Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI(OLD) – EXAMINATION – SUMMER 2019

Subject Code:161702 **Date:21/05/2019**

Subject Name: Process Control

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)**	Explain modeling steps and linearization concepts for mathematical modeling of process dynamics.	**07**
	(b)	Explain closed loop ZN tuning method of the PID controller.	**07**
Q.2	**(a)**	Explain the need of PI control action in place of P control action alone.	**07**
	(b)	Explain PD control scheme in detail.	**07**
		OR	
	(b)	Derive model of a level tank system.	**07**
Q.3	**(a)**	Explain the Ratio control in details, with suitable example and calculation.	**07**
	(b)	Write short note on selective and override control with relevant sketches.	**07**
		OR	
Q.3	**(a)**	Explain feed forward control of heat exchanger.	**07**
	(b)	Explain split range control scheme.	**07**
Q.4	**(a)**	Explain cascade control scheme with neat application diagram.	**07**
	(b)	Draw block diagram for thermometer bulb control system. Obtain its closed loop response by applying step input.	**07**
		OR	
Q.4	**(a)**	Define the proportional band in proportional controller? Explain how the offset is reduced by increasing the proportional gain.	**07**
	(b)	How will you evaluate self regulation and process load in the process? Explain it.	**07**
Q.5	**(a)**	How can we determine tuning constants that give good control performance?	**07**
	(b)	Draw and explain process and instrumentation elements of a typical feedback loop.	**07**
		OR	
Q.5	**(a)**	Obtain control model for Room Air conditioning system defining all system variables. Is the system is Self regulating?	**07**
	(b)	An electronic flow sensor converts flow information in linearly so that the flow from 0 to 300 m^3/h becomes a current from 0 to 50 mA. Calculate the current for a flow of 225 m3/h.	**07**

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