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Seat No._____

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SARDAR PATEL UNIVERSITY

M. Sc. - INDUSTRIAL CHEMISTRY, Semester - 2 Examinations

Subject: PS02CICH23 - Unit processes

Monday, Dt. 18-03-2019

Time: 10:00 a.m. to 01:00 p.m. **Total Marks: 70**

Q. 1 **Multiple choice questions (Attempt all)** [08]

1 Halogenations may carried out by _____.
(a) Addition (b) Substitution
(c) Replacement (d) All of these

2 Which catalyst is used for manufacture of acetic acid?
(a) stearic acid (b) boron Trifluoride
(c) Manganese acetate (d) Platinum

3 Nitration of toluene shows _____ kinetics.
(a) 0 order (b) 0.5 order
(c) first order (d) second order

4 Sulfonation of benzene by batch process may complete in ____ hrs.
(a)10 (b) 14
(c) 28 (d) 40

5 Ingold has proposed _____possible mechanisms for ester hydrolysis.
(a) 2 (b) 4
(c) 6 (d) 8

6 Esterification catalysts are _____in nature.
(a) acidic (b) basic
(c) neutral (d) all of these

7 Which catalyst is use in manufacturing of phthalic anhydride?
(a) V_2O_5 (b) BF_3
(c) $AlCl_3$ (d) HNO_3

8 Oxidation of o-xylene may produce _____.
(a) phthalic anhydride (b) acetic acid
(c)ethanol (d) benzoic acid

[P.T.O]

(1)

Q. 2 **Answer the following short question (Any seven)** [14]

1 Define fluorination.
2 Enlist various types of alkylation.
3 Define sulfation.
4 Write safety measures of nitrators.
5 Explain in brief about catalytic esterification.
6 Define esterification.
7 Draw the labelled block diagram of manufacturing of vinyl acetate.
8 Define oxidation.
9 Define hydration.

Q.3 (a) With the help of labelled diagram, explain the manufacture of BHC. [06]
(b) Discuss the manufacturing of petroleum alkylates by sulfuric acid alkylation. [06]

OR

(b) Explain with the help of flow diagram the manufacture of Chlorobenzene. [06]

Q.4 (a) Write a note on Schmidt and biazzi nitrator. [06]
(b) Write a note on the manufacture of nitrobenzene. [06]

OR

(b) Write a note on mono sulfonation of benzene using a suitable diagram. [06]

Q.5 (a) Write a note on **i.** Acid hydrolysis **ii.** Alkali hydrolysis [06]
(b) Explain in details thermodynamics and mechanism of hydrolysis. [06]

OR

(b) With the help of flow diagram, explain the manufacture of ethanol. [06]

Q.6 (a) With the help of flow diagram, explain the manufacture of methanol from CO and H_2. [06]
(b) Discuss various oxidizing agents. [06]

OR

(b) Write a note on types of oxidative reactions. [06]

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(2)