**BCA 2nd Semester**

**Subject: Operating Systems**

**Date of Submission: 08/02/2019**

**Note: Attempt all Questions. Late submissions will not be accepted and will be given zero marks.**

**ASSIGNMENT I**

1. Differentiate between Multiprogramming and Multiprocessing.
2. Write generic components of operating system also draw diagram for this.
3. Define the following terms; Multithreading, Multitasking, Kernel , Spooling
4. What are various functions of Operating Systems? Explain.
5. What are various types of operating systems?
6. What are various services of Operating Systems?
7. What is a Process? Draw a suitable diagram for process States Transition/ Process life Cycle.
8. Define terms: turnaround time, response time, and throughput.
9. What is process scheduling? Compare Long Term, Medium term and short-term schedulers.
10. Draw different structures/architecture diagrams for operating systems.

**ASSIGNMENT II**

1. What is Critical Section and its problems?
2. What are deadlocks? What are necessary conditions for occurrence of a deadlock? How can we avoid deadlocks?
3. What is Banker’s algorithm? How Deadlock is prevented using Banker’s Algorithm? Identify safe sequence for the following data. (Max A is 10, B is 5 and C is 7 instances).

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Process** | **Allocation** | | | **Max** | | | **Available** | | |
| **A** | **B** | **C** | **A** | **B** | **C** | **A** | **B** | **C** |
| P1 | 0 | 1 | 0 | 7 | 5 | 3 | 3 | 3 | 2 |
| P2 | 2 | 0 | 0 | 3 | 2 | 2 |  |  |  |
| P3 | 3 | 0 | 2 | 9 | 0 | 2 |  |  |  |
| P4 | 2 | 1 | 1 | 2 | 2 | 2 |  |  |  |
| P5 | 0 | 0 | 2 | 4 | 3 | 3 |  |  |  |

1. Differentiate between Process and Thread.
2. Explain the following in context of process scheduling:
   1. Turnaround time
   2. Response time
   3. Throughput
   4. Scheduler
3. In case of Preemptive SJF scheduling, draw a Gantt chart and calculate average waiting time of processes for the data given below: (5)

|  |  |  |
| --- | --- | --- |
| **Process** | **Arrival Time** | **Burst Time** |
| P1 | 0 | 8 |
| P2 | 1 | 4 |
| P3 | 2 | 9 |
| P4 | 3 | 5 |