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CAMM/D-20 **24047**

OPERATING SYSTEMS

Paper–MCA-14-35

Time Allowed : 3 Hours] [Maximum Marks : 80

Note : Attempt **five** questions in all, selecting at least **one** question from each Unit. Question No. **1** is compulsory. All questions carry equal marks.

Compulsory Question

1. (a) Define Process and explain various states of a process by drawing a diagram. 4

   (b) How can the Deadlocks be prevented? Discuss. 4

   (c) What is Thrashing? How is it handled? 4

   (d) Discuss Remote file access in distributed file systems. 4

UNIT–I

2. (a) What are the activities of an Operating system in regard to management of process, Memory, File, Secondary-storage and I/O system? 8

(b) What is the difference between a System call and a Functional call? Explain all types of system calls using examples. 8

3. (a) What is Scheduling? Explain the situations when scheduling needs to be performed. 4

(b) Explain Priority scheduling, Round Robin scheduling and Multi-level feedback queue Scheduling pointing out their benefits and drawbacks. 12

UNIT–II

4. What is a Semaphore? How Bounded-Buffer, Reader-Writer and Dining-philosopher classical Synchronization problems can be solved using semaphores? 16

5. What is Deadlock? What are the necessary conditions for occurrence of a deadlock? Write Banker's algorithm to avoid a deadlock and explain it using an example. 16

UNIT–III

6. (a) What is Memory partitioning? Explain various types of Partitioning. 8

(b) Differentiate between Paging and Segmentation. 8

7. (a) Briefly discuss various attributes and operations of a File. Also discuss the protection mechanism in a File system. 8

(b) Discuss FCFS, SSTF, SCAN and LOOK disk scheduling algorithms. 8

UNIT–IV

8. (a) What is the difference between Security and Protection? Discuss various Security threats. 8

(b) What is the need of Protection domain? Also describe major principles of Protection. 8

9. What is Distributed system? How does Distributed operating system differ from a Network operating system? Discuss the basic design issues that must be addressed while designing distributed operating systems. 16