Department of Computer Science and Engineering
MIDTERM EXAMINATION Fall 2019
CSE321: Operating Systems

Total Marks: 40   **Time Allowed: 1 Hour 20 minutes**

[Answer all Questions. Understanding the question is a part of the exam.]

CO1   1. a) Define BIOS. Explain "Parallel System" and "Multiprogrammed   [1+4]
System".

     b) Explain Dual mode hardware protection of Operating System.   [3]

     c) Define System Call. Mention two System call of an OS.   [2]

CO2   2. a) Draw process state diagram for process scheduling.   [2]

     b) Distinguish between two IPC models with appropriate diagram.   [4]

     c) Differentiate between Long-Term and Short-Term scheduler.   [4]

CO3   3. a) Consider the following set of processes with the length of the CPU-
burst time given in milliseconds. Draw the Gantt Charts illustrating the
execution of these processes using preemptive priority (a smaller
number implies a higher priority) and RR (time quantum = 2
milliseconds) scheduling. Find average waiting for above scheduling
algorithms and identify which algorithm is the best.   [8]

Process	Burst Time	Arrival Time	Priority
P1	8	3	3
P2	6	5	1
P3	3	18	4
P4	3	20	1
P5	5	4	2

     b) Explain Starvation with proper example.   [2]

CO5   4. a) Explain Race Condition. Explain how "Critical Section" concept
helps to solve race condition.   [2+2]

b) Demonstrate the following table using "Peterson's algorithm for two process". Must consider the below conditions and information for application.

- Each statement will take 3ms to complete
- For process 0: i=0, j=1; and for process 1: i=1. j=0
- Context switching will occur after 12ms
- In critical section area carried only 6 statements
- In remainder section area carried only 3 statement
- Information common to both processes: turn=0;
- flag[0]=FALSE; flag[1]=FALSE;

Process 0	Process 1
i = 0, j =1	i = 1, j =0

[6]