Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– VI • EXAMINATION – SUMMER 2015

Subject Code: 160505 **Date: 12/05/2015**

Subject Name: Computer Aided Process Synthesis

Time: 10.30am-01.00pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** Discuss the Engineering Ethics briefly. **07**

(b) Mention the steps involved in product and process design. **07**

Q.2 **(a)** Explain the five steps procedure for construction of Attainable region. **07**

(b) List the heuristics for determining favorable sequence of distillation operation. **07**

OR

(b) Draw the various possible configurations for ternary distillation. **07**

Q.3 **(a)** Explain the HEN design procedure to meet MER target. **07**

(b) Formulate the LP model for following data. Take ΔT_{min}= 10 ^{o}F. **07**

Stream	Source temperature, ^{o}F	Target temperature, ^{o}F	M*Cp, btu per hour ^{o}F
C1	120	235	2
C2	180	240	4
H1	260	160	3
H2	250	130	1.5

OR

Q.3 **(a)** Describe Transshipment model briefly. **07**

(b) Explain the generalized rules for stream splitting on both sides of the pinch to satisfy MER requirements. **07**

Q.4 **(a)** Compare forward heat integration and reverse heat integration in distillation with necessary figure. **07**

(b) Define: Approach temperature, Threshold approach temperature, Optimum approach temperature, Minimum approach temperature **07**

OR

Q.4 **(a)** Calculate the number of possible sequences of ordinary distillation column for 10 number of product and draw only direct and indirect sequence. **07**

(b) Discuss the positioning of heat pump. **07**

Q.5 **(a)** Compare overlapping operation and non-overlapping operation. **07**

(b) Write briefly on Multiple Product batch plants. **07**

OR

Q.5 **(a)** Compare various transfer policies. **07**

(b) Discuss the positioning of heat engine. **07**

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