PRESIDENCY UNIVERSITY

BENGALURU

Make Up Examinations – December 2025

Date: 26 – 12- 2025　　　　　　　　　　**Time:** 1.00pm to 04.00pm

School: SOCSE	**Program**: B.Tech-CBD/CDV/ISE, BCA	
Course Code: CSA1006	**Course Name:** Operating Systems and Unix Programming	
Semester: MK	**Max Marks**: 100	**Weightage**: 50%

CO - Levels	CO1	CO2	CO3	CO4
Marks	24	30	22	24

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 OS? Nane any 2 examples of OS	2 Marks	L1	CO2
2.	Mention two functions of an operating system.	2 Marks	L2	CO1
3.	Define a process. What are its different states?	2 Marks	L1	CO2
4.	Explain the purpose of different scheduling criteria with an example.	2 Marks	L2	CO1
5.	What is a deadlock? List two necessary conditions for deadlock.	2 Marks	L2	CO2
6.	Differentiate between starvation and deadlock with examples.	2 Marks	L1	CO2
7.	Define demand paging.	2 Marks	L1	CO3
8.	What is Belady's anomaly?	2 Marks	L1	CO3
9.	Differentiate between Deadlock Prevention and Deadlock Avoidance.	2 Marks	L1	CO3
10.	Define a process. What are its different states?	2 Marks	L1	CO2

Part B

11.	a.	Explain the different types of operating systems with suitable examples.	10 Marks	L2	CO 1
	b.	What are the different types of system calls? Explain with examples.	10 Marks	L1	CO 1
		Or			
12.	a.	Describe the architecture of an operating system.	10 Marks	L2	CO 1
	b.	Explain in detail about the operating system services.	10 Marks	L1	CO 1

13.	a.	What is a thread? Explain user-level and kernel-level threads.	10 Marks	L1	CO 2
	b.	Apply Round Robin (RR) Scheduling (Time Quantum = 4 ms) to find the average Total turnaround time and Average waiting time. Show Gantt chart. Process No Burst Time P1 8 P2 5 P3 10 P4 7	10 Marks	L2	CO 2
		Or			
14.	a.	Describe the process management in an operating system. Include the process life cycle and PCB (Process Control Block).	10 Marks	L2	CO 2
	b.	Explain inter-process communication (IPC). Describe direct and indirect communication, shared memory, and message passing.	10 Marks	L2	CO 2

15.	a.	Explain the methods how deadlock can be avoided? Assume that there are 5 processes from P0 through P4. There are 3 resources types: A(10 instances), B(5 instances), and C(7 instances). Snapshot at time T0:	10 Marks	L1	CO 3

		Allocation A B C / Max A B C / Available 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?			
	b.	Consider the following processes with their burst times and arrival times. Draw the Gantt charts and calculate the waiting time and turnaround time for each process using: • SJF Process Arrival Time Burst Time P1 0 5 P2 1 3 P3 2 8 P4 3 6	10 Marks	L3	CO 3

Or

16.	a.	Write a shell script to print all prime numbers between m and n (m<n).	10 Marks	L2	CO 3
	b.	Discuss about the Resource allocation graph in detail with an example.	10 Marks	L3	CO 3

17.	a.	Discuss the methods for handling deadlock in detail.	10 Marks	L2	CO 4
	b.	Write a shell program to find the reverse a given number and check whether it is palindrome or not?	10 Marks	L2	CO 4

Or

18.	a.	i)Write a Shell program to check the given number is even or odd ii)Write any 3 basic LINUX commands.	7 Marks 3 Marks	L1	CO 4
	b.	Explain File operations.	10 Marks	L2	CO 4