

**Course Code:** 2101CS403

**Course Name:** Operating System

Sr.	Unit No.	Question	BL	CO
1	1	What is Kernel? Differentiate between Monolithic Kernel and Micro Kernel.	U	CO-1
2	1	Explain different service/functions provided by operating system.	U	CO-1
3	1	Discuss role of OS as a resource manager.	U	CO-1
4	1	Explain the features of Time-sharing system.	U	CO-1
5	1	What is operating system? Give the view of OS as a resource manager.	U	CO-1
6	1	What is system call? Explain steps for system call execution.	U	CO-1
7	1	Write different types of system call.	U	CO-1
8	1	List out types of operating system and explain batch OS and time-sharing OS in brief.	U	CO-1
9	2	Explain Process/Thread Life Cycle with diagram.	U	CO-2
10	2	Explain process control block (PCB) with diagram.	U	CO-2
11	2	Difference between process and thread.	U	CO-2
12	2	Write various multi-threading models.	U	CO-2
13	2	Write benefits of threads.	U	CO-2
14	2	Five batch jobs A to E arrive at same time. They have estimated running times 10,6,2,4 and 8 minutes. Their priorities are 3,5,2,1 and 4 respectively with 5 being highest priority. For each of the following algorithm determine mean process turnaround time. Ignore process swapping overhead. Quantum time is 2 minute. Round Robin, Priority Scheduling, FCFS, SJF.	A	CO-2
15	2	Define term Scheduler, Scheduling and Scheduling Algorithm with example.	R	CO-2
16	2	Define terms. 1) Throughput 2) Waiting Time 3) Turnaround Time 4) Response Time 5) Granularity 6) Short Term Scheduler 7) CPU Utilization	R	CO-2
17	2	What is scheduler? Explain queuing diagram representation of process scheduler with figure.	U	CO-2
18	2	Write various scheduling criteria.	U	CO-2
19	2	Consider Five Processes P1 to P5 arrived at same time. They have estimated running time 10, 2, 6, 8 and 4 seconds, respectively. Their Priorities are 3, 2, 5, 4 and 1, respectively with 5 being highest Priority. Find the average turnaround time and average waiting time for Round Robin (quantum time=3) and Priority Scheduling algorithm.	A	CO-2
20	2	Consider the processes P1, P2, P3, P4 with burst time is 21, 3, 6 and 2 respectively, arrives for execution in the same order, with arrival time 0, draw GANTT chart and find the average waiting time using the FCFS and SJF scheduling algorithm.	A	CO-2
21	3	Define following Terms: Mutual Exclusion, Critical Section, Race Condition	R	CO-3
22	3	What is Semaphore? Give the implementation of Readers-Writers Problem using Semaphore	U	CO-3
23	3	What is Semaphore? Give the implementation of Bounded Buffer Producer Consumer Problem using Semaphore.	U	CO-3
24	3	Explain Dining philosopher solution using Semaphore.	U	CO-3
25	3	What is critical section problem. Write Peterson's Solution for the same.	U	CO-3
26	3	Write short note on message passing.	U	CO-3

