USMAN Institute of Technology

Department	Engineering Technology
Course-Code	CET225
Course-Name	Operating Systems
Submission Deadline	26-11-2024
Total Marks	5

Assignment#02

General Instructions:

- Your work should be original, not copied from internet or any other resource
- You can discuss with class fellows and research from internet but do not copy paste.
- Assignment should be submitted before due date.
- First Page your Assignment must be Title page, with Assignment No. Student Id and Full Name
- Submit hand written assignment.

Question#01:

Using the following process data, calculate the **completion time**, **waiting time**, and **turnaround time** for each process using the **First-Come, First-Served (FCFS)** and **Shortest Job First (SJF)** scheduling algorithms. Additionally, calculate the **average waiting time** and **average turnaround time** for each algorithm. Draw Gantt chart for each scheduling algorithm.

Process	Burst Time (ms)	Arrival Time (ms)
P1	5	0
P2	9	1
P3	6	2
P4	3	3
P5	4	4

Question#02:

Using the same process data, calculate the scheduling metrics if the non-pre-emptive **Priority Scheduling** algorithm is used (assuming the following priorities):

Process	Burst Time (ms)	Arrival Time (ms)	Priority
P1	5	0	3
P2	9	1	1
P3	6	2	4
P4	3	3	2
P5	4	4	5

- Calculate **completion time**, **waiting time**, and **turnaround time** for each process.
- Calculate the **average waiting time** and **average turnaround time**.
- If two processes have the same priority, use FCFS as a tie-breaker.

Question#03:

Summarize your results from Questions 1-2. For each scheduling algorithm (**FCFS, SJF, RR,** and **no preemptive Priority** Scheduling):

- List the **average waiting time** and **average turnaround time**.
- Briefly discuss which algorithm performed best in terms of average waiting time and why that might be the case.

Question#04:

What factors determine the time quantum in **round robin** scheduling? Consider the system:
Compute the **average turnaround time** of the processes for the time quantum q = 2, q = 4, and q = 8 respectively.

Process	Burst Time (ms)	Arrival Time (ms)
P1	0	12
P2	2	6
P3	8	18
P4	10	4
P5	4	4