

Roll No. ....

Printed Pages : 3

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BT-4 / M-19

**OPERATING SYSTEMS**

**Paper-IT-208 N**

*Time allowed : 3 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) Elaborate the roles of interrupts in operating systems. Discuss the technicalities of using various interrupts mechanisms in operating systems. 8
- (b) Give the real time justification of using multiple queues with feedback in process 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) What are the prime objectives of using scheduling ? How preemptive and non-preemptive scheduling works ? Briefly explain each of them. 7

**Unit-II**

3. (a) Define the deadlock states. Explain the scientific procedures of the following :
  - (i) Deadlock avoidance 4
  - (ii) Deadlock prevention 4

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- (b) What do you mean by mutual exclusion? Explain Dekker's solution and Peterson's solution for exclusion. 7
4. (a) Justify the role of critical section for the inter-process communication. 5
- (b) Why monitors and message passing mechanisms are valuable in any type of inter-process communication? 5
- (c) Explain and substantiate the concept of detection and recovery in deadlocks. 5

### Unit-III

5. (a) Explain the concept of Virtual memory. List any two methods for its implementation and explain any one of them with the help of a schematic diagram. 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 Pages segmentation. 5

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## Unit-IV

7. (a) Write short notes on the following :
- (i) Buffering 3
  - (ii) Device allocation considerations 3
  - (iii) Network operating system and NFS 3
- (b) Draw and explain the flow of activity that takes place during a Remote Procedure Call (RPC) between two networked systems. 6
8. (a) How the various RPC semantics are used in presence of failures threads and thread packages ? 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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