



[3763] – 251

T.E. (IT) (Semester – I) Examination, 2010
OPERATING SYSTEMS
(2003 Course)

Time : 3 Hours

Max. Marks : 100

- Instructions :** 1) Answer *all* questions for *each* Section.
2) Answers to the *two* Sections should be written in *separate* answer books.
3) Figures to the *right* indicate *full* marks.
4) *Neat* diagrams must be drawn *wherever* necessary.
5) Assume suitable data *wherever* necessary.

SECTION – I

1. a) Describe in detail the functions of an Operating System as a Resource Manager. 8
b) Describe the classification of Operating Systems with examples. 8

OR

2. a) Describe with the help of a neat diagram the interaction of the Operating Systems with the hardware architecture. 8
b) Explain modern Unix kernel with a neat diagram. 8
3. a) What is process image ? Explain with neat diagram contents of a process image. 8
b) Explain the difference between program and process. 4
c) Explain the process state diagram in detail. 6

OR

4. a) What is critical section problem ? 4
b) Explain the concept of Monitor in detail. 6
c) Explain the Banker's algorithm for Deadlock avoidance with example. 8
5. a) State and explain the scheduling criteria for the uniprocessor scheduling. 4
b) Differentiate between different types of scheduling. 4
c) Compare FCFS, SJF, RR. State which is the better scheduling algorithm. 8

OR

P.T.O.



6. a) List and explain four classes of real-time scheduling. 8
 b) State four approaches for multiprocessor thread scheduling and processor assignment. 8

SECTION – II

7. a) A process references pages in the following order
 4, 5, 6, 7, 4, 5, 8, 4, 5, 6, 7, 8, 6, 4, 7, 5
 Use Optimal and LRU page replacement algorithms to find out the number of page faults for the above reference string using 3 page frames. 10
 b) Explain the concepts of segmentation and paging with the help of neat diagrams. 8

OR

8. a) Explain the following memory allocation strategies with the help of neat diagrams : 10
 1) Best fit 2) First fit
 3) Next fit 4) Worst fit
 b) Explain internal and external fragmentation in detail. 8
 9. a) Describe any four types of file organizations. 8
 b) Describe three levels of record blocking with the help of neat diagram. 8

OR

10. a) Explain the evolution of I/O function in detail. 6
 b) Explain with example and neat diagram following disk scheduling algorithms. 10
 1) SCAN 2) C-SCAN 3) SSTF 4) FIFO
 11. a) State and explain different methods for user authentication for security. 8
 b) Write a shell script to search particular word from the file and display the total count and the line wise count. 4
 c) Write a shell script to find whether a given number is prime or not. 4

OR

12. a) How is security implemented in Windows 2000 ? 8
 b) Explain the UNIX password scheme with the help of neat diagram. 8