Code No: R2021052 **R20** SET - 1

II B. Tech I Semester Regular/Supplementary Examinations, December-2023
OPERATING SYSTEMS
(Com to CSE,CSE(IOT), CST, IT,CSE(CS),IOTCSBT,IOT,CS)

Time: 3 hours Max. Marks: 70

Answer any **FIVE** Questions each Question from each unit
All Questions carry **Equal** Marks
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UNIT-I

1 a) What are various operating system functions and explain. [7M]

b) Describe the open-Source operating System. [7M]

OR

2 a) Show the diagrammatic representation of Operating system structure. [7M]

b) Define what is a system call? List and explain why system call required. [7M]

UNIT-II

3 a) Define the process. What is various process scheduling algorithms? Explain. [7M]

b) What is threading? Describe the Multithreading models. [7M]

OR

4 a) Define Race condition, Critical Regions Mutex and Monitors. [7M]

b) Explain the how communication will happen in client server systems. [7M]

UNIT-III

5 a) What are different memory management Strategies. Explain briefly. [7M]

b) Define the technique of Virtual Memory. Describe briefly Demand paging. [7M]

OR

6 a) Explain Paging and segmentation with examples. [7M]

b) Describe with examples the page replacement algorithms. [7M]

UNIT-IV

7 a) What are necessary conditions to happen the Deadlock in the system. [7M]

b) What is banker's algorithm and explain? When this algorithm will run in the system. [7M]

OR

8 a) Briefly explain Deadlock detection and recovery and deadlock prevention [7M]

b) What is the purpose of disc scheduling algorithms? Distinguish between SCAN and LOOK Algorithms with suitable examples. [7M]

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UNIT-V

9 a) What are various Goals and Principles of protection? Describe with examples. [7M]

b) Define System Security and program and network threats. [7M]

OR

10 a) Explain Briefly how Cryptography ensure security. [7M]

b) Explain about Access matrix, Access control and access rights. [7M]

Code No: R2021052 **R20** SET - 2

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Time: 3 hours Max. Marks: 70

Answer any **FIVE** Questions each Question from each unit.
All Questions carry **Equal** Marks
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UNIT-I

1 a) Define the purpose of operating system. What are operating systems operations? [7M]

b) What are various operating system services? Explain the System Boot. [7M]

OR

2 a) Explain various Operating System functions and Interface. [7M]

b) Define the system call. What various system calls and explain. [7M]

UNIT-II

3 a) Describe with a an example the inter-Process communication. [7M]

b) What is a thread? Explain with examples multithreaded Programming. [7M]

OR

4 a) Define the Thread Library and describe thread scheduling. [7M]

b) Explain with examples Race Condition, Critical Section, and Dining philosophers' problem. [7M]

UNIT-III

5 a) Describe with examples the Contiguous memory allocation and Swapping. [7M]

b) Discuss the concept of page replacement technique in the Memory Management with implementation techniques. [7M]

OR

6 a) What is page fault? Discuss how to handle it. Discuss Segmentation mechanism. [7M]

b) Explain the terms with examples Demand paging, Frame allocation and Thrashing. [7M]

UNIT-IV

7 a) Describe the deadlock detection and recovery with an example. [7M]

b) Explain briefly the secondary Structure and RAID. [7M]

OR

8 a) Discuss the necessary conditions for occurring resource deadlocks. Explain the single resource and process deadlock as an example. [7M]

b) Explain the terms Deadlock avoidance and prevention. [7M]

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UNIT-V

9 a) What are the different principles of domain protection? Explain with an example. [7M]

b) Discuss the overview of Linux operating system. [7M]

OR

10 a) What are program threats and network threats? How the Cryptography helps the system security? [7M]

b) Discuss the goals for the protection of the System. [7M]

Code No: R2021052 **R20** SET - 3

II B. Tech I Semester Regular/Supplementary Examinations, December-2023
OPERATING SYSTEMS
(Com to CSE, CST, CSE(IOT), IT,CSE(CS),IOTCSBT,IOT,CS)

