Name:.....
Roll No:.....

MAR ATHANASIUS COLLEGE OF ENGINEERING (AUTONOMOUS),
KOTHAMANGALAM - 686666
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

B.TECH SECOND SERIES EXAMINATION, OCTOBER 2026 (S5 CS, DS, AIML)
B24CS3P14- DISTRIBUTED COMPUTING

Max. Marks: 40 Duration: 1.5 Hours

PART A

Answer all questions. Each question carries 3 marks.

1. Outline the three basic approaches used to implement distributed mutual exclusion. **(CO3)**
2. the purpose of the request-deferred array (RD) maintained in the Ricart–Agrawala algorithm. **(C03)**
3. Describe the concept of Distributed Shared Memory (DSM) abstraction. **(CO4)**
4. Compare the Byzantine agreement problem and the consensus problem with respect to their objectives and requirements. **(CO5)**

PART B

Answer all questions. Each question carries 14 marks.

5. Five processes generate REQUEST messages with logical timestamps 9, 4, 12, 6, and 10. Illustrate Lamport's mutual exclusion algorithm and determine the order of critical section execution, queue contents at each site, and RELEASE operations. **(CO3)**(14 marks)
6. (a) Five processes simultaneously request entry to the critical section. Demonstrate the execution of Lamport's Bakery algorithm by showing the values of the Choosing[] and Number[] arrays at each stage until all processes have completed execution. **(CO4)**(10 marks)
   (b) Explain the different types of messages encountered during rollback recovery. **(CO4)**(4 marks)

VISION

To mould competent computing professionals, innovators, and leaders guided by ethical values and committed to technological advancement and sustainable societal development.

MISSION

- Provide quality education through strong theoretical foundations, experiential learning, and exposure to emerging computing technologies.
- Cultivate critical thinking, research aptitude, and innovation through problem-based learning, industry interaction, and research initiatives.
- Foster ethical values, leadership, social responsibility, and an aspiration for lifelong learning through professional practices, teamwork, and mentoring.