

Programme: B.E – CSE (AI&ML) and CSE(CS)
Internal Assessment – II

TERM: 15-APR-2024 to 27-JUL-2024	COURSE NAME: OPERATING SYSTEMS
DATE: 24/07/2024 TIME: 9:30 to 10:30am	COURSE CODE: CI45/CY45
MAX MARKS: 30	PORTIONS: L20-L42
SEMESTER: 4th SEM	SECTION: A



Mobile Phones are banned

Instructions to Candidates: **Answer any TWO full questions.**

Marks: 15x2=30

Q. NO	Questions	Blooms Levels	CO	Marks
1.a	Describe the necessary conditions for a deadlock situation to occur.	L2	CO4	7
b	Four students Ram, Ahmed, Tom and smriti are working on a single project and requires access to a common data stored in a file. In this case, there has to be a proper synchronization between read and write operations that are performed on a file else the content of the file will be inconsistent. Design/develop a solution to provide synchronization among these users.	L3	CO3	8
2.a	With an example describe the usage of resource allocation graphs in detecting deadlocks.	L2	CO4	5
b	Describe the role of access matrix maintained by operating system to ensure protection.	L2	CO5	5
c	A disk contains 200 tracks numbered from 0 to 199 and the request queue contains track number 82,170,43,140,24,16,190 respectively. If the current position of read/write head is at track number 50 then calculate the total number of track movements using SSTF and CLOOK scheduling policies (Assume the direction is towards smaller value).	L3	CO2	5
3.a	Describe different file access methods.	L2	CO5	5

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b	<p>A system uses 3-page frames for storing process pages in main memory. It uses the First in First out (FIFO) page replacement policy. Assume that all the page frames are initially empty. What is the total number of page faults that will occur while processing the page reference string given below-</p> <p>4, 7, 6, 1, 7, 6, 1, 2, 7, 2</p> <p>If the number of free frames on main memory is increased to four will it reduce the page fault rate? Justify.</p>	L3	CO4	5
c.	<p>With an example illustrate the limitations of software-based solution to solve the critical section problem.</p>	L3	CO3	5

* L1 – Remember, L2 – Understand, L3- Apply, L4- Analyze, L5-Evaluate, L6-Create