

BT-4/M-21

44183

OPERATING SYSTEMS

Paper-PC-IT-206A

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt *five* questions in all, selecting at least *one* question from each unit. All questions carry equal marks.

UNIT-I

1. (a) Identify the prime objectives of using scheduling. How SJF and priority based scheduling work? Briefly explain each of them. 8
- (b) Give the real time justification of using preemptive *versus* non-preemptive scheduling. 7
2. (a) Discuss the roles of using systems calls and system programs for the effective implementation of operating systems services modules. 8
- (b) Elaborate the roles of interrupts in operating systems. Discuss the technicalities of using various interrupts mechanisms in operating systems. 7

UNIT-II

3. (a) Explain and justify the roles of the following :
 - (i) Producer-Consumer Problem. 4
 - (ii) Banker's Algorithm. 4

- (b) What do you mean by Mutual exclusion? Explain Dekker's solution and Peterson's solution for mutual exclusion. 7
4. (a) Define the Deadlock states. Explain the scientific procedures of the following : 5
- (i) Deadlock Recovery.
 - (ii) Deadlock Prevention.
- (b) Explain and substantiate the concept of inter-process communication in operating systems. 5
- (c) Explain and substantiate the concept of detection and recovery in Deadlocks. 5

UNIT-III

5. (a) Explain the role of multiprogramming with fixed, variable and virtual partitions. 8
- (b) What is a page-fault? List all the steps of how a page-fault is serviced by the operating system. 7
6. (a) The following is the sequence of page requests :
- 1, 2, 4, 5, 4, 3, 2, 5, 2, 2, 4, 5.
- Assume that there are three frames. Now, how many page faults will occur if MFU and LRU algorithms are used to replace pages? 10
- (b) Explain the difference between segmented paging and paged segmentation. 5

UNIT-IV

7. (a) Recognize the importance for employing dedicated devices and shared devices under device management. 8
- (b) Draw and explain the flow of activity that takes place during a remote procedure call (RPC) between two networked systems. 7
8. (a) Write short notes on the following :
- (i) Disk Space Management.
 - (ii) Block Allocation.
 - (iii) Free Space Management. 8
- (b) What is basic role of software and hardware in the security of distributed file systems? How will the distributed file systems be protected from an unauthorized use and virus attacks? 7
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