LAST MOMENT TUITIONS

Operating System

December 18

Computer Engineering (Semester 4)

Total marks: 80
Total time: 3 Hours

INSTRUCTIONS
(1) Question 1 is compulsory.
*(2) Attempt any **three** from the remaining questions.*
(3) Draw neat diagrams wherever necessary.

1.a. Explain the difference between monolithic kernel and micro kernel. (5 marks)

1.b. What is mutual exclusion? Explain its significance. (5 marks)

1.c. Discuss various types of scheduler. (5 marks)

1.d. Explain various process states with diagram. (5 marks)

1.e. What is the effect of page size on performance of operating systems? (5 marks)

2.a. What is operating system? Explain various functions and objectives (10 marks)

2.b. What is deadlock? Explain the necessary and sufficient condition for deadlock. (10 marks)

3.a. Explain counting semaphore with examples. (10 marks)

3.b. Consider the processes P1, P2, P3, P4 given in the below table, arrives for execution in the same order, with Arrival Time 0, and given Burst Time. Draw the Gantt chart and find the average waiting time using the FCFS and SJF (Non-Pre-emptive) scheduling algorithm.

Process	Burst Time
P0	21
P1	3
P2	6
P3	2

(10 marks)

4.a. What is paging? Explain LRU, FIFO and Optimal page replacement policy for the following string. Page frame size is 4. Calculate the hit ratio for the same.
1,2,3,4,5,3,4,1,6,7,8,7,8,9,7,8,9,5,4,5,4,2 (10 marks)

4.b. Explain data structures used in banker's algorithms with example. (10 marks)

5.a. What is system call? Explain any five system call in details. (10 marks)

5.b. Explain virtual memory concept with respect to paging, segmentation and TLB (10 marks)

Write short note (Any Two)

1. **6.a.** Linux Virtual file system (10 marks)
2. **6.b.** Resource Allocation graph. (10 marks)
3. **6.c.** Readers and writer problem using Semaphore. (10 marks)
4. **6.d.** Compare disk scheduling algorithms. (10 marks)