



Roll No

**PRESIDENCY UNIVERSITY
BENGALURU**

School Of Computer Science and Engineering & Information Science

End-Term Examinations, Aug 2024

Odd Semester: 2023 - 24

Course Code: CSE3120

Course Name: Operating System with Linux Internals

Department: ISE&IST(LATERAL ENTRY)

Date: 09/08/2024

Time: 9:30AM-12:30PM

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	RB T
1	a. Explain various role of Linkers, loaders with their functions.	4	CO1	L1
	b. What are the main services provided by operating system to the user?	6	CO1	L2
	c. What are micro kernels? Explain microkernel architecture.	10	CO1	L3

OR

2	a. Explain role of operating system with help of component diagram.	4	CO1	L1
	b. Explain any 3 computer system architectures.	6	CO1	L2
	c. What are system calls? Explain each category with suitable examples.	10	CO1	L3

3	a. List the various process scheduling algorithms.	4	CO2	L1																										
	b. Explain various states of process with a neat diagram?	6	CO2	L2																										
	c. Calculate Average Waiting Time, Average Turn AROUND time and Average Burst time for the given system scenario if it follows Non Preemptive Priority algorithms.	10	CO2	L3																										
<table border="1"><thead><tr><th>Process</th><th>AT (m sec)</th><th>BT(m sec)</th><th>PRIORITY</th></tr></thead><tbody><tr><td>P1</td><td>0</td><td>10</td><td>1</td></tr><tr><td>P2</td><td>2</td><td>6</td><td>3</td></tr><tr><td>P3</td><td>1</td><td>3</td><td>4</td></tr><tr><td>P4</td><td>4</td><td>2</td><td>2</td></tr><tr><td>P5</td><td>3</td><td>5</td><td>1</td></tr></tbody></table>	Process				AT (m sec)	BT(m sec)	PRIORITY	P1	0	10	1	P2	2	6	3	P3	1	3	4	P4	4	2	2	P5	3	5	1			
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P4	4	2	2																											
P5	3	5	1																											

OR

4	a. What is turnaround time and throughput?	4	CO2	L1											
	b. WAP to demonstrate creating new processes and waiting for a process.	6	CO2	L2											
	c. Calculate Average Waiting Time, Average Turn AROUND time for the given system scenario if it follows FCFS with Arrival Time.	10	CO2	L3											
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P3	1	3													

5	a. What is process Synchronization? Explain with a neat Example.	4	CO3	L1
	b. Explain the following terminologies a) Race condition b) Critical section c) Non preemptive	6	CO3	L2
	c. What is bankers algorithm. Explain the algorithm with details steps .	10	CO3	L3

OR

6	a. Explain the 3 necessary conditions which the critical-section problem must satisfy?	4	CO3	L1																																																																	
	b. What is the Peterson's solution ? Explain in detail with the code.	6	CO3	L2																																																																	
	c. Considering a system with four processes P0 through P3 and three resources of type A, B, C. Answer the following queries using Bankers algorithm.	10	CO3	L3																																																																	
	a) Is the system in safe sequence.																																																																				
b) If request from process p1 arrives for (1 0 2) can the request be granted immediately.																																																																					
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7	a. Tabulate the difference between a program and a process with proper reasons.	4	CO2	L1											
	b. Calculate Average Waiting Time, Average Turn AROUND time for the given system scenario if it follows FCFS with Arrival Time .	6	CO2	L2											
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	c. Calculate Average Waiting Time, Average Turn AROUND time for the given system scenario if it follows SJF Preemptive algorithms.	10	CO2	L3		
	Process				AT (m sec)	BT(m sec)
	P1				0	12
	P2				2	7
	P3				2	5
	P4				3	2
P5	4	3				

OR

8	a. Define independent and co-operating process	4	CO2	L1
	b. What is IPC? What are the different IPC mechanisms?	6	CO2	L2
	c. Demonstrate how a process can become zombie and orphan with a simple c program.	10	CO2	L3

9	a. Demonstrate the program to open and display the contents of file.	4	CO1	L1
	b. Explain the UNIX architecture with a neat diagram.	6	CO1	L2
	c. What are computer environment systems? Explain any 3 systems with neat diagrams?	10	CO1	L3

OR

10	a. What is mutex lock? Explain the 2 operations used on locks to protect the critical section by writing their structure.	4	CO3	L1
	b. What are monitors? Explain the schematic view of it and its conditional variables usage with a neat diagram.	6	CO3	L2
	c. What are classical problems in synchronization? Explain Dining philosopher problem with the appropriate code.	10	CO3	L3