Total No. of Questions – 8] [Total No. of Printed Pages – 2

BE-VI/6(A)
216745

COMPUTER ENGINEERING **COURSE NO. COM– 605**

(Operating System)

Time Allowed – 3 Hours *Maximum Marks - 100*

Note: Attempt ***five*** questions in all selecting at least two questions from each Section. Each question carries ***20*** marks.

Section – A

1. (a) Define O.S. Discuss in detail the role of O.S.

   (b) Compare and contrast Multiprogramming and Multiprocessing. (10, 10)

2. (a) Define the term "CPU Scheduling"? Explain about pre-emptive & non-pre-emptive scheduling.

   (b) What is dynamic scheduling in multiprocessor system? How does it differ from static scheduling? (10, 10)

3. (a) What is a Process? What are the operations defined on a process?

   (b) Consider a system with a set of processes **P1, P2, P3** and their CPU burst times (**mentioned in milli-seconds**), priorities and arrival times being mentioned as below:

Process	CPU Burst Time	Arrival Times	Priority
P1	5	0	2
P2	15	1	3
P3	10	2	1

Assume **1** to be the highest priority and calculate the following:

1. **Average waiting time using FCFS, SJF and Priority Scheduling mechanisms.** (10, 10)

[Turn Over

4. (a) What are Co-operating Processes? Discuss its properties. Explain the term 'race condition' associated with co-operating processes.

(b) What is a Semaphore? How does semaphore provide better solution as compared to other software solutions for the critical section problem? (10, 10)

Section – B

5. (a) Define Deadlock. What are the necessary conditions for the occurrence of a deadlock?

(b) Describe the **Banker's algorithm** for deadlocks avoidance. (10, 10)

6. What is Virtual memory? Describe various approaches for implementing virtual memory in a computer system. Discuss their advantages and disadvantages.

7. (a) Explain the Architecture of UNIX O.S. Discuss is main features.

(b) Discuss the File System of UNIX O.S. Differentiate Directory, Ordinary and Special Files of UNIX. (10, 10)

8. Write in short about following:

(a) Shared Memory (b) Unix Shell

(c) Parallel processing (d) Interrupts (4 x 5)

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