Seat No.:	Enrolment No

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER III (NEW) - EXAMINATION - WINTER-2016

Subject Code: 2733004 Date: 25/10/2016 **Subject Name: Advanced Separation Processes** 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. 0.1 (a) Discuss various mechanisms for the separations and explain the separation by 07 phase addition or creation in detail. (b) Explain chromatographic techniques in details and give classification of it. 07 0.2 (a) Discuss ETBE production by conventional and reactive distillation methods 07 with process flow diagram and reactions. Explain concept and working of pressure swing adsorption with commercial 07 application. OR **(b)** Discuss about advances in adsorption and ion exchange. 07 (a) Explain Residuum Oil Supercritical Extraction (ROSE) Process with neat flow **07** Q.3 **(b)** Explain continuous counter current adsorption with neat sketch. 07 OR Q.3Discuss the properties of supercritical fluids and the advantages and 07 disadvantages of a supercritical fluid over conventional liquid solvent for extraction process. (b) Explain zone refining for crystallization in details. 07 (a) Discuss the various contact devices used for catalytic distillation. 07 0.4 Explain the construction and working of a melt crystallizer with the help of a 07 neat sketch. 0.4 (a) Write short note on osmotic distillation. **07** (b) Explain the design and working of a short path distillation unit with a sketch. **07** (a) Explain various engineering problem associated with usage of membranes. 0.5 07 **(b)** Write short note on membrane reactor. 07 OR (a) Discuss in details various operating parameters for the evaluation of 07 Q.5 performance of membrane process. List the various application of short path distillation and give a detailed 07 description of any one application. *******