Roll No. .....

MCA (8-9)/D-14 10379

OPERATING SYSTEMS

Paper-MCA-304

Time Allowed : 3 Hours] [Maximum Marks : 80

Note : Attempt five questions in all, selecting at least one question from each Unit. Q. No. 1 is compulsory.

Compulsory Question

1. (a) Give major functions of Operating system‘
   (b) Explain any one methodology for implementation of Operating system calls.
   (c) What are limitations of Message passing as tool for Inter-process Communication?
   (d) List Coffman’s conditions that characterizing deadlocks.
   (e) Define Thrashing. Give any two reasons for thrashing.
   (f) How disk blocks are allocated for files? Explain any one method in brief,
   (g) Name any two Elevator algoritluns. Why they are called elevator algorithms?
   (h) How revocation of access rights is implemented in UNIX? 8X3=24

UNIT-I

2. Define Operating system and discuss its evolution from Simple batch processing to Modern operating system in detail. 14

3. Given three processes with CPU burst time 6,4,3 and arrival time as 1,0,2 respectively. Describe first come first serve, shortest job first and round robin with time quantum Q = 2 as scheduling algorithms for these processes. Also compute the average response time, average wait time and average turnaround time for three algorithms and state which algorithm performs the best. 14

UNIT-II

4. Describe the usage of Semaphores for Synchronization among Concurrent processes. How semaphores can cause deadlocks? Define reader-Writer problem and suggest deadlock free solution using Semaphore. 14

5. What are three mechanisms used in deadlock handling? Explain deadlock avoidance mechanisms in detail. 14

UNIT-III

6. Differentiate between the terms Demand paging and Pure-demand paging. Discuss major implementation issues involved and performance of demand paging in detail. 14

7. Give functions of File system. Explain various file access methods with_ their advantages and disadvantages. 14

UNIT-IV

8. Discuss the significance of Protection in an Operating system. Give various mechanisms and policies used for protection in a distributed Operating system. 14

9. Write short notes on the following :
   (a) Comparison of Memory Management in DOS, WINDOWS and UNIX 5
   (b) Revocation of Access rights in UNIX 5
   (c) Device scheduling policies. 4