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

GUJARAT TECHNOLOGICAL UNIVERSITY

ME Semester –II Examination Dec. - 2011

Subject code: 1720308 **Date: 16/12/2011**
Subject Name: Process Control
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 self regulation, transient; direct acting controller and nominal load for process.	**07**
	(b)	Explain operation of floating point control with neat sketch and necessary waveforms.	**07**
Q.2	**(a)**	Explain operation of PI control with neat sketch and necessary waveforms.	**07**
	(b)	Design electronic PID controller with necessary derivations.	**07**
		OR	
	(b)	Define proportional band. Design electronic proportional controller and also state its limitations.	**07**
Q.3	**(a)**	Explain Zeigler Nicholas method for PI controller tuning.	**07**
	(b)	Explain batch process control in detail.	**07**
		OR	
Q.3	**(a)**	Explain cascade control loop with suitable example and neat sketch.	**07**
	(b)	Give the principles governing distillation column. Explain distillation column control with neat sketch.	**07**
Q.4	**(a)**	Explain feed forward control loop with suitable example and neat sketch.	**07**
	(b)	Explain any one control scheme for condensation in heat exchangers.	**07**
		OR	
Q.4	**(a)**	Explain three element boiler drum level control with neat sketch.	**07**
Q.4	**(b)**	Explain the effect of measurement lag in process instrumentation.	**07**
Q.5	**(a)**	Explain any one scheme for temperature control of superheated steam in boiler.	**07**
	(b)	Explain any one control scheme for evaporation in heat exchangers.	**07**
		OR	
Q.5	**(a)**	Explain ratio control loop with suitable example and neat sketch.	**07**
	(b)	Briefly narrate the occurrence of differential gap in two position controller. Give electronic implementation of two position controller.	**07**

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