

Y 3028

M.C.A. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2006.

Third Semester

CA 232 — OPERATING SYSTEMS

(Regulation 2002)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the characteristics of time shared system?
2. List the features that are possessed by a computer to support multiprogramming.
3. What are the important consideration for CPU scheduling algorithms?
4. Give a practical example for illustrating concurrent process.
5. Give the purpose of Resource request allocation graph and wait for graph?
6. What are the operations that could be performed on a semaphore?
7. Define working Set.
8. Schematically represent the process of address translation in a non-contiguous memory allocation scheme.
9. What is the need for consistency semantics?
10. List the features of distributed systems.

PART B — (5 × 16 = 80 marks)

11. (a) Write notes on:
 - (i) Dual mode of operation (10)
 - (ii) System calls for process management. (6)

Or

- (b) Explain the layered approach for operating system design and implementation. Illustrate with an example OS. (16)

12. (a) (i) Prove that SJF scheduling provides the minimum average turn around time for a set of requests that arrive at same time instant. (7)
- (ii) A program contains a single loop that executes 50 times. The loop contains a computation that lasts 50 msec followed by an I/O operation that consumes 200 msec. This program is executed in a time sharing system with 9 other identical programs. All programs start their execution at the same time. The Scheduling overhead of the Os is 3msec. Compute the response time in the first and subsequent iterations if
- (1) The time slice is 50 msec
- (2) The time slice is 20 msec. (5)
- (iii) Diagrammatically represent process control block. (4)
- Or
- (b) Explain any two preemptive and non preemptive scheduling algorithm with example. (16)
13. (a) Explain the aspects of a monitor type in a programming language. Illustrate the monitor solution to producer consumer problem. (16)
- Or
- (b) Explain the classical problems of synchronisation and suggest solution to one of the problems. (16)
14. (a) (i) It is observed that when a process is executed with alloc = 5, it produces more page faults when the LRU page replacement policy is used than when the Optimal page replacement policy is used. Give a sample page reference string for such a process. (7)
- (ii) Explain LRU approximation algorithm. (9)
- Or
- (b) (i) Explain Free space management. (9)
- (ii) Write notes on Thrashing. (7)
15. (a) Explain the Directory structure organisation which type of organisation is widely used. Justify. (16)
- Or
- (b) Write notes on:
- (i) Windows NT file system (9)
- (ii) Implementation issues in file protection. (7)