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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

P.T.O.

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

10. Explain with example and neat diagram following disk scheduling algorithms. **16**
    1) SCAN 2) C-SCAN
    3) SSTF 4) FIFO

11. a) Explain shell in detail. State and explain different types of shells. **8**

    b) Write a shell script to find the number palindrome. **4**

    c) Write a shell script to find a factorial of a given number. **4**

OR

12. a) How is security implemented in UNIX ? **8**

    b) Explain the UNIX password scheme with the help of neat diagram. **8**
