

III B. Tech I Semester Supplementary Examinations, July – 2023
OPERATING SYSTEMS

CSE(AIML),CSE(AI),CSE(DS),CSE(AIDS),AIDS,AIML

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**

All Questions Carry Equal Marks

UNIT-I

1. a) How operating system ensures the efficient operation of the system itself? Explain with various services. [7M]
 b) What is open source operating system? Explain the history and some examples of it. [7M]

(OR)

2. a) Explain the structure of the operating system with multiprogramming and time sharing systems. [7M]
 b) Discuss the handling of a user application invoking system call and types of system calls. [7M]

UNIT-II

3. a) Write about the following i) process creation ii) process cloning iii) Process termination. [7M]
 b) Illustrate the power of synchronization primitives with bounded buffer problem and explain its implementation through semaphores. [7M]

(OR)

4. a) Discuss the issues to consider in designing multithreaded programs in detail. [7M]
 b) Present critical section problem and explain the solution proposed by Peterson and prove that it is correct. [7M]

UNIT-III

5. a) How paging provides clear separation between the programmer's view of memory and the actual physical memory? Explain its hardware and implementation with suitable examples. [7M]
 b) Explain the need for page replacement and approach of it with FIFO page regalement algorithm with 3 page frames and the reference string is: **7 5 1 2 5 3 5 4 2 3 5 7 1 5 2 4**. [7M]

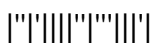
(OR)

6. a) Explain common techniques for structuring the page table: Hierarchical paging, Hashed page tables, and Inverted page tables. [7M]
 b) How to assess the Performance of Demand Paging? Specify the role of Effective Access Time with example. Discuss the Copy on write. [7M]

UNIT-IV

7. a) Present the deadlock detection algorithm with example and explain recovery from the deadlock automatically. [7M]
 b) Write about file attributes, file types and file structures in detail. [7M]

(OR)



8. a) Consider the following snapshot of a system: [10M]

	Allocation	Max	Available
	A B C D	A B C D	A B C D
P0	0 0 1 2	0 0 1 2	1 5 2 0
P1	1 0 0 0	1 7 5 0	
P2	1 3 5 4	2 3 5 6	
P3	0 6 3 2	0 6 5 2	
P4	0 0 1 4	0 6 5 6	

Answer the following questions using the banker's algorithm:

- What is the content of the matrix Need?
- Is the system in a safe state?
- If a request from process P1 arrives for (0,4,2,0), can the request be granted immediately?
- Find the safe state of system.

- b) Present and explain a general overview of the physical structure of secondary and tertiary storage devices. [4M]

UNIT-V

9. a) Discuss the goals and principles of protection and access control in a modern computer system. [7M]

- b) Write about the symmetric encryption, asymmetric encryption, key distributions and authentication aspects of system security. [7M]

(OR)

10. a) Explain major methods, tools, and techniques that can be used to improve resistance to threats while Implementing Security Defenses. [7M]

- b) In detail write about Firewalling and its implementation to Protect Systems and Networks. [7M]

