GUJARAT TECHNOLOGICAL UNIVERSITY M. E. - SEMESTER – II • EXAMINATION – SUMMER • 2013

Subject code: 1721608 Subject Name: Separation Techniques Time: 10.30 am – 01.00 pm Instructions:

Date: 07-06-2013

Total Marks: 70

- 1. Attempt all questions.
- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.
- Q.1 (a) Explain benefits of Membrane Separation Techniques with one membrane 14 separation technique in detail along with its principle, five industrial applications and advantage-disadvantage.

| Q.2 | (a) | Explain Spiral wound membrane module with its advantages. | 07 |
|-----|------------|--|----|
| | (b) | Discuss Melt Crystallization with its industrial applications. | 07 |

- OR
- (b) What is supercritical solvent? List advantages of supercritical solvent with relevant examples.07

| Q.3 | (a) | What is the working principal of Perevoparation? Discuss its application. | 07 |
|-----|------------|---|----|
| | (b) | Write in detail - principle of membrane distillation and its working. | 07 |

OR

| Q.3 | (a) | Compare ó Melt Crystallization Vs. Distillation. | 07 |
|-----|------------|---|----|
| | (b) | Discuss working of Reverse Osmosis and its applications. | 07 |
| Q.4 | (a) | What is the principle of Pressure Swing Adsorption (PSA)? Explain four column PSA technique. | 07 |
| | (b) | Discuss applications of Reactive & Catalytic distillation in detail. | 07 |
| | | OR | |
| Q.4 | (a) | Explain Six column Pressure Swing Adsoption technique. | 07 |
| | (b) | Discuss Pressure Swing Distillation with its industrial applications. | 07 |
| Q.5 | (a) | Briefly discuss ó Design of Short Path Distillation Unit. | 07 |
| | (b) | Write about concept and working of Membrane Reactor along with membrane reactor module used in chemical industry. | 07 |
| | | OR | |
| Q.5 | (a) | Discuss membrane distillation technique. | 07 |
| | (b) | Compare Reverse Osmosis with Ultrafiltration. | 07 |

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