GALGOTIAS UNIVERSITY

ADMISSION NUMBER												

School of Computing Science and Engineering

Master of Computer Applications
Mid Term Examination - May 2024

Duration : 90 Minutes
Max Marks : 50

Sem II - E1PY207T - Operating Systems

General Instructions
Answer to the specific question asked
Draw neat, labelled diagrams wherever necessary
Approved data hand books are allowed subject to verification by the Invigilator

1) What is the function of operating system related to process management? K2 (2)

2) Differentiate between multiprogramming and Time sharing Operating syatem. K1 (3)

3) What is system call? Explain the types of system call K2 (4)

4) Explain the structure of operating system. K2 (6)

5) Discuss the working of different scheduling queue with help of queueing diagram. K3 (6)

6) Consider the set of 5 processes whose arrival time and burst time are given below- K3 (9)

Process Id	Arrival-time	Burst-time
P1	3	1
P2	1	4
P3	4	2
P4	0	6
P5	2	3

If the CPU scheduling policy is SJF non-pre-emptive, Estimate the average waiting time and average turn-around time.

7) Three process p1, P2 and P3 arrive at time zero. Their total execution time is 10ms, 15ms, and 20ms respectively. They spent first 20% of their execution time in doing I/O, next 60% in CPU processing and the last 20% again doing I/O. For what percentage of time was the CPU free? Use Round robin algorithm with time quantum 5ms. K4 (8)

8) Consider three processes, all arriving at time zero, with total execution time of 10, 20 and 30 units respectively. Each process spends the first 20% of execution time doing I/O, the next 70% of time doing computation, and the last 10% of time doing I/O again. The operating system uses a shortest remaining compute time first scheduling algorithm and schedules a new process either when the running process gets blocked on I/O or when the running process finishes its compute burst. Assume that all I/O operations can be overlapped as much as possible. For what percentage of does the CPU remain idle? K4 (12)

OR

Find and explain the average waiting time of the scheduling algorithms for the following process using FCFS, Priority and Round Robin scheduling algorithms. Quantum Time is: 10ms. K4 (12)

Process	Burst Time
P1	29
P2	10
P3	7
P4	12
P5	3

Give Gantt chart illustrating the execution of these jobs using the non-pre-emptive FCFS and SJF scheduling algorithms. Compile the average turnaround time and average waiting time of each job for above algorithms.