CENG328 – OPERATING SYSTEMS

Homework 3

Question 1: Consider the set of processes with arrival time (in milliseconds), CPU burst time (in milliseconds), and priority (0 is the highest priority) shown below. None of the processes have I/O burst time.

Process	Arrival time	Burst Time	Priority
P1	0	10	2
P2	3	6	1
P3	5	14	3
P4	7	4	0
P5	12	7	1

a. Draw Gantt charts that illustrate the execution of these processes using the following scheduling algorithms:
   I. FCFS,
   II. Nonpreemptive SJF,
   III. Preemptive SJF
   IV. Nonpreemptive priority
   V. Preemptive priority
   VI. RR (quantum = 3) (i.e. standard round robin)
   VII. Priority based RR (quantum = 3) (If a process is preempted by a higher-priority process, the preempted process is placed at the end of the queue)

b. What is the turnaround time of each process for each of the scheduling algorithms in part a?
c. What is the waiting time of each process for each of these scheduling algorithms?
d. Which of the algorithms results in the minimum average waiting time (over all processes)?
e. What is the CPU utilization rate for each of these scheduling algorithms?