

III B. Tech I Semester Regular/Supplementary Examinations, December -2023
OPERATING SYSTEMS

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) Discuss in detail the Operating System Functions. [7M]
- b) How user interacts with operating system? Elaborate on Operating System Interface. [7M]

(OR)

2. a) What are the various components of Operating System Structure? Explain them. [7M]
- b) What are system calls? Give its classification. [7M]

UNIT-II

3. a) Give the significance of Process Scheduling. Compare long term schedulers with short term and middle term schedulers. [7M]
- b) What is multithreading? Explain different categories of Multithreading Models. [7M]

(OR)

4. a) What is Race Condition? Where does it occur? Illustrate. [4M]
- b) Give the comparison of various process scheduling algorithms. [10M]

UNIT-III

5. a) What is the need of Memory Management? Explain in detail. [7M]
- b) Discuss in detail about Demand Paging. [7M]

(OR)

6. a) What is Virtual Memory? Explain about Frame Allocation. [7M]
- b) What is segmentation? Compare it with paging. [7M]

UNIT-IV

7. a) How deadlock can be detected? Explain any one deadlock detection algorithm. [7M]
- b) What is a Disk? Give the Overview of Disk Structure. [7M]

(OR)

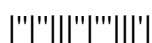
8. a) Elaborate on the necessary and sufficient conditions for deadlock occurrence. [7M]
- b) Give the comparison of various disk scheduling algorithms. [7M]

UNIT-V

9. a) What is System Protection? Explain in detail the Goals of Protection. [7M]
- b) Define threat. Explain in detail about System and Network Threats. [7M]

(OR)

10. a) Compare and contrast Linux with Microsoft Windows. [7M]
- b) Explain in detail about the Classification of Computer Security. [7M]



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UNIT-I

1. a) Write a detailed note on Operating System Operations. [7M]
b) Elaborate on the services provided by operating system. [7M]

(OR)

2. a) How operating system handles system calls? Illustrate system calls for file handling. [7M]
b) Discuss in detail about the need of Open-Source Operating System. [7M]

UNIT-II

3. a) What is Inter Process communication? Explain about the issues in IPC. [7M]
b) What is Scheduling? Explain in detail about Scheduling Criteria. [7M]

(OR)

4. a) Describe the Readers and writers' problem. How to handle it? [7M]
b) How does semaphores provide solution for IPC? Illustrate. [7M]

UNIT-III

5. a) Discuss in detail about Swapping with a neat diagram. [7M]
b) Explain Copy on-write memory management strategy. [7M]

(OR)

6. a) What is Paging? Where does it used? Explain. [7M]
b) Discuss in detail about Kernel Memory Allocation. [7M]

UNIT-IV

7. a) How Deadlock Recovery can be done? Explain with a suitable example. [7M]
b) Explain about RAID Structure along with its merits and demerits. [7M]

(OR)

8. a) Explain Ostrich Algorithm with an example. [7M]
b) How File Systems are Managed and optimized? Explain. [7M]

UNIT-V

9. a) Summarize the Principles that need to be considered for system Protection. [7M]
b) Describe the role of Cryptography for Security. [7M]

(OR)

10. a) Explain in detail about Program Threats. [7M]
b) List out the advantages of Microsoft Windows over Linux Operating System. [7M]

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UNIT-I

1. a) Write a detailed note on Computing Environments. [7M]
b) Give the classification of operating systems. Mention their merits and demerits. [7M]
(OR)
2. a) Explain the layered structure of UNIX operating system. [7M]
b) What is System Boot? Explain in detail. [7M]

UNIT-II

3. a) What is a Process? Explain in detail about Communication in Client-Server Systems. [7M]
b) Explain in detail about various fields of Process Control block.. [7M]
(OR)
4. a) What are Thread Libraries? List out Threading Issues. [7M]
b) Give the Peterson solution to critical section problem. [7M]

UNIT-III

5. a) Explain in detail about Contiguous Memory Allocation. [7M]
b) How does a system identify Thrashing and how to eliminate it? [7M]
(OR)
6. a) What are Memory Mapped Files? Explain in detail. [7M]
b) Write a brief note on Segmentation. Compare it with paging. [7M]

UNIT-IV

7. a) How does resource allocation graph support Deadlock Avoidance? Explain [7M]
b) Explain in detail about the necessity of File System Optimization. [7M]
(OR)
8. a) Explain briefly about Deadlock Recovery. [7M]
b) Distinguish between single level, two level and tree structured directories. [7M]

UNIT-V

9. a) Discuss in role of access matrix in system Protection. [7M]
b) How does Firewall protect systems and networks? Give its classification. [7M]
(OR)
10. a) Explain goals of system protection with an example. [7M]
b) How does User Authentication secure the system? Explain [7M]

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UNIT-I

1.
 - a) What is an Operating System? Explain its Functions. [7M]
 - b) Explain in detail about User and Operating System Interface. [7M]
- (OR)
2.
 - a) Give the classification of operating systems along with their merits and demerits. [7M]
 - b) Explain in detail about Operating System Structure. [7M]

UNIT-II

3. a) Write a detailed note on Scheduling Algorithms. [7M]
b) Discuss the solution to Dining Philosophers Problem using semaphores. [7M]
- (OR)
4. a) What are Mutexes? Give their role in IPC. [7M]
b) What is Message Passing? Explain briefly about Barriers. [7M]

UNIT-III

5.
 - a) Explain in detail how Swapping is used in Memory management. [7M]
 - b) Illustrate LRU and RR Page Replacement algorithms with examples. [7M]
- (OR)
6.
 - a) Distinguish between Main Memory and Virtual Memory. [7M]
 - b) Write a detailed note on Kernel Memory Allocation. [7M]

UNIT-IV

7. a) Compare SCAN and C-SCAN disc scheduling algorithms. [7M]
b) Explain indexed file allocation method with an example. [7M]
- (OR)
8. a) How to recover from deadlock situations? Explain. [7M]
b) Discuss about File system Implementation in detail. [7M]

UNIT-V

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| 9. | a) | Explain in detail about Access Matrix mechanism of system protection. | [7M] |
| | b) | Elaborate on various features of Linux Operating System. | [7M] |
| | | (OR) | |
| 10. | a) | Write a brief note on Revocation of Access Rights. | [7M] |
| | b) | Explain in detail about Implementing Security Defenses. | [7M] |