

Second Year First Semester M.C.A. Examination

OPERATING SYSTEMS

Paper - 3 MCA 1

P. Pages : 3

Time : Three Hours]

[Max. Marks : 80

- Note :** (1) All question carry equal marks as indicated.
 (2) Due credit will be given to neatness and adequate dimensions.
 (3) Assume suitable data wherever necessary.
 (4) Illustrate your answers wherever necessary with the help of neat sketches.

1. (a) Describe the three major activities of an operating system with regard to :—
 (i) Memory Management. 6
 (ii) Secondary storage management. 6
 (b) Describe briefly the services provided by operating system. 7

OR

2. (a) Differentiate between various multi-threaded models giving their diagrams. 7
 (b) Describe the five major activities of an operating system with regard to :—
 (i) Process management. 6
 (ii) File management. 6
3. (a) What is CPU scheduling ? Differentiate between primitive and non-primitive type of scheduling. Give the different criteria for determining the best scheduling algorithm. 7
 (b) What is a process control block ? Why is it needed ? Describe atleast seven fields in a PCB. 7

OR

4. (a) Consider the following set of processes. Compute the waiting and turnaround

time for each process for each of FCFS, SJF (Preemptive) and priority (non-Preemptive scheduling).

Arrival time	Process	CPU Burst time	Priority (lower to highest)
0	P1	10	02
2	P2	04	01
3	P3	02	03

- (b) Explain how to eliminate the deadlock using resource preemption. 7
5. (a) What is segmentation ? Explain the principle of operation of segmentation. Give the hardware support needed ? Explain how protection and sharing achieved. 7
- (b) State and explain the LRU page replacement algorithm. 6

OR

6. (a) Explain the following :—
- (i) Page fault. 7
- (ii) External fragmentation. 7
- (b) Explain the following :—
- (i) Thrashing. 6
- (ii) Dynamic linking. 6
7. (a) Explain file system mounting. 6
- (b) Describe the following methods of free space management. Bit vector, Linked List, grouping, counting. 7

OR

8. (a) What is "i-node" ? Explain how to access the i-nodes. 6
- (b) Describe the various methods of directory implementation. 7

9. (a) Explain in brief the I/O kernel structure. AQ-2631 6
(b) Explain :—
(i) Consistency semantics.
(ii) Unix semantics.
(iii) session semantics. 7

OR

10. (a) Differentiate between :—
(i) Physical and logical formatting.
(ii) Sector sparing and sector slipping. 7
(iii) Boot block and data block. 7
(b) Explain the working of SSTF disk scheduling with example. 6

11. (a) With reference to Linux, differentiate between
(i) Fork and clone system calls. 7
(ii) Argument vector and environment vector. 7
(b) Explain the process management in Linux. 7

OR

12. (a) What do you mean by Kernel module ? How does Linux supports kernel module. 7
(b) Describe the various parts of a process content in Linux. 7

