Tutorial 4
CSN 232 Operating System

Q1. Which one or more of the following CPU scheduling algorithms can potentially cause starvation?

A. First-in-First-out
B. Round Robin
C. Priority Scheduling
D. Shortest Job First

Q2. Consider four processes P, Q, R, and S scheduled on a CPU as per round robin algorithm with a time quantum of 4 units. The processes arrive in the order P, Q, R, S, all at time t = 0. There is exactly one context switch from S to Q, exactly one context switch from R to Q, and exactly two context switches from Q to R. There is no context switch from S to P. Switching to a ready process after the termination of another process is also considered a context switch. Which one of the following is NOT possible as CPU burst time (in time units) of these processes?

A. P = 4, Q = 10, R = 6, S = 2
B. P = 2, Q = 9, R = 5, S = 1
C. P = 4, Q = 12, R = 5, S = 4
D. P = 3, Q = 7, R = 7, S = 3

Q3. Consider the following set of processes, assumed to have arrived at time 0. Consider the CPU scheduling algorithms Shortest Job First (SJF) and Round Robin (RR). For RR, assume that the processes are scheduled in the order P1, P2, P3, P4.

Processes	P1	P2	P3	P4
Burst Time (in ms)	8	7	2	4

If the time quantum for RR is 4 ms, then what is the absolute value of the difference between the average turnaround times (in ms) of SJF and RR (round off to 2 decimal places)?

A. 10.5
B. 15.75
C. 5.25
D. 4.25

Q4. Consider the following four processes with arrival times (in milliseconds) and their length of CPU burst (in milliseconds) as shown below:

Process	P1	P2	P3	P4
Arrival Time	0	1	3	4
CPU Burst Time	3	1	3	Z

These processes are run on a single processor using preemptive Shortest Remaining Time First scheduling algorithm. If the average waiting time of the processes is 1 millisecond, then what is the value of Z?

A. 1
B. 2
C. 3
D. 4