Paper-II

Operating System Organization &UNIX

Time: Three Hours] [Maximum Marks : 100

1. Define the essential properties of the following types of operating system :
   (i) Batch
   (ii) Interactive
   (iii) Time-sharing
   (iv) Real Time
   (v) Distributed. 20
2. (a) Explain the term System Call and sketch a diagram to explain the use of System Call to perform I/O operation. 10
   (b) Write short note on virtual machines and its advantages. 10
3. Explain the following Scheduling Algorithm for Processor scheduling highlighting the strengths and limitations of each Algorithm :
   (i) Shortest-Job-First Scheduling
   (ii) Priority scheduling
   (iii) Round-Robin Scheduling
   (iv) Multilevel Queue scheduling 20
4. Explain the following :
   (i) Swapping 5
   (ii) Page-Replacement Algorithm. 15
5. Explain concept of Memory Management with emphasis on Paging and Demand paging. 20
6. Consider a disk queue with request for I/O to blocks on cylinder 185, 15, 195, 65, 155, 85, 170, 90

If the disk head is initially at cylinder 80 and disk drive has 200 cylinders numbered 0 to 199

(i) Draw track chart for FCFS, SSTF, SCAN, C-SCAN, LOOK and C-LOOK algorithm of disk scheduling.

(ii) Also determine total head movement in tracks in each case.

(iii) Which is the best Algorithm ? 20

7. Discuss and compare the following allocation of files on Disk :

(i) Contiguous Allocation

(ii) Linked Allocation

(iii) Indexed Allocation 20

8. Explain the following :-

(i) File Access Methods 6

(ii) File Protection 6

(iii) Distributed File System 8

9. (a) What do you understand by Interprocess Communication ? 10

(b) What are Semaphores ? How do they Implement Mutual Exclusion ? 10

10. Explain the following :-

(i) Architecture of UNIX. 10

(ii) Deadlock Avoidance. 10

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