Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – SUMMER • 2014

Subject code: 1721608 **Date: 25-06-2014**

Subject Name: Separation Techniques

Time: 02:30 pm - 05:00 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)**	Describe the advantages and disadvantages of super critical fluid solvents over liquid solvents.	**07**
	(b)	Briefly describe design and working of short path distillation unit.	**07**
Q.2	**(a)**	Write down various industrial applications of short path distillation unit and explain in detail distillation of Vitamin-E Acetate.	**07**
	(b)	Write a short note on decaffeination of coffee.	**07**
		OR	
	(b)	Write a short note on ROSE process.	**07**
Q.3	**(a)**	Describe the effect of various parameters on reactive distillation of ETBE (ethyl tertiary butyl ether).	**07**
	(b)	Describe the advantages and disadvantages of pressure swing distillation over azeotropic and extractive distillation.	**07**
		OR	
Q.3	**(a)**	Write a short note on various contact devices used for catalytic distillation.	**07**
	(b)	Write a short note on industrial applications of reactive and pressure swing distillation.	**07**
Q.4	**(a)**	Explain the working principal of membrane of osmotic distillation and write down its various applications.	**07**
	(b)	Describe comparison of melt-crystallizer performance and also give comparison of features of melt crystallization and distillation.	**07**
		OR	
Q.4	**(a)**	Write a short note on ultrafiltration.	**07**
	(b)	Describe the advantages, disadvantages and commercial applications of reverse osmosis.	**07**
Q.5	**(a)**	Describe pressure swing adsorption process to purify hydrogen gas.	**07**
	(b)	Describe the advantages and disadvantages of pressure swing adsorption over cryogenic distillation and write down commercial applications of pressure swing adsorption.	**07**
		OR	
Q.5	**(a)**	Write a short note on various modules of membrane used for membrane reactor.	**07**
	(b)	Write a short note on pervaporization.	**07**

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