

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII(NEW) EXAMINATION – SUMMER 2019

Subject Code: 2171710
Date: 27/05/2019
Subject Name: Process Dynamics and Control
Time: 02:30 PM TO 05:00 PM
Total Marks: 70
Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		MARKS
Q.1	(a) Explain dynamic behavior of first order linear system in detail.	03
	(b) Explain single element control strategies for boiler.	04
	(c) Compare different control strategies for heat exchangers with suitable	07
Q.2	(a) Discuss shrinking and swelling effects in boiler with respect to control strategies.	03
	(b) Compare two and three element level control for boiler.	04
	(c) Explain dynamic response of heat exchanger to change in steam temperature	07
OR		
Q.3	(c) Write short note on liquid to liquid heat exchangers.	07
	(a) What is inverse response? Explain with reference to boiler.	03
	(b) Explain end point detection for continuous and batch reactor.	04
	(c) Write short note on burner management system.	07
OR		
Q.3	(a) Write short note on boiler optimization.	03
	(b) Explain steam temperature and pressure control for boiler.	04
	(c) Explain different factors which are governing the reaction of chemical reactors.	07
Q.4	(a) Explain pH control for chemical reactors in brief.	03
	(b) Explain the control of overhead composition in distillation column.	04
	(c) Explain different methods of controlling pressure in a distillation column.	07
OR		
Q.4	(a) Write a brief note on countercurrent exchangers.	03
	(b) Explain the control of bottom composition in distillation column.	04
	(c) Write short note on sequential and logic control in batch process.	07
Q.5	(a) Write short note on distillate reflux flow control.	03
	(b) Explain column pressure control in distillation column.	04
	(c) Explain the unit operations used in food and pharmaceutical industries with suitable process flow diagram.	07
OR		
Q.5	(a) What is dead time in process. Explain it with example.	03
	(b) Discuss different design aspects for waste water treatment plant.	04
	(c) Explain the unit operations of cement industry with suitable process flow diagram	07
