

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**M. E. - SEMESTER – III • EXAMINATION – WINTER 2012**

**Subject code: 731601****Date: 30/12/2012****Subject Name: Process Intensification****Time: 10.30 am – 01.00 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) What is Process Intensification (PI)? Write about the obstacles to PI. **07**  
(b) Write brief about the Printed Circuit Heat Exchangers (PCHE). **07**
- Q.2** (a) Give brief about the areas of chemical process industry where PI is applicable. **07**  
(b) Explain treated, rough and extended surfaces as passive enhancement techniques for heat transfer. **07**
- OR**
- (b) Write brief about the In-line static Mixers. **07**
- Q.3** (a) Write about the spinning disk reactor. **07**  
(b) Discuss about the reactive distillation in detail. **07**
- OR**
- Q.3** (a) Write brief about the membrane reactor. **07**  
(b) Discuss Divided wall column in distillation unit as process intensification tool. **07**
- Q.4** (a) Write about the application of process intensification in metallurgical industries. **07**  
(b) Explain electric drying and dewatering methods as intensified drying. **07**
- OR**
- Q.4** (a) Discuss about the application of process intensification in glass industry. **07**  
(b) Write about the Uranium enrichment by centrifuge in intensified nuclear industry. **07**
- Q.5** (a) Mention the advantages of PI in terms of environment and energy. **07**  
(b) Explain the concept of HEX reactor. **07**
- OR**
- Q.5** (a) Discuss about the intensified methane reforming. **07**  
(b) Discuss about the process intensified biotechnology. **07**

\*\*\*\*\*