Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – I • EXAMINATION – WINTER 2012

Subject code: 710306N **Date: 10-01-2013**
Subject Name: Mechatronics
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)**	Give classification of transducers in detail.	**07**
	(b)	Explain the use of input guarding for instrumentation amplifier for signal conditioning.	**07**
Q.2	**(a)**	Explain pulse modulation with neat sketches.	**07**
	(b)	Explain data acquisition system with neat block diagram representation.	**07**
		OR	
	(b)	Explain the importance of actuator in process industry.	**07**
Q.3	**(a)**	Give classification of cams narrating application with simple figures.	**07**
	(b)	Explain the use of nomographs for gear trains.	**07**
		OR	
Q.3	**(a)**	Explain variable reluctance type stepper motor with neat sketches.	**07**
	(b)	Design model for any one electromechanical system.	**07**
Q.4	**(a)**	Explain the dynamic response of second order system with necessary derivations.	**07**
	(b)	Explain PID control mode with necessary derivations, diagrams and applications.	**07**
		OR	
Q.4	**(a)**	Explain adaptive control in detail.	**07**
Q.4	**(b)**	Differentiate between combinational and sequential logics.	**07**
Q.5	**(a)**	Prove the superiority of microcontroller in respect of microprocessor by suitable example.	**07**
	(b)	Explain watch dog timer in detail.	**07**
		OR	
Q.5	**(a)**	Explain serial communication of peripheral in proper depth.	**07**
	(b)	Enumerate the comparisons of C language programming and assembly language programming for different aspect in with suitable reasoning and examples.	**07**

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