which of the following type of reactors is used in the process of chlorobenzene ?
(a) lead/glass (b) polymer lined
(c) stainless steel lined (d) all of these
6. Which of the following catalyst is used in the oil hardening?
(a) Al (b) Ni (c) Hg (d) Cu
7. Which of the following is a hydrolyzing agent ?
(a) Water + acid (b) Benzene
(c) Paraffin (d) All of these
8. Which of the following product is observed for the given reaction....?
 $CH_2=C=O + C_2H_5OH \longrightarrow$ _____
(a) $CH_3COOC_2H_5$ (b) $CH_3COC_2H_5$
(c) $C_2H_5COOC_2H_5$ (d) No reaction.
9. A vortex type of agitation is done in
(a) Schimid nitration (b) Biazzi nitration
(c) Both of them (d) None of them
10. Conversion of alcohol to aldehyde is an example of
(a) oxidation (b) Alkylation
(c) Reduction (d) None of these.

- Q.2 Short Questions : **(Any Ten)** [20]
1. Give the function of sulfuric acid during nitration.
 2. What is oxy-nitration ?
 3. Discuss advantages of batch process for nitration.
 4. Explain the term : sulfonation.
 5. Discuss chromic acid as oxidising agent.
 6. Write sulfonating agents.
 7. What is esterification? Show it with suitable reaction.
 8. Discuss various alkylating agents.
 9. What is iodination reaction ?
 10. Give mechanism of electrophilic substitution Chlorination reaction.
 11. Explain the term : Hydrogenation.
 12. Give the mechanism of Friedel-Craft's alkylation reaction.
- Q.3 (a) Write a short note on : Oxy-nitration. [05]
 (b) Discuss various reduction methods. [05]
- OR**
- Q.3 (a) Give manufacturing of Nitrobenzene by continuous process using fortified spent acid. [07]
 (b) Give advantages of continuous process over batch process. [03]
- Q.4 (a) Discuss commercial manufacturing of benzene sulfonic acid. [07]
 (b) Discuss the uses of sulfamates. [03]
- OR**
- Q.4 (a) Give various oxidising agents with their effective reactions. [06]
 (b) Explain liquid phase and Vapour phase oxidation. [04]
- Q.5 (a) Draw the flow diagram and discuss the manufacturing of chloro benzene [06]
 (b) Discuss various methods for chlorination reaction. [04]
- OR**
- Q.5 (a) Discuss hydrogenation of Acid and Ester to Alcohol. [06]
 (b) Explain hardening of vegetable oil. [04]
- Q.6 What is catalytic esterification? Discuss manufacturing of Ethyl acetate with flow diagram. [10]
- OR**
- Q.6 Give a brief note on : Hydrolysis [10]

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