GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–V (NEW) EXAMINATION – WINTER 2018

Subject Code:2153406   **Date:20/11/2018**
Subject Name:Mechatronics
Time: 10:30 AM TO 01:00 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)**	Define Sensitivity, Drift and Resolution.	**03**
	(b)	Explain any two heat treatment process.	**04**
	(c)	Explain the design process of a mechatronics system.	**07**
Q.2	**(a)**	Explain Conductor and Insulators.	**03**
	(b)	Explain Ratchet and Pawl mechanism with its applications.	**04**
	(c)	Explain Cascade control system with a neat sketch.	**07**
		OR	
	(c)	Differentiate between Open & Closed loop control system with block diagram.	**07**
Q.3	**(a)**	Define Potentiometer.	**03**
	(b)	Explain the difference between DC motor, Stepper motor and Servo motor	**04**
	(c)	Explain Linear Variable Differential Transducer (LVDT) with a neat sketch.	**07**
		OR	
Q.3	**(a)**	Define Thermocouple & Thermistor.	**03**
	(b)	Write short notes on Optical encoders.	**04**
	(c)	Explain Strain gauge pressure Transducer.	**07**
Q.4	**(a)**	Compare Chain and Belt drive with an example.	**03**
	(b)	Explain Pneumatic load cell with neat sketch.	**04**
	(c)	Explain the structure of PLC with its components.	**07**
		OR	
Q.4	**(a)**	Explain Bimetallic strip.	**03**
	(b)	Explain the advantages of PLCs.	**04**
	(c)	What is a Microprocessor? Explain all types of buses used in Microprocessor.	**07**
Q.5	**(a)**	Define Internal Relays, Timers and Shift registers in PLC	**03**
	(b)	List the types of Robot Configuration. Explain any one with neat sketch.	**04**
	(c)	Explain Forward & Reverse kinematics of robotic arm.	**07**
		OR	
Q.5	**(a)**	Explain 3 basic laws of robotics.	**03**
	(b)	Explain Input/output processing in PLC.	**04**
	(c)	Discuss the different types of drive systems in robots and list their merits and demerits.	**07**

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