

III B. Tech I Semester Supplementary Examinations, May/June -2024
OPERATING SYSTEMS

(Com to CSE(AIML),CSE(AI),CSE(DS),CSE(AIDS),AIDS,AIML,CSD)

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**
 All Questions Carry Equal Marks

UNIT-I

1. a) Explain the operating system responsibilities in connection with process management, memory management and I/O management. [7M]
- b) Discuss about the Operating-System Debugging. Explain the debugging process and kernel errors and performance problems [7M]

(OR)

2. a) Explain the Operations of Operating-System in dual mode and multi mode. What is the significance of timer in it? [5M]
- b) How operating system components are interconnected and melded into a kernel? Explain with different structures. [9M]

UNIT-II

3. a) Classify the differences among short-term, medium-term, and long-term scheduling and illustrate with any two scheduling algorithm. [7M]
- b) Write about the semaphore, types of semaphores and operations of it. Explain the semaphore based solution for Reader-Writer's problem. [7M]

(OR)

4. a) Explain three strategies for communication in client-server systems: sockets, Remote Procedure Calls (RPCs) [7M]
- b) How thread library provides the programmer with an API for creating and managing threads? Explain with different thread libraries. [7M]

UNIT-III

5. a) Explain the memory mechanism and its hardware that mapped the programmer's view to the actual physical memory. [7M]
- b) How to increase the performance of memory access with Memory-Mapped Files? Explain its basic mechanism and approaches. [7M]

(OR)

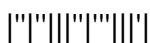
6. a) Write about the concepts of swapping, dynamic loading, dynamic linking and Translation Look a side Buffer. [7M]
- b) For the given reference string with 3 page frames **7 0 1 2 0 3 0 4 2 3 0 7 4 1 0 2 4 3**, implement LRU page-replacement algorithm and LRU-Approximation Page Replacement algorithms and compute the number of page faults. [7M]

UNIT-IV

7. a) Present the system model of deadlocks and characterize with mutex locks. [4M]
- b) Suppose that a disk drive has 5,000 cylinders, numbered 0 to 4,999. The drive is currently serving a request at cylinder 2,150, and the previous request was at cylinder 1,805. The queue of pending requests, in FIFO order, is: **2069, 1212, 2296, 2800, 544, 1618, 356, 1523, 4965, 3681 and 127**. 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 algorithms? a. FCFS b. SSTF c. SCAN d. LOOK e. C-SCAN f. C-LOOK [10M]

(OR)

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8. a) Explain how Redundant Arrays Of Independent Disks (RAID) addresses the performance and reliability issues? Explain. Discuss the Selecting a RAID Level and problems with it. [7M]
b) Illustrate how to allocate space to the files so that disk space is utilized effectively and files can be accessed quickly? Explain Three major methods of allocating disk space in detail. [7M]
- UNIT-V**
9. a) Explain how to revoke access rights to objects shared by different users in systems. [7M]
b) Explore the most important aspects of the parts of cryptography that pertain to operating systems and system security. [7M]
- (OR)
10. a) Analyze about the general model of protection with an access matrix. [7M]
b) Evaluate the computer security classification? Illustrate the system security with Windows system. [7M]

