



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

DATA SCIENCE

UNIT TEST-II

Class: SE

Semester: IV

Subject: Operating System

Date: 18/04/2023

Time: 10.00 AM to 11.30 AM

Max marks: 40

Note the following instructions

1. Attempt all questions.
2. Draw neat diagrams wherever necessary.
3. Write everything in Black ink (no pencil) only.
4. Assume data, if missing, with justification.

Q1	Attempt any two	Marks	CO	Blooms Taxonomy Level	PO
	A] Explain file access methods in detail.	[5]	CO5	L2	-
	B] Explain the structures of a directory.	[5]	CO5	L2	-
	C] Write a detailed note on file sharing.	[5]	CO5	L2	-
	D] Explain file operations with examples.	[5]	CO5	L2	-
Q2	Attempt any two				
	A] Apply FIFO and LRU page replacement algorithms to calculate the number of page faults, hit ratio and miss ratio for the following reference string with frame size: 4 7,0,1,2,0,3,0,4,2,3,0,3,2,3.	[10]	CO4	L3	PO1
	B] Consider memory allocation scenario, as in the following diagram, and allocate memory for additional requests of 212KB, 417KB, 112KB and 426K (in this order). Compare the memory allocation using first-fit, best-fit, and worst fit allocation methods to find which method makes most efficient use of memory. <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">OS</div> <div style="display: flex; flex-direction: column; align-items: center;"> <div style="border: 1px solid black; width: 100px; height: 20px; margin-bottom: 2px;"></div> <div style="border: 1px solid black; width: 100px; height: 20px; margin-bottom: 2px;"></div> <div style="border: 1px solid black; width: 100px; height: 20px; margin-bottom: 2px;"></div> <div style="border: 1px solid black; width: 100px; height: 20px; margin-bottom: 2px;"></div> <div style="border: 1px solid black; width: 100px; height: 20px; margin-bottom: 2px;"></div> <div style="border: 1px solid black; width: 100px; height: 20px;"></div> </div> <div style="display: flex; justify-content: space-around; width: 400px; margin-top: 5px;"> 100KB 500KB 200KB 300KB 600KB </div> </div>	[10]	CO4	L3	PO1
	C] Apply the two types of memory partitioning techniques to show how the main memory is divided into chunks of the same or different sizes so that they can be assigned to processes in the main memory.	[10]	CO4	L3	PO1



Q3	Attempt any one				
	A] Consider a disk queue with I/O requests on the following cylinders in their arriving order: 82,170,43,140,24,16,190. The disk contains 200 tracks (0-199). The initial disk head position is assumed to be at cylinder 50. Calculate and show with diagram the disk head movement using FCFS and SSTF disk scheduling algorithms.	[10]	CO6	L3	PO1
	B] Consider a disk queue with I/O requests on the following cylinders in their arriving order: 82,170,43,140,24,16,190. The disk contains 200 tracks (0-199). The initial disk head position is assumed to be at cylinder 50. Calculate and show with diagram the disk head movement using SCAN and LOOK disk scheduling algorithms.	[10]	CO6	L3	PO1