

Roll No. ....

Total Pages : 3

**8564**

**BT-5/DX**

**OPERATING SYSTEMS**

Paper : IT-357

Group-II

Opt. (ii)

Time : Three Hours]

[Maximum Marks : 100

**Note :** Attempt *five* questions in all selecting at least *one* question from each unit.

**UNIT-I**

1. (a) What are main functions of Operating system? Discuss the characteristics of "Real-time systems" and "Distributed systems" in detail through examples. 10
- (b) Describe the services being provided by an Operating system to its users and various programs. 5
- (c) Differentiate *System Call* and *System Program* with the help of appropriate examples. 5
2. (a) Draw a Process State Transition Diagram, and explain the interpretation of each transition. 5
- (b) Explain the difference between a Trap and an Interrupt. What is the use of each function? 5
- (c) What is meant by "Race Conditions"? How do they occur? 5
- (d) Explain the terms "Mutual Exclusion" and "Critical Region" with the help of suitable examples. 5

## UNIT-II

3. (a) For the processes listed below, compute the (i) Waiting time, and (ii) Turn-around time, using FCFS, SJF and RR (quantum =1) scheduling algorithms :

Process	: P1	P2	P3	P4	P5
Estimated Run Time	: 20	2	4	2	10.

15

- (b) Write a short note on Multilevel Feedback Queue Scheduling Algorithm. 05
4. (a) What are *four* necessary conditions for deadlock? Describe Banker's algorithm in detail (with the help of an example) for avoiding deadlock. 10
- (b) Explain the difference between Compaction, Paging and Segmentation with the help of examples. 10

## UNIT-III

5. (a) Discuss the following file allocation methods with their merits and demerits :
- (i) Contiguous Allocation.
  - (ii) Linked Allocation.
  - (iii) Indexed Allocation. 12
- (b) Explain the difference between Tree Structured Directory and Acyclic Graph Directory in detail, with the help of suitable examples. 8
6. (a) On a Disk with 1000 cylinders, numbers 0 to 999, compute the number of tracks the disk arm must move to satisfy all the requests in a disk queue. Assume the last request serviced was at track 348 and the head is moving towards zero. The queue in FIFO order contains requests for the following tracks : 126, 877, 695, 478,

108 and 379. Perform the computations for the following scheduling algorithms :

- (i) SSTF.
- (ii) LOOK.
- (iii) C-SCAN. 15

- (b) Differentiate the following terms :

Dedicated devices, Shared devices and Virtual devices through examples. 5

## UNIT-IV

7. (a) What are the benefits of Distributed file system as compared to a file system in a centralized system? 5
- (b) Compare and contrast the technique of caching disk blocks locally, on a client system, and remotely on a server. 5
- (c) Give an overview of the Sun Network File System. 10
8. Write short notes on any *two* of the following :
- (a) UNIX file system and allocation method.
  - (b) Memory Management in UNIX.
  - (c) Windows NT-File System. 10×2=20