00131

ADCA / MCA (III YEAR)

Term-End Examination

December, 2011

CS-13 : OPERATING SYSTEMS

Time : 3 hours,   *Maximum Marks : 75*

Note : *Question number 1 is* **compulsory**. *Answer* **any three** *questions from the rest.*

1. (a)   What is a process ? How it is different from   **6**
        a program ? Can a program, have only one
        process ? Justify your answer.

    (b)   What is deadlock ? Write an algorithm for   **10**
        deadlock detection. Also illustrate this
        algorithm with an example.

    (c)   What is authentication ? Briefly describe   **7**
        the three techniques of authorization.

    (d)   Explain Belady's anomaly with the help of   **4**
        an example.

    (e)   What is the basic difference between   **3**
        Distributed Operating System (DOS) and
        Network Operating System (NOS) ?

2. (a) Consider the following set of processes, with the length of the CPU burst time given in milliseconds.

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Process	Burst time
P_1	7
P_2	28
P_3	14
P_4	4
P_5	15
P_6	6

All six processes arrive at time 0 in the order given. Draw Gantt Charts, illustrating the execution of the processes using FCFS, RR and SJF algorithms. For RR quantum used is 2. Also find turnaround time and waiting time for each process with each algorithm of scheduling.

(b) Explain with example the concept of monitors and conditional critical regions.

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3. (a) For the given sequence of block request, calculate the total head movement using FCFS, SSTF and SCAN algorithms. The head is currently at block 100 and moving towards higher side. Also there are total 200 disk blocks.

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36, 92, 14, 104, 62, 67, 93, 125, 128, 79.

Draw the diagram showing head movement for each algorithm.

(b) Discuss the organization of File Allocation Table (FAT), with a suitable example. What kind of Fragmentation occur in FAT.   7

4. (a) Explain how interprocess communication take place in Distributed Systems, using distributed shared memory ?   8

(b) Explain the block structure of an I/O controller with an appropriate diagram.   7

5. (a) What is virtual memory and how it is implemented ? Explain the occurrence of thrashing in virtual memory system.   8

(b) Explain types of multiprocessor operating system. List similarity and differences between multiprocessor and distributed system.   7

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