

QUESTION BANK

MCA 205

OPERATING SYSTEM

UNIT 1

- Q. 1 Write main purposes of Operating System.
- Q. 2 Define Multitasking and Multiprogramming.
- Q. 3 Explain types of operating system.
- Q. 4 Explain Time sharing operating system.
- Q. 5 Write Differences between Distributed OS and Network OS.
- Q. 6 Enlist advantages of Multiprogramming.
- Q. 7 Define System calls .
- Q. 8 Write syntax of system calls for various operating system functions.
- Q. 9 Define and explain term authentication.
- Q. 10 Define virtual machine.
- Q. 11 Define process. Explain process life cycle.
- Q. 12 Draw and explain process control block (PCB).
- Q. 13 Explain representation of process scheduling.
- Q. 14 Define and explain long term, short term, and medium term scheduler.
- Q. 15 Define Threads.
- Q. 16 Define and explain Inter process communication.
- Q. 17 Explain classical problems of synchronization.
- Q. 18 Explain scheduling algorithm optimization criteria.
- Q. 19 Define terms Preemptive and Non preemptive .
- Q. 20 Define and explain FIFO with example.
- Q. 21 Define and explain SJF(Preemptive and non preemptive) with example.
- Q. 22 Define and explain RR with example.
- Q. 23 Define and explain Priority scheduling with example.
- Q. 24 Compare Multilevel Queue and Multilevel Feedback queue algorithm.
- Q. 25 Define and explain Real time CPU Scheduling.

UNIT 2

- Q. 1 Define and explain critical section.
- Q. 2 Explain classical problems of synchronization.
- Q. 3 Explain the terms related to IPC: Race condition, starvation, Semaphores.
- Q. 4 Explain, Why Mutual exclusion required .
- Q. 5 Explain any two methods of achieving mutual exclusion.
- Q. 6 Discuss and explain producer consumer problem.
- Q. 7 Explain deadlock-system model.
- Q. 8 Explain Dining Philosopher problem and give solution of it.
- Q. 9 Define Deadlock, what are the different conditions to check deadlock.
- Q. 10 Define and explain Deadlock prevention and Deadlock avoidance.
- Q. 11 Define safe and unsafe states in terms of deadlock.
- Q. 12 Explain Bankers algorithm with suitable example.
- Q. 13 Explain Resource allocation graph.
- Q. 14 Define process, resource, edges, instances in terms of resource allocation graph.
- Q. 15 Explain recovery methods of deadlock.
- Q. 16 Define and explain data structures for the Banker's algorithm.

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- Q. 17 Write and explain safety algorithm.
Q. 18 Write and explain Resource - Request algorithm.
Q. 19 Define Roll back, Starvation in terms of recovery from deadlock.
Q. 20 Consider the following snapshot of a system:

	Allocation				Max				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P0	0	0	1	2	0	0	1	2	1	5	2	0
P1	1	0	0	0	1	7	5	0				
P2	1	3	5	4	2	3	5	6				
P3	0	6	3	2	0	6	5	2				
P4	0	0	1	4	0	6	5	6				

Answer the following questions using the Banker's algorithm:

- (a) What is content of Need?
(b) Is the system in a safe state.

- Q. 21 Consider the following snapshot of a system:

	Allocation			Max			Available		
	A	B	C	A	B	C	A	B	C
P0	0	1	0	7	5	3	3	3	2
P1	2	0	0	3	2	2			
P2	3	0	2	9	0	2			
P3	2	1	1	2	2	2			
P4	0	0	2	4	3	3			

Answer the following questions using the Banker's algorithm:

- (a) What is content of Need?
(b) Is the system in a safe state.

- Q. 22 In Q.21, If a request from process p1 arrives for (0,4,2,0) can the request be granted immediately.
Q. 23 In Q.22, If a request from process p4 arrives for (3,3,0) can the request be granted immediately.
Q. 24 Explain combined approach of dead handling.
Q. 25 Define Monitors, Explain Monitors in detail.

UNIT 3

- Q. 1 Define logical address space with base and limit register.
Q. 2 Draw and explain hardware Address protection.
Q. 3 Define compile time, load time, execution time.
Q. 4 Draw and explain Multistep processing of a user program.
Q. 5 Define and explain logical address space and physical address space.
Q. 6 Explain Memory-Management unit.
Q. 7 Define and explain static linking and dynamic linking.
Q. 8 Define Swapping, and explain term roll out, roll in.
Q. 9 Draw and explain swap-in and swap-out concept.

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- Q. 10 Explain context switch time including swapping.
- Q. 11 Define and explain contiguous allocation method.
- Q. 12 Define and explain multiple-partition allocation method.
- Q. 13 Explain First fit, Best fit, and worst fit allocation algorithms.
- Q. 14 Define and explain internal fragmentation and external fragmentation.
- Q. 15 What is the use of compaction in term of fragmentation, explain.
- Q. 16 Define and explain pages, frames, page tables.
- Q. 17 Draw and explain address translation scheme.
- Q. 18 Draw and explain paging model of logical and physical memory.
- Q. 19 Define virtual memory and virtual address space, demand segmentation
- Q. 20 Given free memory partitions of 100K, 500K, 200K, 300K, and 600K (in order), how would each of the First-fit, Best-fit, and Worst-fit algorithms place processes of 212K, 417K, 112K, and 426K (in order)? Which algorithm makes the most efficient use of memory?
- Q. 21 Write the comparison between virtual memory and physical memory.
- Q. 22 Define and explain demand paging, concept of lazy swapper, Thrashing.
- Q. 23 Explain valid and invalid bit concept in page table.
- Q. 24 Define and explain page fault and all page replacement algorithms
- Q. 25 Consider the following page reference string:
7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1
How many page fault occur for the following replacement algorithm assuming 3 frames, 4 frames.
- (i) LRU replacement algorithm.
- (ii) FIFO replacement algorithm.
- (iii) Optimal replacement algorithm.

UNIT 4

- Q. 1 What is memory hierarchy system,, explain with diagram.
- Q. 2 Draw and explain disk structure.
- Q. 3 Write and explain different file access methods.
- Q. 4 Draw a table to show file types including Name, extension, and functions.
- Q. 5 Draw and explain different levels of directory structures.
- Q. 6 Write and explain various operations performed on directory.
- Q. 7 Explain various disk scheduling algorithms with example.
- Q. 8 Consider, A disk drive has 200 cylinders, numbered 0 to 199. The drive is currently serving a request at cylinder 53. The sequence of request in FIFO order is: 98, 183, 37, 122, 14, 124, 65, 67. calculate the total head movements by using FCFS, SSTF, SCAN, LOOK
- Q. 9 Explain low level formatting or physical formatting in terms of disk management.
- Q. 10 Define and explain swap-space management.
- Q. 11 Explain different goals of protection.
- Q. 12 Define and explain principle of protection and domain of protection.
- Q. 13 Explain uses of access matrix.
- Q. 14 Write short note on revocation of access rights.
- Q. 15 Explain language based protection.
- Q. 16 Define Intruders (crackers), Threat, and Attack.
- Q. 17 Explain security violation categories.

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- Q. 18 Define program threats, system threats
- Q. 19 Define authentication, explain all methods of authentication.
- Q. 20 Explain method and use of one time password.
- Q. 21 Explain how cryptography used as a security tool.
- Q. 22 Define encryption, explain encryption algorithm.
- Q. 23 Write the comparison between various file allocation methods.
- Q. 24 Explain various methods of password to keep system secure.
- Q. 25 Explain security measure levels.