Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII • EXAMINATION – WINTER • 2014

Subject Code: 170504 **Date: 27-11-2014**

Subject Name: New Separation Techniques

Time: 10:30 am - 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	**(a)**	Explain with neat flowsheet working of Pressure Swing Adsorption used for production of nitrogen.	**07**
	(b)	Disucss about the advantages and disadvantages of Pressure Swing Adsorption over Cryogenic Distillation.	**07**
Q.2	**(a)**	Explain with neat sketch the working of BATCH SUPPER CRITICAL EXTRACTION UNIT and discuss about the effect of cosolvent or modifier on super critical extraction.	**07**
	(b)	Advantages and disadvantages of reactive / catalytic distillation over conventional reaction followed by distillation.	**07**
		OR	
	(b)	Discuss about the various types of contacting devices use in Catalytic Distillation.	**07**
Q.3		Explain with neat sketch the working of Short Path Distillation Unit and discuss how the most gentle conditions for the distillation of heat sensitive products are obtained in the same.Also list out commercial applications of Short Path Distillation.	**14**
		OR	
Q.3		Explain with neat flowsheet Residuum Oil Supercritical Extraction (ROSE) process. Also discuss about the advantages and disadvantaes of this process over conventional propane deasphalting process.	**14**
Q.4		Explain working principle of Pressure Swing Distillation. Also discuss about the advantages and disadvantaes of this operation over azeotropic and extractive distillations.Give two applications of Pressure Swing Distillation with neat flowsheet.	**14**
		OR	
Q.4		Discuss working principle of Reverse Osmosis and its industrial applications.	**14**
Q.5		Write short notes on following.	
	(a)	Membrane reactor	**07**
	(b)	Pervaporation	**07**
		OR	
Q.5		Discuss about the different techniques used for Melt crystallization.	**14**

****