



# INDIAN INSTITUTE OF INFORMATION TECHNOLOGY, SRI CITY

## MID TERM-I EXAMINATION - MONSOON 2024

### Operating System

Date: 10-09-2024

Max. Marks: 25

CSE:UG2/PC

Duration: 90 Mins (03:30-05:00PM)

Roll No: 526230010142

#### Instructions:

1. Write all the answers only in the answer sheet and write them legibly.
2. Attach the question paper with the answer sheet.
3. Calculators are allowed

#### Answer all the questions

Answer all the questions		[3 Marks]																												
1	What is a real time operating system and its types	[4 Marks]																												
2	Explain the relationship among API, System call and operating system with a diagram	[3 Marks]																												
3	What is a context switch? Explain with an appropriate diagram.	[4 Marks]																												
4	Using a diagram describe the different states of a process and what transitions occur between these states	[3 Marks]																												
5	What are the sections shared by the threads of the same process? Explain the benefits of using a process with multiple threads	[4 marks]																												
6	Find average turnaround time and average waiting time for the below six processes by using preemptive priority scheduling algorithm. (Note: Larger Priority value has higher priority)																													
	<table border="1"> <thead> <tr> <th>Process</th> <th>Arrival time</th> <th>Burst time</th> <th>Priority</th> </tr> </thead> <tbody> <tr> <td>P1</td> <td>0</td> <td>05</td> <td>4</td> </tr> <tr> <td>P2</td> <td>1</td> <td>10</td> <td>3</td> </tr> <tr> <td>P3</td> <td>2</td> <td>03</td> <td>1</td> </tr> <tr> <td>P4</td> <td>3</td> <td>02</td> <td>6</td> </tr> <tr> <td>P5</td> <td>4</td> <td>07</td> <td>6</td> </tr> <tr> <td>P6</td> <td>5</td> <td>05</td> <td>2</td> </tr> </tbody> </table>	Process	Arrival time	Burst time	Priority	P1	0	05	4	P2	1	10	3	P3	2	03	1	P4	3	02	6	P5	4	07	6	P6	5	05	2	
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Consider the following processes with their arrival times and burst times. The time quantum for Round Robin scheduling starts at 3 units and dynamically reduces by 1 unit after every 3 context switches (not considering the initial and scheduler context switch), with a minimum quantum of 1 unit. Calculate the time of completion of each process, average turnaround time and average waiting time		[4 Marks]																												
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