

OPERATING SYSTEM (23CY403)

8. Unit Wise Question Bank

UNIT I

S. No	Question	BT	CO	PO
PART-A(Short Answer Questions)				
1	What are the types of System calls?	L1	CO1	PO1
2	What are the advantage and disadvantage of multiprocessor system?	L1	CO1	PO5
3	What are the advantages of layered structure over monolithic structure?	L1	CO1	PO1
4	What is Process?	L1	CO1	PO1
5	What are threads and its types?	L1	CO1	PO2
6	What is the O.S features required for multi programming	L1	CO1	PO1
7	What are advantages of distributed System?	L1	CO1	PO5
8	What are the advantages of layered structure over monolithic structure?	L1	CO1	PO5
PART-B(Long Answer Questions)				
9	A. Define operating system and list the basic services provided by operating system. B. Differentiate among the following types of OS by defining their essential properties <ul style="list-style-type: none"> • Time sharing system • Parallel system • Distributed system • Real time system 	L2	CO1	PO2
10	A. Explain the essential properties of <ul style="list-style-type: none"> • Batch System • Time sharing • Real time • Parallel • Distributed B. Explain different types of OS Components.	L2	CO1	PO1
13	A. Explain batch system and Multi programmed System in detail.	L4	CO1	PO2

	B. Explain the terms: (i)Real time System (ii)Distributed Systems			
12	A. Explain the terms: <ul style="list-style-type: none"> Parallel System Batch System B. Explain O.S as extended machine in detail	L1,L 2	CO1	PO1
13	A. Explain OS System Calls. B. Explain essential features of following structure of O.S <ul style="list-style-type: none"> Monolithic System Layered Systems Micro Kernels Client Server Model Virtual Machines Exo kernels 	L2	CO1	PO1
14	A. Define process and Explain process states in details with diagram B. Explain process states and process control block in details	L3	CO1	PO2
17	A. Explain and differentiate between user level and kernel level thread. B. Explain Threads in detail? List the main difference and similarities between threads and process	L3	CO1	PO3

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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 Deadlock 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	a) Write a short note on-Fork, Exit, Wait, Wait pid, Exec of System call interface for process management system.	L2	CO2
15	a) Explain the following process scheduling algorithm <ul style="list-style-type: none"> • 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																		
16	a)	<p>Consider following processes with length of CPU burst time in</p> <table><tr><th>Process</th><th>Burst time</th></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> <p>All process arrived in order p1,p2,p3,p4 all time zero</p> <ul style="list-style-type: none">• Draw Gant 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	Process	Burst time	P1	5	P2	10	P3	2	P4	1	L5	CO2								
Process	Burst time																					
P1	5																					
P2	10																					
P3	2																					
P4	1																					
	b)	<ul style="list-style-type: none">• Consider following processes with length of CPU bursttime in millisecond <table><tr><th>Process</th><th>Burst time</th><th>Priority</th></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> <p>All processes arrived in order p1,p2,p3,p4,p5 all at time zero</p>	Process	Burst time	Priority	P1	10	3	P2	1	1	P3	2	3	P4	1	4	P5	5	2	L5	CO2
Process	Burst time	Priority																				
P1	10	3																				
P2	1	1																				
P3	2	3																				
P4	1	4																				
P5	5	2																				

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.	L2	CO3
	b) Explain about Monitors.	L2	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	L4	CO3

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. multi programming with fixed & variable partition.		

12	a)	Consider the following page reference string. 1,2,3,4,5,3,4,1,6,7,8,7,8,9,7,8,9,5,4,5,4,2 How 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? How a page table is implemented?	L1	CO4
	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 page frame is three.0,1,2,1,4,2,3,7,2,1,3,5,1,2,5.	L4	CO4
15	a)	What is virtual memory? How it is implemented.	L1	CO4
	b)	Write short on: a. multi programming 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 anti-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



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