2005 CENTRE FOR DEVELOPMENT OF ADVANCED COMPUTING(C-DAC) M.C.A

END-TERM EXAMINATION
THIRD SEMESTER [MCA] - DECEMBER 2005
Paper Code: MCA 201

OPERATING SYSTEM

Time: 3 Hours

Marks: 70

Q. 1.
(a) What are the difference between trap and interrupt?
(b) What is the purpose of base and limit registers?
(c) What is the purpose of command interpreter?
(d) Difference between system calls and system programs.
(e) What is the difference between user level and kernel level threads?
(f) Define the difference between pre-emptive and non pre-emptive scheduling?
(g) Is it possible to have a deadlock involving only one single process? Explain.
(h) What do you mean by memory fragmentation?
8 x 2.5 = 20

UNIT - I

Q. 2.
(a) What is paging? How it differs from segmentation? Explain a system which uses a combined scheme of segmentation with paging. 6
(b) Consider a paging system with the page table stored in memory. If a memory reference takes 200 nano secs and 80 percent of all page table references are found in the associative registers, what is the effective memory reference time? (Assume associative register references time as zero). 4

Q. 3.
(a) Consider the following page reference string:- 6
1, 5, 2, 3, 2, 1, 4, 2, 3, 5, 1, 2, 5, 4, 3, 2, 4, 1, 2
How many page faults will occur assuming three frames for
(i) LRV
(ii) FIFO and
(iii)Optimal Replacement
(b) Describe the steps how a page fault is handled by the operating system. 4

UNIT - II

Q. 4.
(a) What are the necessary conditions for a deadlock to occur? Explain. 5
(b) Explain Banker's algorithm for deadlock avoidance. 5

Q. 5.
(a) What are semaphores? How these are implemented? 4
(b) Explain with examples the following scheduling algorithm. 6
(i) FCFS
(ii) SJF
(iii)Round Robin

UNIT - III

Q. 6. Suppose a disk queue with requests for I/O to blocks on cylinders:-
10
100, 175, 50, 120, 120, 20, 150, 75, 200
If the disk head is currently at 60, find out the total disk head movement for the following algorithm:-
(a) FCFS
(b) SSTP
(c) SCAN
(d) LOOK
(e) C-SCAN

Q. 7.
(a) How swap space is managed by the Operating system? Explain. 5
(b) What are interrupt? How interrupt are handled by the operating system? 5

UNIT - IV

Q. 8. Explain the contiguous, linked and indexed file allocation techniques with suitable example. What technique is used in Unix Operating System? 10

Q. 9.
(a) What are the different file access methods? 5
(b) Explain the different directory structure? 5