O.P.Code: 20CI0601 | R20 | H.T.No.

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech II Year I Semester Regular & Supplementary Examinations December-2023
PRINCIPLES OF OPERATING SYSTEMS
(Computer Science & Information Technology)

Time: 3 Hours **Max. Marks: 60**

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	a	Describe briefly the layers of operating system structures.	CO1	L1	6M
	b	Explain about evaluation of operating system.	CO1	L2	6M

OR

2	a	Difference between Kernel and Operating System.	CO1	L4	6M
	b	Discuss in briefly about Protection and Security.	CO1	L2	6M

UNIT-II

3	a	Explain the different threading issues?	CO2	L2	6M
	b	Consider the following processes, with the length of CPU burst time given below:	CO2	L5	6M

Process	Burst Time	Priority
P1	10	3
P2	4	1
P3	2	5
P4	1	4
P5	5	2

Consider a Gantt chart illustrating the execution of these job using FCFS,SJF, non preemptive priority& Round Robin(quantum=1), CPU scheduling.

OR

4	a	Explain in detail about operations of process.	CO2	L2	6M
	b	Discuss about Multilevel Queue Scheduling and First come First Serve with example.	CO2	L2	6M

UNIT-III

5	a	What are the Strategies for handling Deadlock?	CO3	L1	6M
	b	What is Process synchronization? Explain Critical-section problem with solution.	CO3	L1	6M

OR

6	a	Explain Peterson's solution.	CO3	L1	6M
	b	Write the properties and limitations of semaphores.	CO3	L1	6M

UNIT-IV

7	a	Difference between paging and segmentation.	CO4	L4	6M
	b	Explain any two page replacement algorithms.	CO4	L3	6M

OR

8	a	Difference between External fragmentation and Internal fragmentation. How to solve the fragmentation problem using paging?	CO4	L5	6M
	b	Explain the terms: i) First-fit ii) Best-fit iii) Worst fit	CO4	L2	6M

UNIT-V

9	a	Consider a typical situation in a multiprogramming environment, in which the operating system maintains a queue of requests for each I/O device. Assume the disk has 200 tracks and that the disk request queue has random requests in it. The requested tracks are received in the	CO5	L5	6M

following order:
55,58,39,18,90,160,150,38,184,27,129,110,186,147,41,10,64,120.Assu me that the head disk is initially positioned over track 100 and is moving in the direction of decreasing track number. Perform the analysis for C-SCAN, LOOK and C-LOOK.

	b	Explain in detail about File system Allocation methods with neat diagram.	**CO5**	**L3**	**6M**

OR

10	**a**	What is Directory? Explain Directory implementation.	**CO5**	**L2**	**6M**
	b	Explain the different disk scheduling algorithms with neat diagrams.	**CO5**	**L2**	**6M**

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