



Roll No

**PRESIDENCY UNIVERSITY
BENGALURU**

School Of Computer Science and Engineering & Information Science

End-Term Examinations, Aug 2024

Odd Semester: 2023 - 24

Course Code: CSE2010

Course Name: OPERATING SYSTEMS

Department: CSE

Date: 07-08-2024

Time: 9.30a.m. to 12.30 p.m.

Max Marks: 100

Weightage: 50%

Instructions:

- (i) Read the all questions carefully and answer accordingly.
(ii) Do not write any matter on the question paper other than roll number.

Q.No	Questions	Marks	CO	RBT
1	a. Briefly explain the components of computer system	4	CO1	L1
	b. Explain the concept of user view and system view with respect to operating system	6	CO1	L2
	c. Explain the different types of operating system services	10	CO1	L3

OR

2	a. Define Operating System? Explain its goals and write what exactly an operating system does	4	CO1	L1
	b. Explain the concept of dual mode of operating in operating system	6	CO1	L2
	c. Explain the different types of system calls in operating system	10	CO1	L3

3	a. Write any 4 differences between a process and program	4	CO2	L1																										
	b. What is PCB? Explain the information that the PCB holds about a process.	6	CO2	L2																										
	c. Consider the process its arrival time, burst time, priority given In below table. Apply preemptive priority scheduling and Calculate the average turn around time , average waiting time. Assume the least value is given the highest priority.	10	CO2	L3																										
	<table border="1"><thead><tr><th>Process ID</th><th>Arrival time</th><th>Burst time</th><th>Priority</th></tr></thead><tbody><tr><td>P1</td><td>0</td><td>10</td><td>3</td></tr><tr><td>P2</td><td>1</td><td>5</td><td>2</td></tr><tr><td>P3</td><td>0</td><td>6</td><td>1</td></tr><tr><td>P4</td><td>2</td><td>7</td><td>2</td></tr><tr><td>P5</td><td>3</td><td>8</td><td>4</td></tr></tbody></table>				Process ID	Arrival time	Burst time	Priority	P1	0	10	3	P2	1	5	2	P3	0	6	1	P4	2	7	2	P5	3	8	4		
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	P1				0	10	3																							
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P3	0	6	1																											
P4	2	7	2																											
P5	3	8	4																											

OR

4	a. What do you mean by context switching? List the different scenarios the context switching takes place	4	CO2	L1																				
	b. Explain how the process execution takes place with a process State diagram.	6	CO2	L2																				
	c. Consider the process its arrival time, burst time, given in below table. Apply SRTF scheduling and Calculate the average turn around time , average waiting time.	10	CO2	L3																				
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P6	4	5																						

5	a. Explain the Critical section problem	4	CO3	L1																																															
	b. Explain the concept of reader writers problem and also describe the solution given to it using semaphores	6	CO3	L2																																															
	c. Given the there are 5 process with three resource R1,R2,R3 and The availability, allocation, maximum is given below If the available of resources is <3,3,2> respectively of R1,R2,R3. Check whether the system is in safe state using bankers algorithm If so give the safe sequence. Also check whether the request of P1 if it arrives for <1,0,2> can be granted immediately or not.	10	CO3	L3																																															
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OR

6	a. Explain how deadlocks can be detected and avoided using Resource allocation graph.	4	CO3	L1																																																													
	b. Explain the concept of dining philosophers problem, also Describe how the solution can be given using semaphores	6	CO3	L2																																																													
	a. Given the there are 5 process with four resource R1,R2,R3,R4 and The availability, allocation, maximum is given below	10	CO3	L3																																																													
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7	a. Define swapping? Explain how swapping takes place between memory and disk storage	4	CO4	L1
	b. Explain address binding in detail	6	CO4	L2
	c. Given the order of pages 7,0,1,2,3,1,2,4,5,0,4,2,3,4,1,7,3,1,0,3,0,2,1 and if the page replacement algorithm used is optimal replacement check whether belady's anomaly exists or not considering the number of frames 3 and 4.	10	CO4	L3

OR

8	a. What is dynamic loading and dynamic linking	4	CO4	L1
	b. Explain the concept of first fit, best fit and worst fit of memory Allocation techniques with example.	6	CO4	L2
	c. Given the order of pages 5,4,2,1,3,2,4,5,1,4,6,2,1,3,1,4,5,2,1,6,5,1,5 Apply LRU, FCFS and optimal page replacement techniques and also check which algorithm suits better.	10	CO4	L3

9	a. Write a note on timer	4	CO1	L1
	b. Explain in brief system programs and its types.	6	CO1	L2
	c. List the different structures of operating system available and explain any two in detail.	10	CO1	L3

OR

10	a. Define process? What are the different attributes of a process.	4	CO2	L1																				
	b. Explain the concept of convey effect with an example	6	CO2	L2																				
	c. Consider the process its arrival time, burst time, given in below table. Apply RR scheduling and Calculate the average turn around time , average waiting time given the time quanta=2	10	CO2	L3																				
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