01712

ADCA / MCA (III YEAR)

Term-End Examination
June, 2010

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) Explain the concept of paged segmentation with an example. What is address translation in segmentation ? Give an example. **8**

(b) Consider the following page reference string : **10**

2, 4, 1, 3, 2, 5, 6, 1, 3, 0, 4.

Calculate the number of page faults for LRU and OPT page replacement algorithms. Assume the memory with 3 frames. Also discuss Belady's anamoly in reference to FIFO algorithm.

(c) What are the essential conditions for deadlock to occur ? Explain any one algorithm for deadlock recovery (with an example). **8**

(d) How can database and operating system security be carried out ? Suggest some procedures/algorithms. **4**

2. (a) Draw Gantt charts and also find out the average waiting time, average response time for the given set of processes (all arriving at the same time) : **5**

Process	CPU Burst time
P0	4
P1	2
P2	7
P3	3
P4	1

for :

(i) FCFS

(ii) RR (quantum=2) algorithms

(b) How is a distributed OS different from a Network OS ? Give key features of both. **4**

(c) What is meant by the term 'scheduling' ? Differentiate between various categories of scheduling. (Give examples). **6**

3. (a) What is a conditional critical region ? Implement the solution for diners - philosophers problem with the help of semaphore. **10**

(b) Give and explain the architecture of WINDOWS 2000. **5**

4. (a) Explain the concept of multiprogrammed OS. What is thrashing ? Explain the principle of 'working set'. 6

(b) Distinguish between various types of file allocation strategies. Also explain directory structure in UNIX. 6

(c) Give a brief note on IPC in an OS. 3

5. (a) Assume that the disk head is currently at cylinder 0. (Where the total cylinders are from 0 to 199). The disk queue requests are 75, 120, 155, 80, 170, 60, 100. Calculate the total distance (in cylinders) moved by the disk arm by the following algorithms : 9

(i) SCAN

(ii) LOOK

(iii) SSTF

(b) Give example of a real-time OS. What is the difference between a multiprogramming and a multiprocessing OS/architecture ? 4

(c) Give a note on synchronous and asynchronous data transfer in a device. 2