SET: A

EAST WEST UNIVERSITY BANGLADESH
Department of Computer Science & Engineering

CSE325: Operating System (1,2)

Term-II Examination **Spring 2016**

Total Marks: 30 Instructor: Dr. Md. Shamim Akhter Time: 90 minutes

PART-I : Inter Process Communication (IPC) (10)

1. The arrival time (in second) of each individual process is given in Table-1. A counting semaphore variable N = 4 and Table-2 has the execution code of all processes. Critical section requires seven (7) seconds. Your task is to evaluate the starting and ending time of each process to execute the critical section. (5)

Process	Arrival Time
P0	1
P1	2
P2	3
P3	4
P4	4
P5	5
P6	5
P7	6

Table-1

Execution Code
Wait (N); **Critical Section** **…..** **…..** Signal (N)

Table-2

2. Write the differences between **MUTEX** and **Binary Semaphore**. (2.5)
3. **Atomic** wait and signal do not violate the **mutual exclusion**. Explain, WHY? (2.5)

PART-II : Scheduling Algorithm (10)

4. Consider the following set of processes and fill the entries of the following table with **average waiting time** and **average turnaround time** for each indicated scheduling policy. (8)

Process Name	Arrival Time	Processing Time
1	0	3
2	1	5
3	3	2
4	9	5
5	12	5

Scheduling Policy	Average Waiting Time	Average Turnaround Time
FCFS		
RR-2		
SJF		
SRTF		

5. Write the difference between **Multilevel Queue** scheduling and **Multilevel Feedback Queue** scheduling. (2)

PART-III : Dead Lock (10)

6. Consider the following snapshot of a system:

	Allocation				**Max**				**Available**			
	A	**B**	**C**	**D**	**A**	**B**	**C**	**D**	**A**	**B**	**C**	**D**
P_0	0	0	1	2	0	0	1	2	1	5	2	0
P_1	0	1	0	0	2	5	3	0				
P_2	0	3	4	3	2	3	5	5				
P_3	1	6	3	2	0	6	5	2				
P_4	1	0	1	4	0	4	4	6				

Answer the following questions using the **banker's algorithm**:

a) Is the system in a **safe state**? (4)

b) If a request from process P_1 arrives for (2, 5, 2, 0), can the request be granted immediately? (2)

c) If a request from process P_0 arrives for (1, 1, 1, 1), can the request be granted immediately? (2)

d) Prove that the safety algorithm requires the order of m x n^2 operations. (2)