Seat No.:	Enrolment No.

Subject code: 142002

GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. - SEMESTER - IV • EXAMINATION - WINTER 2012

Date: 31/12/2012

Subj	ect l	Name: Basic Mechatronics	
Time	e: 02	2.30 pm - 05.00 pm Total Marks	: 70
Inst i	ruct	ions:	
	1. 2. 3.	Attempt any five questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks.	
Q.1	(a)	What is mechatronics?Briefly discuss the levels of mechatronics with example.	07
	(b)	Explain and derive equation for piezo electric actuators modeling.	07
Q.2	(a) (b)	• • •	07 07
	(b)	Enlist the various position sensors and explain any one with neat sketch.	07
Q.3	(a) (b)	1 , 1	07 07
Q.3	(a) (b)		07 07
Q.4	(a)	Explain the strain gauge load cells.	07
	(b)	Explain the single phase induction motor and methods of self starting. OR	07
Q.4	(a)	Explain thyristors and TRIACS with characteristics and voltage control.	07
	(b)	Explain AC servo motor with its construction and working by circuit diagram	07
Q.5	(a)	Give detail of PWM (Pulse Width Modulation) and DC converter with basic circuit and waveform.	07
	(b)	Explain relays with one application and why freewheeling diode is necessary.	07
0.5		OR	05
Q.5	(a) (b)		07 07
