Seat No.:	Enrolment No
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## GUJARAT TECHNOLOGICAL UNIVERSITY ME SEMESTER II EXAMINATION – SUMMER 2017

Subject Code: 2723009 Date:26/05/2017

**Subject Name: Advanced Process 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.

Q.1	(a)	Define step input and impulse input function. Derive its Laplace transfer function.	07
	(b)	State the advantages and disadvantages of feed forward control system.	07
Q.2	(a)	What is MIMO control system? Explain it with example of CSTR.	07
	(b)	Solve the following differential equation by Laplace Transform method: $\frac{d^2x}{dt^2} + 4x = 2e^{-t} \qquad x(0) = x'(0) = 0$	07
		OR	0=
	(b)	Inverse the z transform: $f(z) = \frac{z}{(z^2 - 4z + 3)}$	07
Q.3	(a)	What is smith predictor? Explain in brief all features.	07
	(b)	Find the z transform of following functions:  1. t and 2. a <sup>n</sup>	07
		OR	
Q.3	(a)	What is cascade control system? Show the typical block diagram. Also state the applications.	07
	(b)	T 1 1 1 CD C madel adaptive	07
Q.4		Discuss in brief Product Quality Control for the Hydroalkylation plant.	14
		OR	07
Q.4	(a)	"Poor process design leading to control problems" – Explain and justify this statement with example.	
	(b)	Discuss in brief stability analysis of Discrete time control systems.	07
Q.5	(a)	Also Evaloin	07
	(b)	Explain the following terms:	07
		1. Sampler 2. Filters 3. Stability OR	
0.5	(-)	C . II . I	07
Q.5	(a) (b)	to the state of matter and the state of matter the state of matter the state of matter than the	07