Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII(OLD) • EXAMINATION – WINTER 2016

Subject Code: 170504 **Date: 25/11/2016**

Subject Name: New Separation Techniques

Time: 10:30 AM to 01:00 PM **Total Marks: 70**

Instructions:

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

Q.1 With neat flow sheet discuss the ROSE (Residuum Oil Supercritical Extraction) process. Also discuss about the advantages of ROSE process over conventional propane deasphalting process. **14**

Q.2 **(a)** Write the Advantages and disadvantages of Pressure swing adsorption over conventional cryogenic distillation. **07**

(b) Discuss Batch Super critical extraction with neat flowsheet. **07**

OR

(b) Discuss with neat flowsheet about Decaffeination of coffee via super critical extraction. **07**

Q.3 Explain with neat flowsheet working of six bed Pressure Swing Adsorption. Also disucss about the advantages and disadvantages of the same over cryogenic distillation. **14**

OR

Q.3 Explain with neat flowsheet manufacturing process of Ethyl Tertiary Butyl Ether (ETBE) via catalytic distillation. Also discuss the effect of following parameters on catalytic distillation of ETBE. **14**

(i) Feed composition

(ii) Reflux ratio

(iii) Feed point

Q.4 Discuss "Pressure Swing Distillation" with two applications. Write also about the advantages of the same over azeotropic and extractive distillation techniques. **14**

OR

Q.4 Explain the concept of Ultra filteration. Write about the industrial applications of the same. **14**

Q.5 Discuss working principle of Pervaporization and its Industrial applications. **14**

OR

Q.5 List out the different techniques used for melt crystallization. Explain any two techniques in detail. **14**

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