Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV • EXAMINATION – SUMMER 2015

Subject Code: 142002 **Date: 08/06/2015**

Subject Name: BASIC MECHATRONICS

Time: 10.30am-01.00pm **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)**	State the advantage and disadvantage of mechatronics systems.	**07**
	(b)	State different types of robots and explain any two in details.	**07**
Q.2	**(a)**	(i) Explain different types of control systems with suitable example.	**03**
		(ii) Give full form of following acronyms: AVCS,CIM,CAM,FMS	**04**
	(b)	Compare the hydraulic and pneumatic systems.	**07**
		OR	
	(b)	Describe the operation and construction of, (i) Variable displacement Vane pump (ii) Double acting Cylinder	**07**
Q.3	**(a)**	State different types of temperature transducers and explain any two in details.	**07**
	(b)	Describe the following: (i) Potentiometer Displacement Sensor (ii) Bimetallic strip	**07**
		OR	
Q.3	**(a)**	Explain any one displacement sensor with neat sketch.	**07**
	(b)	Explain displacement measurement using capacitive transducer and using LVDT.	**07**
Q.4	**(a)**	What is a load cell? Explain briefly the construction and working of strain gauge load cell.	**07**
	(b)	What is Cam? State different types of Cams and Cam followers. Describe working principle of Cam and Cam follower.	**07**
		OR	
Q.4	**(a)**	Explain the types of gears with neat sketches.	**07**
	(b)	Explain single phase induction motor and its working.	**07**
Q.5	**(a)**	State the advantage and limitation of CNC machine and discuss briefly the classification of CNC machine.	**07**
	(b)	Explain following terms of Microprocessor i) ALU ii) Control unit iii) Registers iv) Program counter v) Memory address register vi) Accumulator	**07**
		OR	
Q.5	**(a)**	Explain any two types of stepper motor with suitable diagram.	**07**
	(b)	(i)Describe operation of Fast and Loose pulley	**03**
		(ii) Compare Gear, Chain and Belt drive.	**04**

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