

CH 485: Process Calculations

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Time : 3 Hrs
Theory : 100 marks
Sessional : 50 marks

Material balance in Unit Operations: basic material balance Principles, material balance without Chemical reaction. Bypass, recycle, purging.

Material balance with Chemical reaction: Reaction Equilibrium, equilibrium Constant.

Energy Balance: thermo physics: Law of conservation of Energy, Components of energy Balance Equations, Heat Capacity, Enthalpy Change of Phase Changes, steam tables, Heat of mixing, energy balance in cyclic Processes, energy Balance in Non-flow processes, energy balance in flow processes.

Energy balance: thermo chemistry: Heat effects accompanying chemical reactions, effect of temperature on standard Heat of reaction.

Introduction to Computer Aided Process Calculations: Degrees of Freedom and Specifications, Use of Spreadsheets, Tearing and Iterative Techniques in Flow sheeting.

TEXTBOOKS:

1. O.A.Hougen, K. M. Watson and R. A. Ragatz, "Chemical Process Principles", Vol-I, CBS Publishers and Distributors, New Delhi, 1995.
2. D. Himmelblau, "Basic Principles and Calculations in Chemical Engineering", 5th Edn., Prentice Hall of India Ltd., N. Delhi, 1994.
3. K V narayanan and B Lakshmikutty, Stoichiometry and Proces Calculations
4. V. Venkataramani and N. Anantharaman, "Process Calculations", Prentice Hall of India Ltd., N. Delhi, 2003.