Seat No.: Enrolment No.
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## GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII EXAMINATION - SUMMER 2016

Sui	oject	Code:1/0504 Date:18/05/2016	
Sul	bject	Name: New Separation Techniques	
	U	2:30 PM to 05:00 PM Total Marks: 70	
	ructio		
11150		Attempt all questions.	
	2.	Make suitable assumptions wherever necessary.	
	3.	Figures to the right indicate full marks.	
Q.1	(a)	Write an overview of new separation techniques applied in chemical industry.	07
	<b>(b)</b>	Explain the concept of reverse osmosis and its application.	07
	()		
<b>Q.2</b>	(a)	Describe the working of a two bed six step PSA unit with a neat sketch.	07
	<b>(b)</b>	Describe the operational steps of a batch supercritical unit along with a neat sketch.	07
	` /	OR	
	<b>(b)</b>	With the help of a process flow sheet describe the process for decaffeination of	07
	` /	coffee by Kraft process.	
Q.3	(a)	Answer in brief:	08
		(i) List the various commercial application of PSA.	
		(ii) Why CO <sub>2</sub> is considered as a good supercritical solvent?	
	<b>(b)</b>	What are the advantages and disadvantages of Pressure swing adsorption over	06
		cryogenic distillation?	
		OR	
Q.3	(a)	Explain the concept and working of pressure swing distillation and its applications.	07
	<b>(b)</b>	Discuss the possible modification in a tray distillation column internals for	07
		conducting reactive distillation.	
<b>Q.4</b>	(a)	Answer in brief:	08
		(i) List the various applications of melt crystallization.	
		(ii) State the difference between short path distillation and molecular distillation.	
	<b>(b)</b>	Draw a short path distillation unit and label the important parts.	06
		OR	
Q.4	(a)	State and explain the different ways by which reactive distillation can be applied	07
	<b>(3.</b> )	with neat sketch.	
	<b>(b)</b>	What are the different types of equipments used in melt crystallization? Explain	07
		any one in detail.	
0.5	(.)		05
Q.5	(a)	Compare the characteristics of the various membrane modules and their usage.	07
	<b>(b)</b>	Explain the process of membrane distillation and its application.	07
0.5	(a)	OR  Discuss the various problems associated with membrane based energians	07
Q.5	(a)	Discuss the various problems associated with membrane based operations.  Explain the basic principle of pervaporation and its commercial applications.	07 07
	<b>(b)</b>	Explain the basic principle of pervaporation and its commercial applications.	U/