



**T.E. (Information Technology) (Semester – I) Examination, 2010**  
**OPERATING SYSTEMS**  
**(2003 Course)**

Time : 3 Hours

Max. Marks : 100

- Instructions :** 1) Answer **three** questions from **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 the services provided by Operating System. 8  
b) Describe the evolution of Operating Systems with examples. 8

**OR**

2. a) Explain the following terms with examples. 8  
1) Multiprogramming  
2) Multitasking  
3) Multiprocessing  
4) Time sharing.  
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 UNIX process diagram in detail. 10

**OR**

4. a) Explain the conditions for the occurrence of deadlock. 8  
b) Explain the Hardware and OS approaches for achieving Mutual Exclusion. 10  
5. a) Explain the RR scheduling algorithm with example. 8  
b) State four approaches for multiprocessor thread scheduling and processor assignment. 8

**OR**



6. a) List and explain any three classes of real-time scheduling. 6
- b) Consider the following set of processes, with the length of processes given in milliseconds. Assume time quantum equal to 1. 10

Process	Arrival time	Burst Time
P1	0	6
P2	2	2
P3	4	3
P4	6	4
P5	8	5

- a) Draw Gantt chart illustrating the execution of these processes using Round Robin scheduling.
- b) Calculate waiting time and turnaround time for each process.
- c) Calculate average waiting time and turnaround time for all the processes.

### SECTION – II

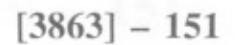
7. a) A process references pages in the following order 10  
 2 3 2 1 5 2 4 5 3 2 5 2  
 Use FIFO and LRU page replacement algorithms to find out the number of page faults for the above reference string using 3 page frames.

- b) Explain the concept of translation Look aside buffer with the help of neat diagram. 8

OR

8. a) Explain the concept of partitioning. Describe any one scheme memory management using partitioning. 10
- b) Explain the concept of paging in detail. 8
9. a) Explain secondary storage management in detail. 8
- b) Describe three levels of record blocking with the help of neat diagram. 8

OR



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

*B/II/10/2,010*