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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

**B.Tech II Year I Semester Regular & Supplementary Examinations March-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 Difference between Kernel and Operating System. CO1 L3 6M  
b Discuss about User and Operating System Interface. CO1 L4 6M

OR

- 2 a Explain operating system operations. CO1 L3 6M  
b How operating system services are provided by system calls? Explain. CO1 L2 6M

**UNIT-II**

- 3 Consider the following processes, with the length of CPU burst time given below: CO2 L4 12M

Process	Burst Time	Priority
P1	6	3
P2	3	2
P3	9	4
P4	4	1

Consider a Gantt chart illustrating the execution of this job using FCFS, non preemptive priority & SJF CPU scheduling.

OR

- 4 a What is CPU scheduling? Explain types of Scheduling and Scheduling Criteria. CO2 L2 6M  
b Explain Process Control Block with neat diagram. CO2 L3 6M

**UNIT-III**

- 5 a List and explain the properties and limitations of semaphores. CO3 L3 6M  
b Explain the methods for handling deadlocks. CO3 L2 6M

OR

- 6 a What is Process synchronization? Explain Critical-section problem with Solution. CO3 L3 6M  
b Explain Dead lock detection with Example. CO3 L2 6M

**UNIT-IV**

- 7 a Difference between External fragmentation and Internal fragmentation? How to solve the fragmentation problem using paging. CO4 L3 6M  
b What is fragmentation? Explain the types of fragmentation. CO4 L2 6M

OR

- 8 a Difference between paging and segmentation. CO4 L4 6M  
b Discuss logical versus physical address space. CO4 L3 6M

**UNIT-V**

- 9 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 following order: 55,58,39,18,90,160,150,38,184,27,129,110,186,147,41,10,64,120. Assume that the head disk is initially positioned over track 100 and is moving in the direction of decreasing track number. Perform the analysis for FIFO, SSTF and SCAN. CO5 L3 12M

OR

- 10 a Explain the different disk scheduling algorithms with neat diagram. CO5 L4 6M  
b Discuss about File system Allocation methods with neat diagram. CO5 L3 6M

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