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3th SEMESTER

SUPPLEMENTARY EXAMINATION

PT 203 Elements of Chemical Engineering

Roll No. _____

B.Tech. PSCT

(Feb-2019)

Time: 3:00 Hours

Max. Marks: 40

Note: Answer all questions. Assume any suitable data, if necessary. Use pencil to draw the Figures.

- 1 (a). Draw a neat diagram of Agitation Equipment and label its parts.
(b). Differentiate between an Ideal Screen and an Actual screen. 5+5=10
2. The waste acid in a nitrating process contains 11.3% HNO₃, 44.4% H₂SO₄ and 44.3% H₂O by weight. This is to be concentrated to contain 32% HNO₃ and 60% H₂SO₄ by weight by adding concentrated nitric acid containing 92% by weight HNO₃ and concentrated sulphuric acid containing 98% of H₂SO₄ by weight. Calculate the weight of the waste acid and the concentrated acids to be combined to obtain 2000 kg of desired mixture. 10
- 3(a). Write a note on "Batch Reactors". Draw a neat diagram of Batch Reactor. Write the advantages of batch reactors over the other types of reactors commonly used in Chemical and Process industries.
(b). Write a note on Screen Analysis for particle size distribution. 6+4=10
- 4 (a). Differentiate between (any 2):
i. Unit Operations and Unit Processes
ii. Limiting Reactant and Excess Reactant
iii. Propeller and Turbine
(b). A single effect evaporator is fed with 10000 kg/h of weak liquor containing 15% caustic (NaOH) by weight and is concentrated to get thick liquor containing 40% by weight caustic. Calculate: (i). kg/h of water evaporated (ii). kg/h of thick liquor obtained. 5+5=10

END