



VIT

Vellore Institute of Technology

REG.NO: 2560105763

SCHOOL OF COMPUTER SCIENCE ENGINEERING AND INFORMATION SYSTEMS

CONTINUOUS ASSESSMENT TEST - I

FALL SEMESTER 2025-2026

SLOT: A1+TA1+TAA1

Programme Name & Branch : BCS
 Course Code and Course Name : UCSC103L & Computer Organization and Architecture
 Faculty Name(s) : Dr. R. Parvathi, Dr. S. Chandra Mouliswaran
 Class Number(s) : VL2025260105758, VL2025260105763
 Date of Examination : 17.08.2025
 Exam Duration : 90 minutes Maximum Marks: 50

General instruction(s):

- Answer All Questions
- M - Max mark; CO - Course Outcome; BL - Blooms Taxonomy Level (1 - Remember, 2 - Understand, 3 - Apply, 4 - Analyse, 5 - Evaluate, 6 - Create)
- Course Outcomes: Understand data representation and micro-operations, design of the computer.

Q. No	Question	M	CO	BL
1.	Determine equivalent Decimal and Binary numbers for the numbers as given below: i) $(3547.576)_8$ (5 marks) ii) $(D2E.B1)_{16}$ (5 marks)	10	CO1	BL3
2.	Choose the appropriate logic gate to design a Combinational Logic Circuit (CLC) for a mobile login system that remains locked only when both the fingerprint and password are disabled. In all other cases, the mobile should be in the unlocked state. Design the CLC circuit for both locking and unlocking conditions.	10	CO1	BL4
3.	Define a flip-flop and mention its types. Draw the logic circuit diagrams of SR and JK flip-flops. Describe their operation with truth tables and derive their characteristic equations.	10	CO1	BL2
4.	a) Perform the given binary arithmetic operations and determine the results: i) $11010101 + 00111010$ (1 mark) ii) 10101100×1001 (2 marks) iii) $11001000 \div 1100$ (2 marks) b) Apply following binary shift operations three times on the given binary number 11010111: i) Arithmetic Right shift (1 mark) ii) Rotate left shift (2 marks) iii) Rotate right through carry (2 marks)	5 5	CO1	BL3
5.	a) Illustrate all functions involved by computer with neat diagram. b) Draw the instruction cycle state diagram and describe each state involved in the execution of an instruction in a processor.	5 5	CO1	BL2
