



**SIDDARTHA INSTITUTE OF ENGINEERING AND TECHNOLOGY :: PUTTUR
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QUESTION BANK (DESCRIPTIVE)

Subject with Code: Operating Systems(20CS0507)

Course & Branch: B.Tech– CSE,CSM,CIC,CAD,CCC

Year & Sem : II B.Tech &I-Sem

Regulation : R20

UNIT–I

OPERATING SYSTEMS OVERVIEW AND SYSTEM STRUCTURES

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|----|---|---|-----------|-------|
| 1 | a | Define Operating System? Mention what are the goals of an OS. | [L1][CO1] | [4M] |
| | b | Explain the history of Operating Systems. | [L1][CO1] | [8M] |
| 2 | a | List and discuss the different functions of an operating system | [L1][CO1] | [8M] |
| | b | Explain different operations performed by the operating system. | [L2][CO1] | [4M] |
| 3 | a | Examine different types of operating system. | [L4][CO1] | [6M] |
| | b | Describe Computing Environments. | [L2][CO1] | [6M] |
| 4 | a | Distinguish distributed operating system with embedded operating system. | [L2][CO1] | [6M] |
| | b | What is operating system? Explain multi programming and time-sharing operating systems. | [L1][CO1] | [6M] |
| 5 | | Discuss the few services provided by an operating system. | [L2][CO1] | [12M] |
| 6 | a | Discuss briefly about User and Operating System Interface. | [L2][CO1] | [8M] |
| | b | Examine about the dual mode operation in OS with a neat block diagram. | [L3][CO1] | [4M] |
| | a | Define System call, List different types of system calls. | [L1][CO1] | [6M] |
| 7 | b | Evaluate different types of system calls in operating system. | [L5][CO1] | [6M] |
| | a | Write notes on system programs. | [L1][CO1] | [6M] |
| 8 | b | Dissect operating system structures. | [L4][CO1] | [6M] |
| | a | Justify layered structure of an OS. | [L6][CO1] | [8M] |
| 9 | b | Differentiate monolithic kernel and microkernel | [L4][CO1] | [4M] |
| | a | Explain Micro Kernel Operating system. | [L2][CO1] | [6M] |
| 10 | b | Determine concept of virtual machines. | [L3][CO1] | [6M] |

UNIT-II

PROCESSES AND THREADS

- 1 a Define Process? Describe process States with neat diagram. [L1][CO2] [6M]
 b Name and draw five different process states with proper definition. [L1][CO2] [6M]
- 2 a Explain about process Scheduling. list types of scheduling. [L2][CO2] [6M]
 b Differentiate long term Scheduling and Short Term Scheduling [L2][C02] [6M]
 a Determine the following [L5][C02] [6M]
 i)Long-Term Scheduler ii)Short-Term Scheduleriii)Medium Term Scheduler
- 3 b What is the responsibility of Context Switch scheduling in process scheduling. [L1][C02] [6M]
- 4 a Explain in detail about inter process communication. [L2][C02] [6M]
 b Discuss the essential properties of the following types of systems [L2][C02] [6M]
 i)Shared Memory ii)Message Passing
- 5 a Show the usage of process synchronization. [L2][C02] [6M]
 b Define scheduling .Explain SJF scheduling algorithm. [L1][C02] [6M]
- a Compute the average waiting time for the processes using non preemptive SJF scheduling algorithm. [L3][C02] [6M]

Process	Arrival Time	Brust Time
P1	0	7
P2	2	4
P3	4	1
P4	5	4
P5	3	4

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- b Give below Processes table, calculate the average waiting time for the algorithms:First Come First Serve (FCFS) [L2][C02] [6M]

Process	Arrival Time	Brust Time
P1	0	7
P2	2	4
P3	4	1
P4	5	4
P5	3	4

7	Explain in detail about CPU Scheduling Algorithms? With Examples	[L2][CO2] [12M]
8	a What is threading and multithreading in OS?	[L1][CO2] [6M]
	b Write about Advantages of Threads.	[L3][CO2] [6M]
9	a Explain the Structure of user level thread and kernel level thread.	[L4][CO2] [6M]
	b List the Advantages of ULT and KLT	[L1][CO2] [6M]
10	a Discuss about Thread Libraries	[L2][CO2] [6M]
	b Difference between ULT and KLT	[L2][CO2] [6M]

