Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (OLD) - EXAMINATION – SUMMER 2017

Subject Code: 170504 **Date: 06/05/2017**

Subject Name: New Separation Techniques

Time: 02:30 PM to 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)**	Discuss concentration polarization phenomena in ultrafiltration and various methods to reduce it.	**07**
	(b)	With the help of a detailed flow diagram explain the ROSE process for deasphalting of residual oil by supercritical extraction.	**07**
Q.2	**(a)**	Describe working principle of reverse osmosis and its industrial application in details.	**07**
	(b)	List out advantages and disadvantages of membrane separation processes over conventional separation processes.	**07**
		OR	
	(b)	With neat sketch explain construction and working of short path distillation.	**07**
Q.3	**(a)**	Explain concept of membrane distillation and discuss various configuration of and application of MD.	**07**
	(b)	List out industrial application of Pervaporation and describe hybrid process for the production of absolute alcohol.	**07**
		OR	
Q.3	**(a)**	Write note on advantages and disadvantages of PSA over cryogenic separation.	**07**
	(b)	Explain zone refining technique for melt crystallization.	**07**
Q.4	**(a)**	Discuss industrial application of short path distillation.	**07**
	(b)	Discuss the parameters affecting the performance of RO membranes.	**07**
		OR	
Q.4	**(a)**	Discuss catalytic and reactive distillation process for production of ETBE with flow diagram.	**07**
	(b)	Write short note on Bale and KATMAX packing.	**07**
Q.5	**(a)**	Discuss basic principle of pressure swing distillation and its advantages and disadvantages over azeotropic distillation.	**07**
	(b)	Discuss four step pressure swing adsorption for production of hydrogen.	**07**
		OR	
Q.5	**(a)**	Write short note on Membrane reactor and its applications.	**07**
	(b)	Discuss advantages and disadvantages of supercritical solvent extraction over conventional liquid-liquid extraction process.	**07**

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