BRAC University, Dhaka
Department of Computer Science and Engineering

CSE321: Operating Systems
Quiz - 2

Marks: 15 **Time: 30 Min**

Name:	ID:	Section:

1. Determine if the following sentences are true or false. For any false sentence, write its correct form. 5*1 = 5

   i. To increase performances of a scheduling algorithm, we need to minimise Throughput. (F)
   We need to maximise throughput.

   ii. All queues in a multilevel queue must implement the same scheduling algorithm. (F)
   Different queues can implement different scheduling algorithms.

   iii. A thread can be considered lightweight in comparison to a process. (T)

   iv. In a many-to-one model, multiple user threads utilise multiple kernel threads. (F)
   Multiple user threads utilise the same kernel thread.

   v. Parallel components of an application have an effect on the performance of a system when additional cores are added into the system. (F)
   Serial components affect the performance of the system when additional cores are added into the system.

2. Consider the following processes: 10

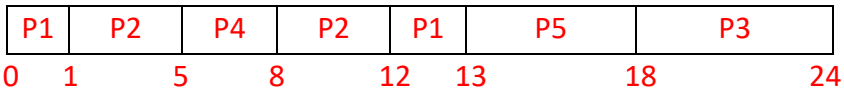
Process	Burst Time	Arrival Time	Priority
P1	2	0	3
P2	8	1	2
P3	6	3	5
P4	3	5	1
P5	5	7	4

Answer the following for preemptive priority and RR (q = 3ms) scheduling algorithms

   i. Draw the Gantt Chart for each algorithm. 4
   ii. Calculate the average turnaround time for each algorithm. 2
   iii. Calculate the number of context switches. 2
   iv. Among these two algorithms, which one is better in terms of average turnaround time and context switches. 2

Answer is in the next page.

Preemptive priority scheduling algorithm:



Turnaround time:

P1 = 13 – 0 = 13

P2 = 12 – 1 = 11

P3 = 24 – 3 = 21

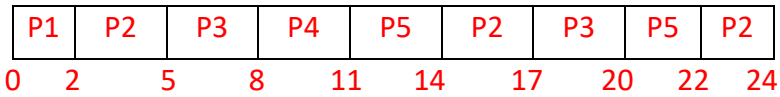
P4 = 8 – 5 = 3

P5 = 18 – 7 = 11

Average turnaround time = (13+11+21+3+11)/5 = 59/5 = 11.8ms

No. of context switches: 6

RR scheduling algorithm (q = 3ms):



Turnaround time:

P1 = 2 – 0 = 2

P2 = 24 – 1 = 23

P3 = 20 – 3 = 17

P4 = 11 – 5 = 6

P5 = 22 – 7 = 15

Average turnaround time = (2+23+17+6+15)/5 = 63/5 = 12.6ms

No. of context switches: 8

The preemptive scheduling is better for both criteria.