Q.P. Code: 18CI0601 **R18**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year II Semester Supplementary Examinations July-2021

FUNDAMENTALS OF OPERATING SYSTEMS

(Computer Science & Information Technology)

Time: 3 hours Max. Marks: 60

PART-A

(Answer all the Questions **5 x 2 = 10** Marks)

1	a	Difference between Monolithic kernel and Micro kernel?	**2M**
	b	What requirement is to be satisfied for a solution of a critical section problem?	**2M**
	c	Define 'Safe State"?	**2M**
	d	What is the basic method of Segmentation?	**2M**
	e	Define UFD and MFD.	**2M**

PART-B

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

UNIT-I

2	a	What is operating system? Explain different types of operating system in detail.	**5M**
	b	Explain in detail about open source operating systems.	**5M**

OR

3	a	Describe briefly the layers of operating system structures.	**5M**
	b	Discuss in briefly about Protection and Security.	**5M**

UNIT-II

4	a	Explain different types of CPU Scheduling algorithms with example.	**5M**
	b	What are the 3 different types of scheduling queues?	**5M**

OR

5	a	Consider the following processes, with the length of CPU burst time given below:	**5M**

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

i) Consider a Gantt chart illustrating the execution of these job using FCFS,SJF ,non preemptive priority& Round Robin(quantum=1), CPU scheduling. Calculate the average waiting time and average turnaround time for each of the above Scheduling algorithm

	b	What are Threads? Write about Types of Threads.	**5M**

UNIT-III

6 **a** Considering a system with five processes P0 through P4 and three resources of type A, B, C. Resource type A has 10 instances, B has 5 instances and type C has 7 instances. Suppose at time t0 following snapshot of the system has been taken: **5M**

Process	Allocation			Max			Available		
	A	B	C	A	B	C	A	B	C
P0	0	1	0	7	5	3	3	2	2
P1	2	0	0	3	2	2			
P2	3	0	2	9	0	2			
P3	2	1	1	2	2	2			
P4	0	0	2	4	3	3			

i) What will be the content of the Need matrix? ii) Is the system in a safe state? If Yes, then what is the safe sequence?

b Explain about the Recovery from deadlock **5M**

OR

7 **a** Explain the solution for Dining-Philosophers Problem. **6M**

b Explain in detail about producer consumer problem. **4M**

UNIT-IV

8 **a** Consider the following page reference string:1,2,3,4,2,1,5,6,1,2,3,7,6,3,2,1,2,3,6.How many page faults would occur for the LRU,FIFO,LFU and Optimal page replacement algorithms, assuming two and five frames. **6M**

b Write about Contiguous memory allocation. **4M**

OR

9 **a** Difference between External fragmentation and Internal fragmentation. How to solve the fragmentation problem using paging? **5M**

b Explain the concept of Virtual memory. **5M**

UNIT-V

10 **a** Consider a disk queue with requests for I/O to blocks on cylinders in the following order: 98,183,37,122,14,124,65,67 .The disk head is initially at cylinder 53.Discuss how the FIFO,SSTF,SCAN,C-SCAN,LOOK and C-LOOK disk scheduling algorithms will work for the data set. Compute the total head movement for each algorithm . **5M**

b Compare the C-LOOK and C-SCAN disk scheduling algorithms. **5M**

OR

11 **a** Explain in detail about File system Allocation methods with neat diagram. **5M**

b What is File? Explain File concept in detail. **5M**

END