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Bengaluru

Mid Term Examinations - October 2026

Date: 07/10/2026 **Time:** 02:00 PM - 03:30 PM

Course Code: CSA2506 **Course Name:** Operating Systems and Unix Programming

Semester: Third Semester **Max. Marks:** 50 **Weightage:** 50%

CO - Levels	CO1	CO2
Marks	92	88

PART A: Answer Following Questions. 10 M

Q.N.	Questions	M	CO	BT
1	Discuss the concept of an Operating System with its functions.	2	CO1	BT1
2	Explain the concept of context switching.	2	CO1	BT2
3	Classify the types of process relationships in an operating systems.	2	CO1	BT2
4	Differentiate between kernel and shell.	2	CO2	BT2
5	Define mutual exclusion concept of an Operating System.	2	CO2	BT1

PART B : Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
6	Explain the various services provided by an Operating System to users and processes.	10	CO1	BT2
7	Explain the various generations of Operating Systems, describing the key technological developments in each.	10	CO1	BT2

PART C: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
8	Describe the basic architectural concepts of an Operating System, including the kernel, shell, and system structure (monolithic, layered, microkernel).	10	CO1	BT2
9	Consider the following processes with their burst times: Process Burst Time P1 8 ms P2 4 ms P3 2 ms P4 6 ms Assuming all processes arrive at time 0, calculate the waiting time and turnaround time using FCFS and SJF scheduling. Compare the results.	10	CO1	BT3

PART D: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT

10	Consider the following processes with their burst times: Process Burst Time P1 7 ms P2 6 ms P3 2 ms P4 5 ms Assuming all processes arrive at time 0, calculate the waiting time and turnaround time using Round Robin scheduling where time quantum is 2ms.	10	CO2	BT3
11	Illustarte the different types of thread models in detail. Compare user-level threads and kernel-level threads based on management, performance, and scheduling.	10	CO2	BT2

PART E: Answer Any 1 Following Questions. 10 M				
Q.N.	**Questions**	**M**	**CO**	**BT**
12	Explain Inter-Process Communication (IPC) in detail. Discuss the need for IPC and explain different mechanisms used for communication between processes.	10	CO2	BT2
13	Define deadlock. Explain the four necessary conditions for deadlock to occur with suitable examples.	10	CO2	BT2