Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – III • EXAMINATION – WINTER • 2014

Subject code: 731601 Date: 25-11-2014

Subject Name: Process Intensification

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)**	Explain the role of Process Intensification in making the process and plant safer and environmentally friendly.	**07**
	(b)	Explain vibration and mixing for intensifying mass transfer.	**07**
Q.2	**(a)**	Explain some of the reasons that are responsible for the slow adoption of PI, despite its benefits.	**07**
	(b)	Discuss ôPlate Heat Exchangersô	**07**
		OR	
	(b)	Discuss ôFoam Heat Exchangersô	**07**
Q.3	**(a)**	Explain ôintensified methane reformingô in detail.	**07**
	(b)	Explain the use of ômechanical aids and swirl flow devicesô as tools for PI	**07**
		OR	
Q.3	**(a)**	Give a detailed explanation of HiGee for distillation.	**07**
	(b)	Discuss PI for drying	**07**
Q.4	**(a)**	Explain intensified separators in the chemical process industry.	**07**
	(b)	Explain the benefits of PI with respect to energy aspects.	**07**
		OR	
Q.4	**(a)**	Discuss Process Intensification for power generation.	**07**
	(b)	Discuss the ôrotating heat pipeô and its application.	**07**
Q.5	**(a)**	How can rotation be used for enhancing heat transfer?	**07**
	(b)	Discuss Electrokinetics for PI in brief.	**07**
		OR	
Q.5	**(a)**	Enlist any seven ôCompact heat exchangersô with their sector and applications	**07**
	(b)	Explain ôadditives (for liquids and gases) and surface catalysisô as ways of intensifying heat transfer.	**07**

****