27	3	Explain monitor with algorithm.	U	CO-3
28	3	What is RAG? Explain briefly.	U	CO-3
29	3	What is Deadlock? List the conditions that lead to deadlock. How Deadlock can be prevented?	U	CO-3
30	3	Which are the necessary conditions for Deadlock? Explain Deadlock recovery in brief.	U	CO-3
31	3	Explain Banker's algorithm.	U	CO-3
32	4	Explain multiprogramming with fixed partition.	U	CO-4
33	4	Explain link list method for dynamic memory management.	U	CO-4
34	4	How free space can be managed by OS.	U	CO-4
35	4	Explain Swapping and Fragmentation in detail.	U	CO-4
36	4	What is Paging? Explain paging mechanism in MMU with example.	U	CO-4
37	4	Explain TLB and Virtual Memory.	U	CO-4
38	4	Discuss demand paging.	U	CO-4
39	4	Define following Terms: Thrashing, Virtual Memory	R	CO-4
40	4	List different Page Replacement Algorithms? Discuss it in terms of page faults.	U	CO-4
41	4	What is Belady's anomaly? Explain with suitable example.	U	CO-4
42	4	Consider (70120304230321201701) page reference string: How many page fault would occur for following page replacement algorithm. Consider 3 frames and 4 frames. 1. FIFO 2. LRU 3. Optimal	A	CO-4
43	4	Consider the 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 With four Frames How many page faults would occur for the FIFO, Optimal page replacement algorithms? which algorithm is efficient? (assume all frames are initially empty)	A	CO-4
44	4	Given six Partition of 300KB, 600KB, 350KB, 200KB, 750KB and 125KB(in order), how would the first-fit, best-fit and worst-fit algorithms places processes of size 115 KB, 500KB, 358KB, 200KB and 375KB(in order)? Which algorithm is efficient for the use of memory?	A	CO-4
45	4	Calculate the page fault rates for below reference string in case of FIFO and Optimal page replacement algorithm. Assume the memory size is 4 page frames and all frames are initially empty. 0,2,1,6,4,0,1,0,3,1,2,1	A	CO-4
46	4	Consider the following reference string. Calculate the page fault rates for FIFO and OPTIMAL page replacement algorithm. Assume the memory size is 4 page frame. 1,2,3,4,5,3,4,1,6,7,8,7,8,9,7,8,9,5,4,5,4,2	A	CO-4
47	4	Given six Partition of 300KB, 600KB, 350KB, 200KB, 750KB and 125KB(in order), how would the first-fit, best-fit and worst-fit algorithms places processes of size 115 KB, 500KB, 358KB, 200KB and 375KB(in order)? Which algorithm is efficient for the use of memory?	A	CO-4
48	5	Write a short note on DMA.	U	CO-5
49	5	Briefly describe all Disk Arm Scheduling Algorithm.	U	CO-5
50	5	Write short note on RAID.	U	CO-5
51	5	Suppose Disk drive has 300 cylinders. The current position of head is 90. The queue of pending request is 36,79,15,120,199,270,89,170 Calculate head movement for the following algorithms. 1. FCFS 2. SSTF	A	CO-5
52	5	Suppose that a disk drive has 200 cylinders from 0 to 199. The drive is currently at cylinder 53 and previous request at 43. The queue of pending requests in FIFO order is 98, 183, 37, 122, 14, 124, 65, 67. Starting from the current head position what is the total distance (in cylinder ) that the disk arm moves to satisfy all the	A	CO-5

		pending requests for each of the following disk scheduling algorithms: FCFS, SSTF, SCAN, LOOK, CLOOK, CSCAN.		
53	5	Define seek time and rotational latency. Assume that a disk drive has 200 cylinders, numbered 0 to 199. The drive is currently serving a request at cylinder 100. The queue of pending requests is 23, 89, 132, 42, 189. Calculate seek time for FCFS and SSTF disk scheduling algorithm.	A	CO-5
54	5	Suppose that a disk drive has 5000 cylinders, numbered 0 to 4999. The drive is currently serving a request at cylinder 143,. The queue of pending requests, in FIFO order, 86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130. Starting from current head position what is total distance (in cylinders) that disk arm moves to satisfy all the pending request for FCFS and SSTF disk scheduling algorithm?	A	CO-5
55	5	Differentiate Sequential File Access and Random File Access.	U	CO-5
56	5	List and explain different file operations.	U	CO-5
57	5	List and explain different attributes of file.	U	CO-5
58	5	Explain different types of files.	U	CO-5
59	5	Differentiate Absolute path name and Relative path name.	U	CO-5
60	5	Explain Boot block, Super block, Inode table and Data block.	U	CO-5
61	5	Explain various methods to implement files.	U	CO-5
62	5	Explain techniques to manage free space.	U	CO-5