O.P.Code: 23CI0603	R23	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech.II Year II Semester Regular Examinations July/August-2025

PRINCIPLES OF OPERATING SYSTEMS

(Computer Science & Information Technology)

Time: 3 Hours **Max. Marks: 70**

PART-A

(Answer all the Questions **10 x 2 = 20** Marks)

1	a	What is an Operating System?	CO1	L2	2M
	b	Differentiate between kernel mode and user mode.	CO1	L1	2M
	c	Name any two thread libraries.	CO2	L1	2M
	d	Mention any two CPU scheduling algorithms.	CO2	L1	2M
	e	What are the three necessary conditions that a solution to the critical section problem must satisfy?	CO3	L1	2M
	f	What is a binary semaphore? Give one example of its application.	CO3	L1	2M
	g	What is thrashing?	CO4	L1	2M
	h	Name any two HDD scheduling algorithms.	CO4	L1	2M
	i	List any two file access methods.	CO5	L1	2M
	j	What are the basic file operations?	CO5	L2	2M

PART-B

(Answer all Five Units **5 x 10 = 50** Marks)

UNIT-I

2	a	List and Explain the main functions of an operating system with suitable examples.	CO1	L2	5M
	b	Explain different operations performed by the operating system.	CO1	L4	5M
		OR			
3	a	Discuss the types of Operating System in detail.	CO1	L3	5M
	b	Describe the main types of computing environments.	CO1	L4	5M

UNIT-II

4	a	With a neat sketch, explain process state diagram.	CO2	L2	5M
	b	Explain Process Control Block with neat diagram.	CO2	L4	5M
		OR			
5	a	Describe about the different types of Schedulers in operating system.	CO2	L4	5M
	b	Analyze the different types of process operations in operating system.	CO2	L3	5M

UNIT-III

6	a	What is Critical section problem? Explain with example	CO3	L2	5M
	b	What are Mutex Locks? Explain the different types with example	CO3	L4	5M
		OR			
7	a	Describe about Deadlock Prevention Methods .	CO3	L3	6M
	b	Explain Producer Consumer problem using semaphore	CO3	L4	4M

UNIT-IV

8	a	What is memory management? List and discuss about various techniques of managing memory in operating systems.	CO4	L3	6M
	b	Explain about contiguous memory allocation in detail .	CO4	L4	4M
		OR			
9	a	What is paging, and how does it improve memory management? Give an example.	CO4	L3	5M
	b	Explain page table structures and how they manage large memory spaces efficiently.	CO4	L4	5M

UNIT-V

10	a	What is file? Explain its structure and attributes in detail	CO5	L2	5M
	b	Analyze the different file types available.	CO5	L4	5M
		OR			
11	a	What are the different file access methods? Explain with examples.	CO5	L3	5M
	b	Describe types of directory implementation with a neat diagram.	CO5	L3	5M

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