

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**
