VIT
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

REG.NO.:

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

SLOT: F2+TF2

Programme Name & Branch	: B.Tech. CSE
Course Code and Course Name	: BCSE324L - Foundations of Blockchain Technology
Faculty Name(s)	: Dr. Mohanasundaram R, Dr. Govindha
Class Number(s)	: 5867, 2009
Date of Examination	: 21/03/2025
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 :
  - CO1 - Understand Blockchain ecosystem and its services in real world sceneries
  - CO2 - Apply and Analyze the requirement of Distributed Ledger Technology and Smart Contract

Q. No	Question	M	CO	BL
1.	How does key splitting and sharing mechanism and threshold signature schemes will enhance security in cryptographic systems? Evaluate the effectiveness of keyless authentication technologies in securing digital assets.	10	2	5
2.	How do different components of a Solidity smart contract (e.g., state variables, functions, modifiers, events) interact to define contract behavior? Illustrate those components with an example. Also Analyze their roles in ensuring security, efficiency, and functionality.	10	2	4

3.	Design a Solidity smart contract for a Healthcare Record Management System that allows patients to securely store and share their medical records with authorized doctors.
	Minimum Requirements:
	• Roles:
	  ○ Patients: Can upload medical records and grant/revoke access.
	  ○ Doctors: Can view patient records only if granted permission.
	• Medical Records:
	  ○ Stored as a hash (off-chain storage like IPFS or a database).
	  ○ Each record should have a timestamp.
	• Access Control:
	  ○ Only the patient can add a new record.
	  ○ Patients can grant/revoke access to specific doctors.
		10	2	5

VIT

Vellore Institute of Technology

(Deemed to be University under section 3 of UGC Act, 1956)

REG.NO.:

SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

CONTINUOUS ASSESSMENT TEST - I

WINTER SEMESTER 2024-2025

SLOT: F2+TF2

	• Security & Privacy: ○ Only authorized doctors can access patient records. ○ Unauthorized access should be restricted.			
4.	How do the key components of a DAO (e.g., governance token, smart contracts, treasury, voting mechanisms) interact to maintain decentralization and autonomy? Analyze the strengths and weaknesses of each component.	10	3	4
5.	How do Aragon and DAOstack differ in their approach to building and managing decentralized autonomous organizations (DAOs)? Analyze their governance models, scalability, and modularity.	10	3	4