

SEAT No. _____

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Sardar Patel University

B. Sc. (Semester – V) Examination

Date: 26-12-2020, Saturday

Time: 02:00pm – 04:00pm

Industrial Chemistry

COURSE NO: US05CICH02 (Unit Processes in Organic Manufacturing)

Notes: Figures to the right indicate full marks.

Total marks: 70

Q.1 Answer the following Multiple-Choice Questions. (All are compulsory) (10)

- Mixed acid used for nitration is a mixture of.....
 - $\text{HNO}_3 + \text{H}_2\text{SO}_4$
 - $\text{CH}_3\text{COOH} + \text{HCl}$
 - $\text{H}_2\text{SO}_4 + \text{HCl}$
 - All of these.
- Which of the following is a unit process?
 - Alkylation
 - Distillation
 - Mixing
 - None of these.
- Nitration is _____ reaction.
 - Electrophilic substitution reaction
 - Nucleophilic substitution reaction
 - Electrolysis reaction
 - Precipitation reaction
- Preparation of HCHO from CH_4 is the example of
 - Combination of dehydrogenation & removal of Oxygen
 - Combination of hydrogenation & introduction of Oxygen
 - Combination of dehydrogenation & introduction of Oxygen
 - All of these.
- Benzoyl Peroxide is obtained by reacting a...
 - $2\text{C}_6\text{H}_5\text{COCl} + \text{Na}_2\text{O}_2$
 - $2\text{C}_6\text{H}_5\text{CH}_2\text{Cl} + \text{Na}_2\text{O}_2$
 - $2\text{C}_6\text{H}_5\text{CH}_2\text{COCl} + \text{Na}_2\text{O}_2$
 - $2\text{SO}_2\text{Cl} + \text{Na}_2\text{O}_2$.
- Fuming Sulfuric acid is.....
 - $\text{H}_2\text{SO}_4 + \text{SO}_3$
 - $\text{H}_2\text{SO}_4 + \text{H}_2\text{O}$
 - $\text{H}_2\text{SO}_4 + \text{Cl}$
 - All of these.
- Halogenation may involve reactions of.....
 - Addition
 - Substitution of hydrogen
 - Replacement of functional group
 - All of above.
- The direct reduction of carboxyl group to an alcohol at temperature usually from ____
 - $300-400^\circ\text{C}$
 - $700-900^\circ\text{C}$
 - $1000-1100^\circ\text{C}$
 - $0-5^\circ\text{C}$
- An active catalyst for hydrogenating the lauryl ester of coconut oil fatty acid is...
 - Copper- ammonium chromate
 - Copper
 - Nickel
 - Copper- ammonium sulphate.
- A reaction of $\text{KCN} + \text{H}_2\text{O}$ to give HCN is known asreaction
 - Hydrolysis
 - Hydrogenation
 - Esterification
 - None of these.

[1]

[P.T.O]

Q.2 Are the following statements true or false? (All are compulsory) (08)

1. Drying is not an example of "unit operation". True / False?
2. During nitration process, H₂SO₄ removes water from reaction. True / False?
3. Barbet process operated in batch at 160-180 °C. True / False?
4. Conversion of alcohol to an Aldehyde is the example of Oxidation. True / False?
5. Phosphorous trichloride is used as a catalyst in preparation of monochloroacetic acid. True / False?
6. Nickel is the most commonly used catalyst in oil hardening. True / False?
7. Benzene is not a hydrolysis agent. True / False?
8. In gold has proposed 08 possible mechanism for ester hydrolysis. True / False?

Q.3 Answer the following short questions (Attempt Any 10 out of 12) (20)

1. Write use of Nitro & Amino compounds.
2. Giving example, Write a technique of partial reduction.
3. Define term unit Process and unit Operations.
4. Define a term Sulfonation.
5. Define a term Sulfoalkylation.
6. Define a term Sulfoxidation.
7. Write a mechanism for addition type chlorination reaction.
8. Write a reaction for "Sand-Mayer reaction".
9. Outline applications of halogenating compounds.
10. Giving examples, define term esterification reactions.
11. What is trans-esterification? Give an example.
12. Enlist various type of hydrolysis reaction.

Q.4 Answer the following Long questions (Attempt Any 04) (32)

1. Giving manufacturing process of Aniline, discuss the Bechamp reduction.
2. Write a notes on "Oxy nitration reaction".
3. Discuss the manufacturing of "Acetic acid".
4. Giving definition of Oxidation reaction, Discuss the different types of oxidizing agents and oxidative reactions.
5. Discuss the manufacturing process of "Chloro-benzene from Benzene".
6. Write note on "Hydrogenation of vegetable oil".
7. Write note on Different mechanism of Hydrolysis reactions.
8. Write note on Esterification of Carboxylic acid derivatives.