Seat No.: _____   Enrolment No._____   1

GUJARAT TECHNOLOGICAL UNIVERSITY
BE- SEMESTER–V (NEW) EXAMINATION – WINTER 2020

Subject Code:3151705   **Date:27/01/2021**
Subject Name:Process Control
Time:10:30 AM TO 12:30 PM   **Total Marks: 56**

Instructions:
1. Attempt any FOUR questions out of EIGHT questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

			Marks
Q.1	**(a)**	With temperature control loop, explain the manipulated variable and controlled variable terms.	**03**
	(b)	Draw flow and Level control loop.	**04**
	(c)	List and explain seven control objectives of process control	**07**
Q.2	**(a)**	Describe the following terms (1)Process Load (2)Dead time	**03**
	(b)	What is FOPDT modeling method.	**04**
	(c)	Explain two position control with application area.	**07**
Q.3	**(a)**	What is importance of bias in Proportional control.	**03**
	(b)	Give features of P, I and D mode of control action.	**04**
	(c)	Derive the transfer function of two non-interacting tank.	**07**
Q.4	**(a)**	Define proportional band. Show the diagram showing relation between different value of gain and PB.	**03**
	(b)	Explain the override control of A boiler with diagram.	**04**
	(c)	Explain closed loop tuning method for PID Controller with one example.	**07**
Q.5	**(a)**	What are the applications of mathematical modelling in process control are?	**03**
	(b)	What is integral windup? Draw the strategy for preventing windup.	**04**
	(c)	Explain proportional control scheme with features, limitations and its remedy. Provide neat sketch for support of the same.	**07**
Q.6	**(a)**	Show the Auctioneering control scheme for temperature control in tubular reactor.	**03**
	(b)	Explain direct and reverse action of a controller with suitable example.	**04**
	(c)	Explain the PI composite control mode in detail.	**07**
Q.7	**(a)**	Draw the scheme of pressure control in a reactor using split range control technique.	**03**
	(b)	Draw the diagram of selective control technique.	**04**
	(c)	Explain Cascade Control system in detail	**07**

Q.8 **(a)** Explain PID tuning using open loop tuning method in brief. **03**

(b) Give difference between feedback and feedforward control system. **04**

(c) Explain Ratio control system with one suitable process example **07**