GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–V EXAMINATION – WINTER 2015

Subject Code: 151704   **Date:14/12/2015**

Subject Name: Industrial Control System

Time: 10:30am to 1:00pm   **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)**	Explain open loop control system and closed loop control system with example.	**07**
	(b)	Explain Mathematical Model with any one example for any system. Enlist uses of Mathematical Model.	**07**
Q.2	**(a)**	Explain components and working of Direct Digital Control with block diagram.	**07**
	(b)	Explain Feedback and Feedforward controller scheme with features.	**07**
		OR	
	(b)	Explain Cascade Control scheme in detail with example.	**07**
Q.3	**(a)**	Explain Proportional-Integral (PI) controller mode. Enlist advantages, disadvantages and applications.	**07**
	(b)	Explain Ziegler-Nichols tuning method in brief.	**05**
	(c)	Explain why Derivative action is not used alone?	**02**
		OR	
Q.3	**(a)**	Explain On-off controller in detail with example, advantages and disadvantages	**07**
	(b)	Explain Electronic Proportional Controller. How we can reduce offset?	**07**
Q.4	**(a)**	Explain PLC Counter types with example.	**07**
	(b)	Explain Hierarchical of DCS. Explain function of each level.	**07**
		OR	
Q.4	**(a)**	Explain any two type of PLC Timer with waveform.	**07**
	(b)	Explain SCADA in detail. Explain RTU in brief.	**07**
Q.5	**(a)**	Enlist types of Globe Valves. Explain any two Globe valves with features.	**07**
	(b)	Explain any one Rotary Valve in brief.	**04**
	(c)	Enlist selection criteria for control valve in brief	**03**
		OR	

Q.5	**(a)**	Explain following terms:
		  I. Process II. Rangeability III. Dead Time IV. Linear System
		  V. Cavitation VI. Trim VII. Actuator
			07

	(b)	Explain Control valve flow characteristics. Explain rules for selecting valve characteristics.	**07**

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