UNIT-III**PROCESS SYNCHRONIZATION AND DEADLOCKS**

1	a Define process synchronization in detail	[L1][CO3] [4M]
	b What is critical section problem? Explain with example.	[L1][CO3] [8M]
2	a What are the different techniques of mutual exclusion?	[L2][CO3] [6M]
	b Classify petersons solution.	[L4][CO3] [6M]
3	a Define Semaphore, discuss in detail wait and signal operations.	[L2][CO3] [6M]
	b List and explain types of semaphores?	[L1][CO3] [6M]
4	a What is Monitor?explain with syntax.	[L2][CO3] [6M]
	b Write Short notes on Classical Problem of Synchronization	[L1][CO3] [6M]
5	Explain the solution for Producer Consumer Problem	[L2][CO3] [6M]
6	a Construct Dinning Philosophers Problem	[L6][CO4] [6M]
	b Develop Readers Writer Problem	[L6][CO4] [6M]
7	a Definition of Dead Lock? What are types of deadlock?	[L2][CO4] [6M]
	b Write Short notes on Dead Lock Characteristics.	[L3][CO4] [6M]
8	a SimulateStarvation vs Deadlock	[L6][CO4] [6M]
	b Write Short note on	[L3][C04] [6M]
	i)Mutual Exclusion	
	ii)Hold and Wait	
9	a Describe in detail deadlock prevention.	[L3][CO4] [6M]
	b Justify what is deadlock avoidance, explain briefly.	[L4][C04] [6M]
10	a Summarize between Deadlock Detection and Recovery	[L2][C04] [6M]
	b Explain Banker's Algorithm?	[L2][C04] [6M]

UNIT –IV

MEMORYMANAGEMENT,VIRTUALMEMORYAND DISKSCHEDULING

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| 1 | a Define Memory management. | [L1][CO5] | [2M] |
| | b Explain about main memory with neat diagram. | [L2][CO5] | [10M] |
| 2 | a What is Swapping? Explain with structure. | [L2][CO5] | [6M] |
| | b Describe the advantages and disadvantages of swapping. | [L2][CO5] | [6M] |
| 3 | a Explain about contiguous memory allocation in memory management. | [L2][CO5] | [8M] |
| | b Write short notes on paging | [L1][CO5] | [4M] |
| 4 | a Justify segmentation. | [L6][CO5] | [6M] |
| | b Explain segmentation with one example ,mention the advantages and disadvantages also. | [L2][CO5] | [6M] |
| 5 | Discuss in detail virtual memory. | [L2][CO5] | [12M] |
| 6 | a Classify demand paging with example. | [L4][CO5] | [6M] |
| | b Dissect pagereplacement with example. | [L4][CO5] | [6M] |
| 7 | a List different types of page replacement algorithms with examples. | [L1][CO5] | [6M] |
| | b Consider the following reference string 7,0,1,2,0,3,0,4,2,3,0,3,2,1,2,0,1,7,0,1. Assume there are three frames. Apply LRU replacement algorithm to the referencesting above and find out how many page faults are produced. Illustrate the LRU page replacement algorithm in detail and also two feasible implementations of the LRU algorithm. | [L5][CO5] | [6M] |
| 8 | a Classify Thrashing | [L4][CO5] | [6M] |
| | b Givenpagereferencestring:1,2,3,2,1,5,2,1,6,2,5,6,3,1,3,6,1,2,4,3. Compare the number of page faults for LRU, FIFO and Optimal page replacement algorithm. | [L5][CO5] | [6M] |
| 9 | What is disk scheduling. List the different Disk scheduling algorithms with their comparisons. | [L4][CO5] | [12M] |
| 10 | a Compare all disk scheduling algorithms. | [L5][CO5] | [6M] |
| | b Describe about disk management. | [L2][CO5] | [6M] |

UNIT-V

FILEMANAGEMENTANDPROTECTION&SECURITY

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|-----------|---|-----------|-------|
| 1 | a Illustrate the concept of file with Example. | [L3][CO6] | [6M] |
| | b Compare the various file access methods | [L3][CO6] | [4M] |
| 2 | a Examine common file types, file operations. | [L4][CO6] | [8M] |
| | b Enlist different types of directory structure.. | [L1][CO6] | [6M] |
| 3 | a What is File system Structure? | [L1][CO6] | [6M] |
| | b Discuss the following file allocation methods | [L2][CO6] | [6M] |
| | i) Contiguous Allocation | | |
| | ii) Linked Allocation | | |
| | iii) Indexed Allocation. | | |
| 4 | Justify free space management in Operating System? | [L6][CO6] | [12M] |
| 5 | a Demonstrate goals of protection in the OS | [L2][CO6] | [6M] |
| | b Explain about Principles of Protection | [L2][CO6] | [6M] |
| 6 | a Dissect what is Domain of protection in Security. | [L4][CO6] | [6M] |
| | b Classify access matrix and its implementation? | [L4][CO6] | [6M] |
| 7 | a Define Authentication? explain types of authentications | [L1][CO6] | [6M] |
| | b What is a password, explain about its types. | [L1][CO6] | [6M] |
| 8 | a Describe in detail about Threats? | [L2][CO6] | [6M] |
| | b Discuss in detail about intruders? | [L2][CO6] | [6M] |
| | a Define Cryptography, mention goals and components of cryptography. | [L1][CO6] | [6M] |
| 9 | b Explain about secret key and public key cryptography. | [L2][CO6] | [6M] |
| 10 | Justify digital signature in detail. | [L6][CO6] | [12M] |

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