REG.NO.:

VIT

Vellore Institute of Technology

SCHOOL OF COMPUTER SCIENCE AND ENGINEERING
CONTINUOUS ASSESSMENT TEST - I
WINTER SEMESTER 2024-2025

SLOT: C2

Programme Name & Branch	: B.Tech & BCE, BKT
Course Code and Course Name	: BCSE327L & Smart Contracts
Faculty Name(s)	: Dr. S. Sridevi
Class Number(s)	: VL2024250502187
Date of Examination	: 18-03-2025
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: CO3: Introduce the Solidity language in creation of a Smart Contracts.
- CO4. Incorporate Smart Contracts in decentralized applications.

Q. No	Question	M	CO	BL
1.	In a decentralized insurance system, claims are processed automatically based on predefined conditions, with Merkle trees used to verify claim legitimacy and ensure transparency. How would you implement Merkle trees in the smart contract to ensure the integrity and security of claim data? What features would you add to provide transparency in claims and payouts?	10	CO3	BL2
2.	A development team is building a decentralized application (dApp) with several smart contracts that interact with each other. During the testing phase, the team notices discrepancies in contract interactions and logic. What steps should they follow in the workflow to isolate the issue, debug the contracts, and ensure smooth interaction between all smart contracts in the dApp?	10	CO3	BL1
3.	Imagine a decentralized charity platform where donors can contribute to causes, and the charity organization can withdraw funds based on predefined milestones. Each cause has a unique ID, and the smart contract tracks total donations, milestones reached, and fund withdrawals. The contract should allow donors to contribute, track donations, and let the charity withdraw funds once the milestone conditions are met. The contract should also emit events when donations are made, milestones are reached, and withdrawals are processed. How would you implement state variables to track donations and withdrawals for each cause while ensuring that milestone conditions are met?	10	CO3	BL3
4.	Consider a decentralized auction platform where users can bid on assets such as art or collectibles. The contract tracks the current highest bid, bid history, and auction time. When the auction ends, the contract transfers ownership of the item to the highest bidder and releases funds to the seller. Which functions should be public (allowing users to place bids), internal (used to update bid status or check auction rules), private (ensuring sensitive auction details are kept secure), and external (accessed by external oracles to fetch auction-related information)?	10	CO4	BL3
5.	In a blockchain-based real estate marketplace, property buyers and sellers execute transactions through smart contracts. How would you implement payable functions to facilitate property payments? Also, how would you manage local variables (e.g., individual property sale amounts) and global variables (e.g., total sales volume) within the contract?"	10	CO4	BL3

****