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ICS 454

Sl.No. : 0030

II Semester M.Sc. Degree Examination, May 2018
(CBCS)
INDUSTRIAL CHEMISTRY
Chemical Engineering Technology

Time : 3 Hours **Max. Marks : 70**

Instructions: 1) *Answer Part - A and any five questions from Part - B.*
2) *Figures to the right indicate marks.*

PART - A

Q1) Answer any five questions: **(5 × 2 = 10)**

a) State Rault's law and its significance.
b) Distinguish between boiling and distillation process.
c) What are continuous vacuum crystallizers? Give examples.
d) Write the important characteristics of tower packing.
e) What are sulfonation and desulfonation reactions? Write suitable examples.
f) What are detergents? Mention their advantages.
g) Differenciate between catalytic hydrogenation and hydrogenolysis.
h) What are oxidizing agents? Mention their applications.

PART - B

Q2) Answer any five questions.

a) Explain the working principle and advantages of horizontal and vertical tube evaporator.
b) Discuss the working principle of vacuum distillation in separation of high boiling solvents.
c) Write a note on azeotropic mixtures.

(5+4+3)

Q3) a) Explain the woking principle and advantages of multiple effect evaporators.
b) Discuss the principle of flash distillation and write its applications.
c) What is fractional distillation? Explain the principle of fractional distillation in separation of petroleum products.

(5+4+3)

Q4) a) Give an account of Swenson Walkers crystallization.
b) Discuss the working principle and major advantages of packed tower in gas adsorption.
c) Explain the concepts and application of flow techniques in separation.

(5+4+3)

Q5) a) Explain the theory and mechanism of crystal growth.
b) Write a note on Mier's theory on crystallization process.
c) What is gas absorption? Draw a comparison between absorption and distillation.

(5+4+3)

Q6) a) Explain the kinetics and mechanism of nitration of aromatic compounds.
b) Obtain the industrial procedure for the manufacturing of dye intermediates.
c) Discuss the mechanism and application of Friedal - Craft alkylation reaction at carbonation.

(5+4+3)

Q7) a) What are sulfonating agents? Explain the kinetics and mechanism of sulfonation reaction on aromatic compounds.
b) Write a note on industrial procedure for the manufacture of nitrate esters.
c) Discuss the preparation of turkey red oil.

(4+4+4)

Q8) a) Discuss different types of catalysts in hydrogenation process with suitable examples.
b) Explain the kinetics and mechanism for the halogenations reaction on aromatic compounds.
c) Give an account of industrial procedure for the synthesis of nitroglycerine.

(4+4+4)

Q9) a) Explain the mechanism of liquid phase oxidation with suitable example.
b) Give the kinetics and mechanism of esterification of carboxylic acid.
c) Mention the industrial procedure for the manufacture of BHC.

(4+4+4)