Term Evaluation (Odd) Semester Examination September 2025

Roll no.....

Name of the Course: MCA
Semester: I
Name of the Paper: Advance Operating System
Paper Code: TMC-104/TMD-105
Time: 1.5 hour **Maximum Marks: 50**

Note:

(i) Answer all the questions by choosing any one of the sub-questions
(ii) Each question carries 10 marks.

Q1. (10 Marks)

a. Differentiate between kernel and shell. Explain their roles in operating system design. (CO1)

OR

b. Explain files and file systems. Discuss different types of file organization and access methods. (CO1)

Q2. (10 Marks)

a. Write short notes on the following: (CO2)
   a) Domain of Protection
   b) Access Control

OR

b. Consider the following Processes:

Process	Arrival Time	Burst Time
P1	0	8
P2	1	4
P3	2	9
P4	3	5

- Using FCFS algorithm, Prepare the Gantt chart.
- Calculate Turnaround Time (TAT), Waiting Time (WT), and their averages.

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Q3. (10 Marks)

a. Write short notes on the following : (CO2)
i) Single-level and multi-level directories
ii) Disk fragmentation and management techniques

OR

b. What is starvation in SJF? Suggest a method / Algorithm to overcome it. (CO1)

Q4. (10 Marks)

a. Write a detailed note on SVR3 scheduling algorithms and their importance in modern systems. (CO2)

OR

b. Consider the following processes waiting for CPU. Now using Round Robin Scheduling, where processes are given, AT and BT is also given then with Time Quantum of 2 ms then find the following terms : (CO1)

Process	Arrival Time	Burst Time
P1	0	5
P2	1	4
P3	2	6
P4	3	3

- Prepare the Gantt chart.
- Calculate WT, TAT, and Response Time for each process.

Q5. (10 Marks)

a. Explain with examples how CPU scheduling affects system performance. (CO1)

OR

b. Compare Round Robin with FCFS and SJF in terms of: (CO1)

- Fairness
- Throughput
- Average waiting time