Roll No. | | | | | | | | | | |

ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)

B.E (FT) - END SEMESTER EXAMINATIONS- APR/MAY 2024
COMPUTER SCIENCE AND ENGINEERING
VI Semester

CS6303 – DISTRIBUTED SYSTEMS

(Regulation 2018-RUSA)

Time: 3hrs | Max.Marks: 100

CO 1	Elucidate the foundations and issues of distributed systems
CO 2	Point out the various synchronization issues and global state for distributed systems
CO 3	Demonstrate the mutual exclusion and deadlock detection in distributed systems
CO 4	Demonstrate the agreement protocols and fault tolerance mechanisms in distributed systems
CO 5	Describe the features of peer-to-peer and distributed shared memory systems

BL – Bloom's Taxonomy Levels
(L1 - Remembering, L2 - Understanding, L3 - Applying, L4 - Analysing, L5 - Evaluating, L6 - Creating)

PART- A (10 x 2 = 20 Marks)
(Answer all Questions)

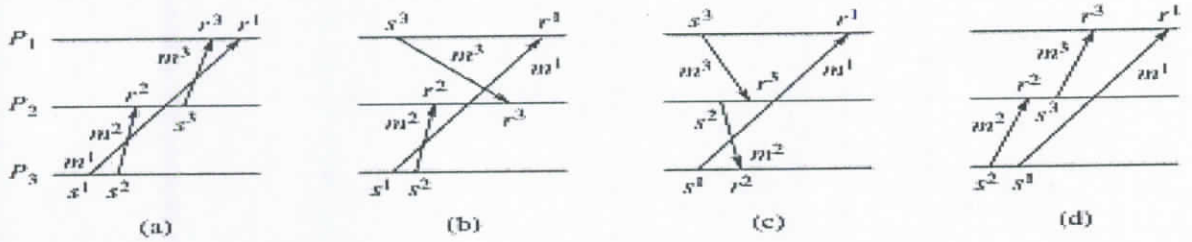
Q. No	Questions	Marks	CO	BL
1	What is flynn's taxonomy?	2	CO 1	L 1
2	Differentiate logical vs physical concurrency.	2	CO 1	L 2
3	Write the definition for FIFO and Co executions.	2	CO 2	L 3
4	What are the conditions of consistent global state?	2	CO 2	L 2
5	What is the significance of request –deferred array?	2	CO 2	L 2
6	What is Wait-for-Graph?	2	CO 3	L 1
7	Define rollback recovery?	2	CO 3	L 1
8	What are the conditions for byzantine agreement problem?	2	CO 4	L 2
9	What is meant by distributed indexing?	2	CO 5	L 2
10	What are the issues in designing DSM?	2	CO 5	L 3

PART- B (8 x 8 = 64 Marks)
(Answer any 8 Questions)

Q. No	Questions	Marks	CO	BL
11	Explain the blocking/non-blocking, synchronous/asynchronous primitives with neat diagram.	8	CO 1	L 2
12	Explain the scalar time and vector time of logical clocks.	8	CO 1	L 2
13	What is RSC communication? Explain with example?	8	CO 2	L 4
14	Explain the binary rendezvous algorithm for synchronous order.	8	CO 2	L 2
15	Explain the Chandy-Lamport algorithm for global snapshot with their properties.	8	CO 2	L 3

16	Discuss the Suzuki-kasami's broadcast algorithm with their properties.	8	CO 2	L 3
17	Discuss the Knapp's classification of distributed deadlock detection algorithms.	8	CO 3	L 3
18	What are the issues in failure recovery? How the uncoordinated checkpointing works?	8	CO 4	L 3
19	Explain the consensus algorithms for byzantine failures.	8	CO 4	L 4
20	Discuss the chord DHT with scalable lookup mechanism with example.	8	CO 5	L 4
21	What are the requirements for mutual exclusion algorithm? Also, discuss about the performance metrics.	8	CO 5	L 3
22	Explain the sequential consistency model algorithm with example.	8	CO 3	L 4

PART- C (2 x 8 = 16 Marks)

Q. No	Questions	Marks	CO	BL
23	In the following space-time diagrams identify which are casually/ Not casually ordered executions. Justify your answers.	8	CO 2	L 4
	 (a) (b) (c) (d)			
24	14. Explain the different indexing mechanisms in detail.	8	CO 5	L 3