Time: 3 hours Max. Marks: 70

Answer any **FIVE** Questions each Question from each unit
All Questions carry **Equal** Marks
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UNIT-I

1 a) What are the services provided by the operating system? Explain briefly. [7M]

b) Briefly explain types of System calls. [7M]

OR

2 a) Discuss with help of a neat diagram the structure of Operating System. [7M]

b) What is debugging? Explain the need of operating system debugging and system boot. [7M]

UNIT-II

3 a) Illustrate about FCFS and Shortest Job First algorithms with suitable examples. [7M]

b) Discuss the concepts of Critical section, Mutual exclusion, Sleep and wakeup. [7M]

OR

4 a) Differentiate between Inter-process communication and Client server communication. [7M]

b) Discuss the Message passing system and Readers and writers problem. [7M]

UNIT-III

5 a) Why Swapping is used in Memory-Management Strategies. Write various advantages of paging and Segmentation. [7M]

b) When thrashing happens in the system. What are the various disadvantages of thrashing? [7M]

OR

6 a) What are various Memory-Management Strategies. Discuss contiguous memory allocation and segmentation. [7M]

b) What is the demand paging. Discuss any three page replacement algorithms. [7M]

UNIT-IV

7 a) Describe the Ostrich algorithm with an example. Briefly explain with an example the Deadlock detection and recovery. [7M]

b) What are various Disk scheduling algorithms, Explain any Three algorithms. [7M]

OR

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8 a) What are various necessary and sufficient conditions to occur a deadlock? Explain. What is the purpose of Bankers algorithm? Write it. [7M]

b) Explain with a neat diagram the disk structure and discuss the following Disk scheduling algorithms. [7M]
(i) FCFS (ii) Shortest Seek-time First

UNIT-V

9 a) What is user authentication? Illustrate the importance of user authentication with suitable example. [7M]

b) Discuss the concept of Cryptography for security. Explain about security defenses. [7M]

OR

10 a) Write short notes on Access matrix, Access control and access rights. [7M]

b) Write the importance of firewall in protecting system and Networks. [7M]

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Time: 3 hours Max. Marks: 70

Answer any **FIVE** Questions each Question from each unit
All Questions carry **Equal** Marks
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UNIT-I

1 a) What are various operating system functions and operations? Discuss. [7M]

b) Discuss briefly operating-system Interface and system calls. [7M]

OR

2 a) Discuss operating system structure and computing environment. [7M]

b) What are system programs and application programs? Define system Boot. [7M]

UNIT-II

3 a) What is process scheduling? Discuss short term scheduling and long term short scheduling schemes. [7M]

b) What is an IPC? Discuss some of classical IPC problems with examples. [7M]

OR

4 a) Define a thread in operating system. What are various Multithreaded models and discuss. [7M]

b) Discuss the concept of inter-process communication and various issues and concepts. [7M]

UNIT-III

5 a) Differentiate constant partition and variable partition techniques. [7M]

b) Discuss page replacement algorithms in memory management. [7M]

OR

6 a) Differentiate between contiguous memory allocation and paging. [7M]

b) Write short notes on Memory-mapped files and kernel memory allocation. [7M]

UNIT-IV

7 a) What is a deadlock? When do deadlocks occur? Discuss the methods of detecting a deadlock and recovering from deadlock. [7M]

b) Write a short note on disk structure and RAID structure. [7M]

OR

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8	a)	What are the different conditions for deadlock occurrence? Explain.	[7M]
	b)	Write a short note on implementation of file system and its optimization.	[7M]

UNIT-V

9	a)	What is system protection. Discuss goals and principles of protection.	[7M]
	b)	Differentiate the security defenses and firewall.	[7M]

OR

10	a)	Write a short note on Access matrix and Revocation of access rights.	[7M]
	b)	Discuss various concepts of Microsoft Windows.	[7M]