Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

End - Term Examinations – MAY 2025

Date: 26-05-2025 **Time:** 01:00 pm – 04:00 pm

School: SOCSE	**Program:** B. Tech- CAI/CBC/CCS/CIT/COM/CSD/CSG/ CSI/CSN/IST	
Course Code :CSE3351	**Course Name:** Operating Systems	
Semester: IV	**Max Marks**:100	**Weightage**: 50%

CO - Levels	**CO1**	**CO2**	**CO3**	**CO4**	**CO5**
Marks	**24**	**24**	**26**	**26**	**NA**

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks. **10Q x 2M=20M**

1.	Define Operating System.	**2 Marks**	**L1**	**CO1**
2.	Differentiate Loader and Linker.	**2 Marks**	**L2**	**CO1**
3.	How the program is differed from the process?	**2 Marks**	**L2**	**CO2**
4.	Define Thread. Give its types.	**2 Marks**	**L1**	**CO2**
5.	What is critical section?	**2 Marks**	**L1**	**CO3**
6.	List out the necessary conditions for deadlock.	**2 Marks**	**L1**	**CO3**
7.	Define Deadlock. Give an example.	**2 Marks**	**L1**	**CO3**
8.	Differentiate base and limit register.	**2 Marks**	**L2**	**CO4**
9.	What is dynamic loading?	**2 Marks**	**L1**	**CO4**
10.	Define page fault.	**2 Marks**	**L1**	**CO4**

Part B

Answer the Questions. **Total Marks 80M**

11.	**a.**	Explain in detail about the operating system services.	**10 Marks**	**L2**	**CO1**
		Or			
12.	**a.**	Discuss in detail about the operating system operations with neat diagram.	**10 Marks**	**L2**	**CO1**

13.	**a.**	What is system call? Explain its types in detail.	**10 Marks**	**L2**	**CO1**
		Or			
14.	**a.**	Describe the operating system structure in detail with neat diagram.	**10 Marks**	**L2**	**CO1**

15.	**a.**	Discuss the Process States and Process Control Block (PCB) with neat diagram.	**10 Marks**	**L2**	**CO2**
		Or			
16.	**a.**	Explain in detail about the Inter Process Communication.	**10 Marks**	**L2**	**CO2**

17.	**a.**	Apply FCFS scheduling to find the average Total turnaround time and Average waiting time. Show Gantt chart.	**10 Marks**	**L3**	**CO2**

Process No	Arrival Time	Burst Time
P1	0	5
P2	1	3
P3	2	8
P4	3	6

		Or			
18.	**a.**	Apply Round Robin (RR) Scheduling (Time Quantum = 4 ms) to find the average Total turnaround time and Average waiting time. Show Gantt chart.	**10 Marks**	**L3**	**CO2**

Process No	Arrival Time	Burst Time
P1	0	8
P2	1	5
P3	2	10
P4	3	7

19.	**a.**	Apply the Peterson's solution to solve the critical section problem.	**10 Marks**	**L2**	**CO3**
		Or			
20.	**a.**	Solve the Readers and Writers Problems using semaphore.	**10 Marks**	**L2**	**CO3**

21.	**a.**	Explain the methods how deadlock can be avoided? Assume that there are 5 processes from P0 through P4. There are 3	**10 Marks**	**L3**	**CO3**

		resources types: A(10 instances), B(5 instances), and C(7 instances). Snapshot at time T0: Allocation Max Available A B C A B C A B C P_0 0 1 0 7 5 3 3 3 2 P_1 2 0 0 3 2 2 P_2 3 0 2 9 0 2 P_3 2 1 1 2 2 2 P_4 0 0 2 4 3 3 Use Banker's algorithm to check whether the system is in safe state or not?			
Or					
22.	**a.**	Discuss about the Resource allocation graph in detail with an example.	**5 Marks**	**L2**	**CO3**
	b.	Discuss the methods for handling deadlock in detail.	**5 Marks**	**L2**	**CO3**

23.	**a.**	Describe in detail about 1. Address binding 2. Swapping	**10 Marks**	**L2**	**CO4**
Or					
24.	**a.**	Discuss in detail about the paging and structure of the page table.	**10 Marks**	**L2**	**CO4**

25.	**a.**	Assume that there are 3 page frames which are initially empty. If the page reference string is 1, 2, 3, 4, 2, 1, 5, 3, 2, 4, and 6. Find the number of page faults using the optimal replacement policy.	**10 Marks**	**L3**	**CO4**
Or					
26.	**a.**	Describe in detail about 1. Segmentation 2. File access methods	**10 Marks**	**L2**	**CO4**