

JK Lakshmipat University Jaipur
INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination, May 2025
B. Tech. (CSE), Semester VI

Roll No.....

CS1245: Enterprise Blockchain Network

Time: 2.5 hours

Max. Marks: 30

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Mention all the assumptions for your answers clearly.

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- Q. 1 A startup plans to disrupt the ride-sharing industry using blockchain technology. The platform aims to connect drivers and riders directly without intermediaries. Their goals are transparency in pricing, reduced commissions, and secure reputation systems for users. They intend to use a native utility token for payments, implement smart contracts for automated fare handling, and develop a public blockchain to ensure open participation. However, they are concerned about scalability, transaction costs, and regulatory risks. 10.0
(LO1, 5)

As a blockchain architect, address the following:

- a. Distinguish between the roles of blockchain, cryptocurrency, and tokens in this scenario. How would each be used in the ride-sharing platform?
- b. Which key components must be integrated into the blockchain architecture (e.g., consensus mechanism, hashing, wallets, nodes)? Justify their inclusion.
- c. Evaluate the pros and cons of choosing Proof of Work vs. Proof of Stake for consensus, considering transaction volume, energy efficiency, and security.
- d. How can smart contracts and DApps be used to automate driver-rider matching, fare calculation, and dispute resolution? Include at least one risk in their use.
- e. If the platform faces performance bottlenecks, how could alternative blockchain types e.g., permissioned or hybrid or Layer 2 solutions improve it?

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- Q. 2 How does Ethereum's architecture (EVM, gas model, and smart contracts) support enterprise-level applications differently than public blockchain use cases like DeFi or NFTs?

OR

- Q. 2 How can the modular architecture of Ethereum (including the EVM, gas model, and Layer 2 integrations) be leveraged to optimize both performance and cost-efficiency in an enterprise-grade application? 5.0
(LO1,5)

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- Q. 3.1 Compare two major use cases of DeFi decentralized lending platforms and DEXs (Decentralized Exchanges). How do they improve upon traditional finance, and what limitations or vulnerabilities do they introduce? 2.0
(LO4)
- Q. 3.2 In a metaverse application that integrates NFTs, DAOs, and DeFi, what roles do Web3 wallets play in ensuring user control, security, and seamless experience? Compare hot wallets vs. cold wallets in this context. 3.0
(LO4)

Q. 4.1	In Hyperledger Fabric, what is chaincode, and how does it enable flexible business logic implementation? Compare it with smart contracts on Ethereum in terms of deployment and upgradeability.	2.0 (LO2,3)
Q. 4.2	Analyze the role of Certificate Authorities (CAs) and Membership Service Providers (MSPs) in Hyperledger Fabric. How do they contribute to secure identity management and access control?	3.0 (LO2,3)
Q. 5	Multiple Choice Questions :- i. In R3 Corda, which of the following is responsible for validating and verifying transactions? a. Notary b. Miner c. Validator d. Smart Contract ii. Which of the following is the consensus mechanism used by Ripple's XRP Ledger? a. Proof of Stake b. Proof of Work c. Practical Byzantine Fault Tolerance (PBFT) d. Delegated Proof of Stake (DPoS) iii. Solana is primarily designed for: a. High scalability with low-cost transactions b. Privacy-focused enterprise applications c. Centralized ledger operations d. Permissioned blockchain networks for banks iv. Which of the following is a feature of Tezos that differentiates it from other blockchains like Ethereum? a. It uses a Proof of Work consensus model b. It has an on-chain governance mechanism that allows users to vote on protocol upgrades c. It only supports private transactions d. It does not support smart contracts v. Quorum is a permissioned blockchain that is a variant of: a. Solana b. Ethereum c. Tezos d. EOS	5.0 (LO5)

all the best!