

SARDAR PATEL UNIVERSITY

M.Sc. (Polymer Science & Technology) Semester-II Examination-2015

Monday, 27th April, 2015

10.30 a.m. to 1.30 p.m.

PS02EPST04: Industrial Process Chemistry

Total Marks: 70

- Note:** (1) Attempt all questions.
(2) Figures to the right indicate full marks.

- Q.1** Write appropriate choice for the following. (8)
- (1) The rate of substitution chlorination of hydrogen on saturated carbon is _____ the rate substitution of hydrogen on unsaturated carbons.
(a) Greater than (b) Less than (c) equal to (d) None of these
 - (2) _____ hydrolyzing agents use for hydrolysis.
(a) Acid (b) alkali (c) water (d) all
 - (3) Decomposition can be done at elevated temperature called :
(a) Hydrolysis (b) Pyrolysis (c) Decomposition (d) Replacement
 - (4) _____ Catalyst is used in hydration process.
(a) HCL (b) H₂SO₄ (c) H₃PO₄ (d) all of these
 - (5) In thermodynamic hydrolysis if free energy is negative the reaction is _____.
(a) Spontaneous (b) favorable (c) a & b both (d) not suitable for practical application
 - (6) _____ Alkylation consist of replacement of Hydrogen atom present in ammonia by alkyl group.
(a) C- alkylation (b) N- alkylation (c) Si-Pb-Al alkylation (d) none of these
 - (7) _____ can be produced by esterification of terpthalic acid with methanol.
(a) ethylene terpthalate (b) di-methyl terpthalate (c) polyethylene terpthalate (d) ethylene glycol
 - (8) The addition of water molecule to olefin double bond will produced alcohol this reaction is known as :
(a) hydrolysis (b) hydration (c) hydrogenation (d) oxidation

Q.2 Attempt any **seven** of the following **(14)**

- (1) Define: (1) Halogenation & hydration (2) Esterification & oxidation
- (2) Explain oxidation without rupture of carbon chain.
- (3) Write a note on oxinitration.
- (4) Give reaction mechanism for neutral ester & full ester.
- (5) Write variety of nitro agent can be used depending upon compound to be nitrated.
- (6) Enlist oxidizing agent. Explain any two.
- (7) Which equipment used in hydration process. Explain any one.
- (8) Write a note on hydrolysis.
- (9) Write classification of alkylation process – based on structure of alkyl group.

Q.3 (a) Give an account on hydrocarbon with its classification. **(6)**

(b) Classify alkylating agents and explain chloroderivatives. **(6)**

OR

(b) Write a note on following. **(6)**

1. Chlorination & Iodination
2. Cascade of stirred reactor

Q.4 (a) Explain in detail manufacture process of phthalic anhydride. **(6)**

(b) Write types and process for hydrogenating oil by drawing diagram. **(6)**

OR

(b) Explain manufacture process of mono sulfonation of benzene. **(6)**

Q.5 (a) Which products obtain by esterification process? Explain any six. **(6)**

(b) Explain manufacture process of ethanol **(6)**

OR

(b) Explain mechanism of esterification process. **(6)**

Q.6 (a) Draw a neat labeled flow chart of manufacture process of methanol. Explain in detail. **(6)**

(b) Write a note on a side reaction of C-Alkylation process. **(6)**

OR

(b) Write a note on reaction type and unit of liquid-liquid chlorination. **(6)**
