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1. **Unit wise Question Bank**

UNIT-I

S. No		Questions	BT	CO
		Part–A (Short Answer Questions)		
1		What are the types of System calls?	L1	CO1
2		What are the advantage and disadvantage of multi processor system?	L1	CO1
3		What are the advantages of layered structure over monolithic structure?	L1	CO1
4		What is Process?		
5		What are threads and its types?		
6		What is the O.S features required for multiprogramming	L1	CO1
7		What are advantages of distributed System?	L1	CO1
8		What are the advantages of layered structure over monolithic structure?	L1	CO1
		Part–B (Long Answer Questions)		
9	a)	Define operating system and list the basic services provided by operating system.	L1	CO1
	b)	Differentiate among the following types of OS by defining their essential properties • Timesharing system • Parallel system • Distributed system • Real time system	L1	CO1
10	a)	Explain the essential properties of • Batch System • Timesharing • Real time • Parallel • Distributed	L2	CO1
	b)	Explain different types of OS Components.	L4	CO1
11	a)	Explain batch system and Multi programmed System in detail.	L2	CO1
	b)	Explain the terms: (i)Real time System (ii)Distributed Systems	L2	CO1
12	a)	Explain the terms: Parallel System Batch System	L2	CO1

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	b)	Explain O.S as extended machine in detail	L2	CO1
13	a)	Explain OS System Calls.	L2	CO1
	b)	Explain essential features of following structure of O.S • Monolithic System • Layered Systems • Micro Kernels • Client Server Model • Virtual Machines • Exo kernels	L2	CO1
14	a)	Define process and Explain process states in details with diagram	L2	CO1
	b)	Explain process states and process control block in details	L2	CO1
15	a)	Explain and differentiate between user level and kernel level thread.	L2	CO1
	b)	Explain Threads in detail? List the main difference and similarities between threads and process	L2	CO1

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UNIT–II

S. No		Questions	BT	CO
		Part– A (Short Answer Questions)		
1		Define Time Slice?	L1	CO2
2		Define Scheduling Queue?	L1	CO2
3		Define preemptive scheduling?	L1	CO2
4		Define Deadlock and system models.	L1	CO2
5		Define CPU scheduler	L1	CO2
6		What is process scheduling?	L1	CO2
7		Define scheduling?	L1	CO2
8		What is multi processor scheduling?	L1	CO2
9		Define real time scheduling system?	L1	CO2
10		Explain the following term related to IPC: a) Race condition b) critical region	L2	CO2
		Part– B (Long Answer Questions)		
11	a)	Explain deadlock avoidance with suitable example using banker's algorithm	L1	CO2
	b)	What are the conditions for deadlock? Explain deadlock detection and recovery in detail.	L2	CO2
12	a)	Explain Dead lock Prevention and deadlock avoidance.	L2	CO2
	b	Explain bankers algorithm for multiple resources to avoid deadlock	L2	CO2
13	a)	Explain deadlock avoidance with suitable example using banker's algorithm	L1	CO2
	b)	Explain FCFS, SJF, Priority and RR algorithms with examples	L2	CO2
14		Write a short note on- Fork, Exit, Wait, Waitpid, Exec of System call interface for process management system.		
15	a)	Explain the following process scheduling algorithm • Priority scheduling • Shortest job first scheduling	L2	CO2
	b)	Explain the effect of increasing the time quantum to an arbitrary large Number and decreasing the time quantum to an arbitrary small number for round robin	L1	CO2

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<table>
<tr><td></td><td></td><td>scheduling algorithm with suitable example?</td><td></td><td></td></tr>
<tr><td>16</td><td>a)</td><td>Consider following processes with length of CPU burst time in milli seconds
<table>
<tr><td>Process</td><td>Burst time</td></tr>
<tr><td>P1</td><td>5</td></tr>
<tr><td>P2</td><td>10</td></tr>
<tr><td>P3</td><td>2</td></tr>
<tr><td>P4</td><td>1</td></tr>
</table>
All process arrived inorderp1, p2,p3,p4alltimezero

Draw Gantt charts illustrating execution of these processes for SJF and round robin(quantum=1)
Calculate waiting time for each process for each scheduling algorithm
Calculate average waiting time for each scheduling algorithm
</td><td>L5</td><td>CO2</td></tr>
<tr><td></td><td>b)</td><td>Consider following processes with length of CPU burst time in millisecond
<table>
<tr><td>Process</td><td>Burst y time</td><td>Priorit</td></tr>
<tr><td>P1</td><td>10</td><td>3</td></tr>
<tr><td>P2</td><td>1</td><td>1</td></tr>
<tr><td>P3</td><td>2</td><td>3</td></tr>
<tr><td>P4</td><td>1</td><td>4</td></tr>
<tr><td>P5</td><td>5</td><td>2</td></tr>
</table>
All processes arrived inorderp1, p2,p3,p4, p5allat time zero</td><td>L5</td><td>CO2</td></tr>
</table>

