QP.Code	U21CS-1A	Reg.No	

KPR Institute of Engineering and Technology
(Autonomous)
Avinashi Road, Arasur, Coimbatore - 641 407
Learn Beyond

Dept.:	CSBS & CSE
Ac.Yr.:	2024 – 2025

Course Code & Title	:	U21CS403	Operating Systems	
Year	:	II	Semester: 04	Date: 20.05.2025- AN
CIAT	:	II	Duration: 90 Minutes	Maximum Marks: 60

Q. No	Section – A (10X1=10 Marks) Answer All Questions	Marks	BT	CO
1	Which of the following is not a necessary condition for a deadlock to occur. a Mutual Exclusion b Hold and wait c Preemption d Circular wait	1	U	CO3
2	What is the main idea behind the banker's algorithm? a To prevent paging b To mange free space in memory c To avoid deadlock by checking for sates d To handle CPU scheduling	1	U	CO3
3	Which memory allocation method allows a process to be allocated memory in one continuous block? a Paging A Contiguous allocation c Segmentation A Virtual memory	1	Ap	CO4
4	In paging the logical address is divide by a Page number and Page offset A Segment and offset c Frame number and frame offset A Segment number and segment	1	Ap	CO4
5	Which of the following Is a disadvantage of fixed partitioning a External fragmentation b Internal fragmentation c No fragmentation d Page fault	1	Ap	CO4
6	Which of the page replacement algorithm replace the page that will not be used for the longest time in the future a LRU b FIFO c Optimal d Clock	1	Ap	CO4
7	Which disk secluding algorithm can lead to starvation a FCFS b SSTF c SCAN d C-CSAN	1	Ap	CO5
8	*Which of the following is not a file allocation method* a Contiguous Allocation b Linked Allocation c Indexed Allocation d Distributed Allocation	1	Ap	CO5
9	In Linux which of the following format Is the file system organized? a FAT32 b NTFS c ext3/ext4 d HFS+	1	Ap	CO5
10	What is the purpose of swap space in operating systems? a To store device derivers b To increase the clock speed c To provide virtual memory d To reduce disk fragmentation	1	Ap	CO5

Q.No	Section – B (10X2=20 Marks) Answer All Questions	Marks	BT	CO
11	What is the purpose of deadlock prevention?	2	U	CO3
12	Define semaphore with all types	2	U	CO3
13	Differentiate between paging and segmentation	2	Ap	CO4
14	What is virtual memory?	2	Ap	CO4
15	List any two-page repayment algorithms.	2	Ap	CO4
16	What is use of demand paging explain with diagram?	2	Ap	CO4
17	Mention any two responsibilities of a file system	2	Ap	CO5
18	What do you mean by disk scheduling? Name any two algorithms	2	Ap	CO5
19	State swap space management	2	Ap	CO5
20	Explain bit map allocation method with example	2	Ap	CO5

Q.No	Section – C (1X6=6 Marks & 2X12=24 Marks) Answer All Questions	Marks	BT	CO
21 a)	Describe the Banker's algorithm for deadlock avoidance. Show how it determine a safe state	6	U	CO3
	(Or)			
21 b)	Consider the following snapshot of a system process | Allocation | Max | Available P0 | 010 | 753 | 332 P1 | 200 | 322 | P2 | 302 | 902 | P3 | 211 | 222 | P4 | 002 | 433 | Answer the following question using the banker's algorithm: 1. Find the need matrix 2. is the system in a safe state	6	U	CO3
22 a)	Consider the page references 7,0,1,2,0,3,0,4,2,3,0,3, 2,3 with 4-page frame. Find the number of page faults using the FIFO and optimal page replacement algorithm.	6	Ap	CO4
	(Or)			
22 b)	Given memory partitions 100K, 500K, 200K, 300K and 600K (in order) how would each of the First-fit, Best-fit and Worst fit algorithm place process of 212K, 417K, 112K and 426K (in order)? Which algorithm makes the most efficient use of memory?	12	Ap	CO4
23 a)	Consider the following disk request sequence for disk with 200 tracks: 82, 170,43, 140, 24,16,190. The R/W head is starting at 50. It is also given that the disk move towards the larger value. Find the number of the movement using SCAN and C-LOOK	12	Ap	CO5
	(Or)			
23 b)	Describe free space management techniques in file systems. Explain bit map, linked list, and grouping methods.	12	Ap	CO5