

No. of Questions : 5]

[Total No. of Pages : 2

[2079]
M.C.A. IInd Semester (Main/Back) New Scheme Examination - 2009
MCA
Operating System
2C7113

Time : 3 Hours

Maximum Marks : 80
 Min. Passing Marks : 32

Instructions to Candidates:

Attempt All Questions. Marks of questions are indicated against each question.

1. a) Define an operating system. What are its functions?
 b) Differentiate between :
 i) Batch processing & multi programming.
 ii) Time sharing & distributed systems.
 c) What are system calls? What is their purpose? Explain. [4+(4×2)+4]
2. a) What is a process? Explain the various states which a process undergoes during execution with the help of diagram.
 b) Apply SJFS algorithm to the following set of processes :

<u>Process</u>	<u>Burst Time</u>
P ₁	6
P ₂	8
P ₃	7
P ₄	3

 c) Explain multiprocessor scheduling and real time scheduling. [4+4+8]
3. a) What are the necessary conditions for deadlock to occur? Explain banker's algorithm for deadlock avoidance.
 b) What is a semaphore? Explain Readers - Writers Problem and Dining - Philosophers problem. [8+8]

2C7113 / 2000

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4. a) Explain the difference between paging and segmentation with the help of example. [with diagram].
 b) Apply the following algorithms for the reference string given below and produce the resultant page frames. [8+8]
 i) Optimal page replacement
 ii) LRU page replacement

7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1

OR

- a) Given that a disk drive has 5,000 cylinders numbered 0 to 4999. The drive is currently serving a request at cylinder 143, and the previous request was at cylinder 125. The queue of pending requests, in FIFO order is
 86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130. Starting from the current head position, what is the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests for each of the following disk- Scheduling algorithm.
 i) FCFS
 ii) SSTF (8)
- b) Briefly explain directory implementation, swap space management, disk reliability and recovery. (8)
5. Write notes on :- (4×4)
 a) Implementation of Access Matrix.
 b) Authentication.
 c) Windows NT Design Principles.
 d) Encryption.

2C7113

(2)