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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY :: PUTTUR
(AUTONOMOUS)
B.Tech. II Year II Semester Supplementary Examinations December-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	Mention any two open-source operating systems.	CO1	L2	2M
	b	Name two types of system calls.	CO1	L1	2M
	c	Define preemptive and non-preemptive scheduling.	CO2	L1	2M
	d	List Differentiate between a program and a process.	CO2	L1	2M
	e	Define deadlock in operating systems with an example	CO3	L1	2M
	f	Mention two recovery methods from deadlock.	CO3	L1	2M
	g	What is contiguous memory allocation?	CO4	L1	2M
	h	Define demand paging?	CO4	L1	2M
	i	Write any two file allocation methods.	CO5	L1	2M
	j	Name any two principles of protection.	CO5	L2	2M

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

UNIT-I

2	a	Explain why you need system calls in Operating System and how they work.	CO1	L2	5M
	b	Illustrate any two operating system structures.	CO1	L4	5M
		OR			
3	a	Design a boot sequence for an operating system and outline the steps involved in system start up.	CO1	L3	5M
	b	How would you use log files, core dumps, and trace listings to debug a system that is intermittently failing?	CO1	L4	5M

UNIT-II

4	a	Discuss multithreading models with neat diagrams.	CO2	L2	5M
	b	Explain in detail about Thread Libraries and its implementations.	CO2	L4	5M
		OR			
5	a	What are common threading issues in concurrent programming, and how can they be effectively prevented or managed?	CO2	L4	5M
	b	Define thread. Analyze the difference between User-Level & Kernel-Level Thread.	CO2	L3	5M

UNIT-III

6	a	Describe deadlock recovery and how it is performed.	CO3	L2	5M
	b	Illustrate Dead lock detection by Banker's Algorithm with Example.	CO3	L4	5M
		OR			
7	a	Describe how monitor achieve process synchronization.	CO3	L3	6M
	b	Illustrate Bounded Buffer Problem using semaphore.	CO3	L4	4M

UNIT-IV

8	a	What is swapping in memory management? List its pros and cons.	CO4	L3	6M
	b	Analyze the difference between Paging and Segmentation.	CO4	L4	4M

			OR		
	9	**a**	Discuss segmentation in operating system with an example.	**CO4**	**L3**	**5M**
		b	Illustrate the procedure for page fault in demand paging with neat diagram.	**CO4**	**L4**	**5M**
			UNIT-V		
	10	**a**	List and explain the various types of file operations.	**CO5**	**L2**	**5M**
		b	Describe different file allocation methods in detail.	**CO5**	**L4**	**5M**
			OR		
	11	**a**	Illustrate the different directory structures with pros and cons.	**CO5**	**L3**	**5M**
		b	How is free space managed in an operating system?	**CO5**	**L3**	**5M**

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