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UNIT–III

S. No		Questions	BT	CO
Part–A (Short Answer Questions)				
1		Explain the terms related to IPC –a) Race condition b) critical section c)Mutual exclusion d)Semaphores	L2	CO3
2		Explain the following term related to IPC: a) Race condition b) critical region	L2	CO3
3		What is monitor? Explain solution for producer-consumer problem using monitor. Explain monitors in detail.	L1	CO3
4		What is semaphore? Discuss product-consumer problem with semaphore.	L1	CO3
5		Explain the terms related to IPC –a) Race condition b) critical section c)Mutual exclusion d)Semaphores	L2	CO3
6		Discuss in detail following solution for achieving mutual exclusion a) Disabling interrupts b) Strict alteration	L1	CO3
Part–B (Long Answer Questions)				
7	a)	Explain Semaphore in details.		CO3
	b)	Explain about Monitors.		CO3
8	a)	Explain about Synchronization Hardware.	L1	CO3
	b)	Explain about Classical Problems of synchronization	L2	CO3
9	a)	Explain about Pipes and FIFO Pipes.	L2	CO3
	b)	Explain about Message Queue and Shared Memory.	L4	CO3
10		Explain about Critical Section problems		

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UNIT–IV

S. No		Questions	BT	CO
Part–A (Short Answer Questions)				
1		Explain the difference between logical and physical addresses?.	L2	CO4
2		What is paging? Discuss basic paging technique in details.	L1	CO4
3		Write short note on: a. Segmentation b. Page table c. Compaction d. Working set model e. fragmentation	L1	CO4
4		Explain difference between internal external fragmentations in detail.	L2	CO4
5		Explain following allocation algorithm. a. First fit b. Best fit c. Worst fit d. Next fit	L2	CO4
6		A 1MB block of memory is allocated using the buddy system. i. Show the results of the following sequence in a figure: Request 70; Request 35; Request	L2	CO4
7		What are the memory management requirements?	L1	CO4
8		Write short note on: Relocation problem for multiprogramming with fixed partitions.	L1	CO4
9		Describe the term page fault frequency. What is thrashing? How is it controlled by OS?	L2	CO4
10		Explain hierarchical page table and inverted page table.	L2	CO4
Part–B (Long Answer Questions)				
11	a)	Explain Segmentation in detail. OR What is segmentation? Explain the basic segmentation method.	L2	CO4
	b)	Write short on: a. multiprogramming with fixed & variable partition.		
12	a)	Consider the following page reference string. 1,2,3,4,5,3,4,1,6,7,8,7,8,9,7,8,9,5,4,5,4,2How many page faults would occur for the following replacement algorithm, assuming four and six frames respectively? a. page replacement. b. FIFO page replacement.	L4	CO4
	b)	Write short note on: a) Not-recently used page replacement algorithm. b) Optimal page replacement algorithm. c) Swapping. d) Relocation and protection	L1	CO4
13	a)	What is demand paging? Explain it with address translation mechanism used. What are its specific advantages?	L1	CO4

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		How a page table is implemented?		
	b)	On a simple paging system with 2^24 bytes of physical memory, 256 pages of logical address , and a, page size of 2^10 bytes, how many bits are in logical address?	L4	CO4
14	a)	Free memory holes of sizes 15K, 10K, 5K, 25K, 30K, 40K are available. The processes of size 12K, 2K, 25K, 20K is to be allocated. How processes are placed in first fit, best fit, worst fit. Calculate internal as well as external fragmentation.	L4	CO4
	b)	Calculate page faults for (LRU, FIFO, OPT) for following sequences where	L4	CO4
		page frame is three. 0,1,2,1,4,2,3,7,2,1,3,5,1,2,5.		
15	a)	What is virtual memory? How it is implemented.	L1	CO4
	b)	Write short on: a. multiprogramming with fixed & variable partition. b. Relocation problem for multiprogramming with fixed partition. c. Use of multiprogramming in memory management. d. TLB. e. Paging. f. Design issues of paging system. g. Relocation and protection. h. policy driven scheduling.	L1	CO4

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UNIT–V

S. No		Questions	BT	CO
Part–A(Short Answer Questions)				
1		What are the objectives and minimal set of requirement for the file management system?	L1	CO5
2		Compare file organization methods	L4	CO5
3		What criteria are important in choosing a file organization?	L1	CO5
4		Explain briefly file system architecture & file management function.	L2	CO5
5		What is the difference between file and database?	L1	CO5
6		What are methods of free management of Disk?	L1	CO5
7		What is the difference between field and record?	L1	CO5
8		What is file management system?	L1	CO5
9		Explain file system implementation using linked list with index and i-node in detail?	L2	CO5
10		What are points to be consider in file system design? Explain linked list allocation & index allocation in detail.	L1	CO5
11	a)	Explain different types Access methods?	L2	CO5
	b)	Explain different types of Directory Structure.	L1	CO5
12	a)	Explain different types of Allocation methods.	L1	CO5
	b)	Explain file system structure in details.	L1	CO5
13	a)	Explain about free space management.	L1	CO5
	b)	Differentiate between windows and Unix file system.	L4	CO5
14	a)	Explain the following file allocation methods a) Contiguous allocation b) i- node	L2	CO5
	b)	Explain file system reliability & performance in detail.	L2	CO5
15	a)	Explain about protection in details.	L1	CO5
	b)	Briefly explain: 1. Open 2. Create 3. Read 4. Write 5.Close 6. Iseek 7. Stat 8.Ioctl System calls	L2	CO5