

Name :  
Reg No :

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**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY  
07 THRISSUR CLUSTER**

**THIRD SEMESTER M.TECH. DEGREE EXAMINATION DEC 2017**

**CHEMICAL ENGINEERING**

**PROCESS CONTROL**

**07CH7103 PROCESS MODELING AND SIMULATION**

**Time : 3 hours**

**Max.Marks: 60**

Answer all six questions. Part 'a' of each question is compulsory.

Answer either part 'b' or part 'c' of each question

<b>Q.no.</b>	<b>Module 1</b>	<b>Marks</b>
<b>1a</b>	Define modelling and simulation.	<b>4</b>
	<b>Answer b or c</b>	
<b>b</b>	What are the basic modelling principles?	<b>5</b>
<b>c</b>	Explain classification of modelling techniques.	<b>5</b>
<b>Q.no.</b>	<b>Module 2</b>	<b>Marks</b>
<b>2a</b>	Explain energy equation.	<b>4</b>
	<b>Answer b or c</b>	
<b>b</b>	Develop the model of continuous flow tank	<b>5</b>
<b>c</b>	Explain transport equations and equations of state.	<b>5</b>
<b>Q.no.</b>	<b>Module 3</b>	<b>Marks</b>
<b>3a</b>	Develop the model of mixing vessel without reaction.	<b>4</b>
	<b>Answer b or c</b>	
<b>b</b>	Develop the model of steam jacketed vessel.	<b>5</b>
<b>c</b>	Develop the model of isothermal variable volume CSTR in series.	<b>5</b>

<b>Q.no.</b>	<b>Module 4</b>	<b>Marks</b>
<b>4a</b>	Write the model equations of partial condenser.	<b>4</b>
<b>Answer b or c</b>		
<b>b</b>	Develop the model for ideal binary distillation column.	<b>5</b>
<b>c</b>	Develop the model for batch distillation.	<b>5</b>
<b>Q.no.</b>	<b>Module 5</b>	<b>Marks</b>
<b>5a</b>	What are distributed systems?	<b>5</b>
<b>Answer b or c</b>		
<b>b</b>	Develop the model of jacketed tubular reactor.	<b>7</b>
<b>c</b>	Develop the model of counter current liquid liquid heat exchanger.	<b>7</b>
<b>Q.no.</b>	<b>Module 6</b>	<b>Marks</b>
<b>6a</b>	What is finite difference method?	<b>5</b>
<b>Answer b or c</b>		
<b>b</b>	Write the algorithm for the simulation of non isothermal CSTR.	<b>7</b>
<b>c</b>	Write the algorithm for the simulation of batch reactor.	<b>7</b>