Reg.No. [redacted]

24596

Velammal College of Engineering and Technology

Viraganoor, Madurai – 625 009
(Autonomous)

B.E./B.Tech End Semester Examinations April 2025

Fourth Semester
Time : 3 Hours

Regulation 2021
Max. Marks 100

21CS208 - Operating Systems
(Common to CSE and IT)

Answer ALL Questions
PART-A (10 x 2 = 20 Marks)

1. Define system software
2. Summarize assembler directives with example.
3. Define system call.
4. Outline the functions of Bootstrap loader.
5. When the CPU scheduling decisions may takes place?
6. Compare preemptive and non-preemptive scheduling.
7. Define logical address and physical address.
8. Differentiate between Global and Local page replacement algorithms.
9. Give the disadvantages of Contiguous allocation
10. List the layers of file system.

Part – B (4 x 16 = 64 Marks)

11. a) Explain the data structure and detailed design of pass 1 of a two-pass assembler with algorithm.

OR

b) Explain the data structure used for macro expansion and write the single pass macro processor algorithm

12. a) Explain in detail about computer system organization.

OR

b) i. Explain the various types of system calls with an example for each.(10)

ii. Discuss the functionality of System boot with respect to an operating system(6)

13. a) Analyze the difference between deadlock prevention and deadlock avoidance strategies. How does the Banker's Algorithm (avoidance) differ from deadlock prevention techniques like hold and wait elimination?

OR

b) Examine the various strategies for deadlock recovery, such as process termination and resource preemption. Compare the pros and cons of each method in terms of system efficiency and reliability.

14. a) Explain Swapping and Contiguous Memory Allocation in Main Memory Management.

OR

b) Explain Page Replacement Algorithms in Virtual Memory Management.

Part – C (1 x 16=16 Marks)

15. a) Make use of the given disk scheduling algorithm (FCFS,CSCAN LOOK CLOOK) to find out the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests.

Consider that a disk drive has 5000 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 request, in FIFO order is 86,1470,913,1774,948,1509,1022,1750,130.

OR

b) Assume the head of a moving disk with 200 tracks, numbered 0....199, is currently serving a request at track 92, and has just finished a request at track 85 and the queue request is kept in the FIFO order, 109, 148, 89, 72, 126, 142. What is the total head movement needed to satisfy these requests for the FCFS, SSTF, SCAN, C-SCAN, LOOK and C-LOOK disk scheduling algorithms?