

Department of Information Technology

Full Marks: 70

Time: 3 Hours

Answer any Ave questions.

1. a) What do you understand by priority boosting used in Windows scheduling? [3]
b) Describe and explain the recrediting operation done in Linux scheduling.[4]
c) How can you prevent a deadlock occurring in a system? [4]
d) Explain the difference between RAG (Resource Allocation Graph) and wait-for-graph. [3]
2. a) Consider the following variation of the readers-writers problem:
A file cannot be read by any reader when a writer is writing on the file nor it can be written by another writer simultaneously. If a writer wishes to write a file while other readers are reading the file, no new reader will be permitted to read the file unless the writer completes its writing (writer is given the priority). If a writer is writing the file, a reader arrives and subsequently a second writer arrives, second writer will be given the priority after the first writer finishes writing the file. Provide a solution to the above synchronization problem with the help of semaphores (binary or counting semaphores). [5]
b) What is the difference between the compile time address binding and the execution time address binding? [3]
c) Describe clearly (with a diagram) how a logical address is translated into a physical address in the paging system. [6]
3. a) Describe the steps followed by the operating system when a TLB miss occurs. [3]
b) Write short notes on: i) valid-invalid bit ii) dirty bit iii) reference bit. [6]
c) What do you understand by thrashing? [3]
d) What is the expected amount of internal fragmentation given n processes in a paging system with page size d ? [2]
4. a) Write a note on EAT (Effective Access Time) in demand paging system.[4]
b) What is meant by Belady's anomaly? [3]
c) Describe the buddy system for memory allocation. [5]
d) What are the effects of smaller page size in a system? [2]
5. a) What are the information-stored in FCB (File Control Block)? [3]
b) State the difference between the hard link and symbolic link. [3]
c) State the indexed disk allocation method. Compare it to contiguous allocation method. [5]
d) What is FAT? " " [3]
6. a) Initial head pointer is at cylinder 53. The request queue for the blocks on the cinders are: 98,183,37,122,14,124,65,67. Compute the total head movement when C-LOOK disk scheduling algorithm is applied. [5]
b) When can two write requests be issued in parallel in RAID level 5? [3]
c) What is the write penalty;(if any) in RAID level 6? [3]
d) Describe the difference between striping and mirroring. [3]