Reg No.:_____ **0520MCA1720721**01 Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Second Semester MCA (2 Year) Degree Examination June 2022

Course Code: 20MCA172

Course Name: ADVANCED OPERATING SYSTEMS

Max. Marks: 60 Duration: 3 Hours

PART A

Answer all questions, each carries 3 marks. Marks

1	What is a process. Discuss about different states of a process with diagram	(3)
2	What is the concept of path expressions? Explain the purpose of the following path expressions: i) path read + write end ii) path write; {read} end	(3)
3	Discuss the importance of mutual exclusion? What are the requirements of mutual exclusion algorithms?	(3)
4	Discuss about the major features of access control list	(3)
5	What is a distributed file system? What are its services?	(3)
6	Explain how to implement distributed shared memory using the read replication algorithm.	(3)
7	Explain the differences between UMA and NUMA architecture of multiprocessor systems.	(3)
8	Explain any two interconnection networks for multiprocessor systems.	(3)
9	Test the conflict serializability of the following log using serialization graph. L = r1(x) r3(y) w1(x) w2(y) r3(x) w2(x)	(3)
10	Explain how timestamp establish a total ordering of transactions.	(3)

PART B

Answer any one question from each module. Each question carries 6 marks.

Module I

11	Explain why Lamport's logical clocks are important in distributed systems.	(6)

OR

12	What are monitors' limitations in terms of mutual exclusion? How do serializers get around this?	(6)

Module II

13	Demonstrate that the Ricart-Agrawala algorithm accesses the critical section in ascending sequence of timestamps.	(6)

OR

14	Explain Suzuki-Kasami's broadcast algorithm for mutual exclusion .	(6)

Module III

15	Explain the components of a load distributing algorithm.	(6)

OR

16	With a clear flowchart, explain the receiver-initiated load distribution algorithm in distributed systems	(6)

Module IV

17	Explain any three design issues of multiprocessor systems.	(6)

OR

18	Write short notes on :	
	a. Memory Virtualisation	(3)
	b. Para Virtualisation	(3)

Module V

19	What is a two-phase locking scheme, and how does it work? What are the drawbacks of 2PL?	(6)

OR

20	Explain the Kung-Robinson concurrency control algorithm.	(6)

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