Multi-tasking and RT Scheduling Problems
COE718 – Embedded System Design

Q. 1: What is the difference between turnaround time and response time?

Q. 2: What is the difference between Non-preemptive and Preemptive Scheduling?

Q. 3: Suppose a new process in a system arrives at an average of four processes per minute and each such process requires an average of 12 seconds of service time. Estimate the fraction of time the CPU is busy in a single processor system.

Q. 4: Consider the following processes are to be scheduled using, FCFS, Round Robin with time quantum 1 and 4.

	A	B	C	D	E
T_a	0	1	3	9	12
T_s	3	5	2	5	5

Q. 5: Assume you have the following processes to execute with one CPU.

Process	**Arrival Time**	**Execution Time**
0	0	75
1	10	40
2	10	25
3	80	20
4	85	45

Suppose a system uses RR (Round-Robin) scheduling with a time quantum of 15 and context switch time is five time-units.
Create a Gantt chart illustrating the execution of these processes.
What is the turn-around time for process 3?

Q. 6:

a. Consider a periodic task set with the following independent tasks.
Task P1: C1 = 20 T1 = 100
Task P2: C2 = 30 T2 = 145
Task P3: C3 = 68 T3 = 150
Verify the utilization-based analysis for all the three tasks.

b.
Suppose that the first instance of the preceding three tasks arrives at time t = 0.
Assume that the first deadline for each task is the following:
D1 = 100; D2 = 145; D3 = 150;
(i) Using Rate Monotonic Scheduling, will all three deadlines be met?
(ii) What about deadlines for future repetitions of each task?