



VIT

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

REG. NO.:

MAT: A1+TA1

SCHOOL OF COMPUTER SCIENCE AND ENGINEERING,
CONTINUOUS ASSESSMENT TEST - I
FALL SEMESTER 2025-2026

Programme Name & Branch : B. Tech CSE and Specializations
Course Code and Course Name : BCSE326L Blockchain Architecture Design
Faculty Name(s) : Dr. N. Poornima
Class Number(s) : VL2025260101515
Date of Examination : 17-Aug-2025 09:30 AM - 11:00 AM
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:
 1. Understand the requirements of the fundamentals of Blockchain.
 2. Identify and apply the concept of Bitcoin.
 3. Recognize the underlying technology of transactions, blocks and proof-of-work.

Q. No	Question	M	CO	B
1.	A logistics company wants to integrate a blockchain-based supply chain tracking system that customers can access via a mobile application. The application should allow real-time product location tracking, authenticity verification, and proof of origin. Illustrate how the application layer of blockchain interacts with the execution layer to fulfill these requirements. Include an annotated diagram showing the flow of information from the customer interface to blockchain data validation.	10	CO1	
2.	A government wants to digitize land records using blockchain to prevent fraud. The system must ensure transparency to the public but allow only authorized officials to update records. However, multiple departments have raised governance concerns about decision-making and dispute resolution in the network. Write the suitability of public, private, and consortium blockchains for this use case. Collaborate your recommendation by addressing governance challenges and how they could be resolved in your chosen blockchain type.	10	CO1	
3.	A blockchain development team is creating a healthcare record system where patient data must be tamper-proof. A new block containing updated medical records must be linked to the existing chain without breaking its integrity. Correlate your understanding of linking blocks to relate how cryptographic hashing ensures the immutability of previous data. Include a labelled diagram showing how the hash of the previous block is stored in the new block's header to maintain the chain.	10	CO2	
4.	A blockchain-based ride-sharing platform collects thousands of ride payment transactions per minute. The platform must aggregate these into blocks and select an efficient mining strategy to minimize delays for drivers receiving payment. Write a note on transaction aggregation based on latency, security, and throughput.	10	CO	
5.	A cryptocurrency exchange notices that a customer's withdrawal request is taking longer than expected to confirm. As a blockchain analyst, you are asked to investigate the transaction from creation to final confirmation to identify possible delays. Analyze the lifecycle of a blockchain transaction from the moment it is created in the wallet to its inclusion in a block and final confirmation. Identify two possible points where delays could occur and explain why. Present your answer with a flow diagram.	10	C	