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Mid Term Examinations - October 2026

Date: 05/10/2026 **Time:** 11:45 AM - 01:15 PM

Course Code: CBC3413 **Course Name:** Blockchain in Financial Services

Semester: Seventh Semester **Max. Marks:** 50 **Weightage:** 50%

CO - Levels	CO1	CO2
Marks	26	64

PART A: Answer Following Questions. 10 M

Q.N.	Questions	M	CO	BT
1	A consensus mechanism is a protocol used by participating nodes to agree on the validity or ordering of transactions. It is required to: Maintain consistency among nodes. Prevent conflicting transaction histories. Support transaction finality according to the network design.	2	CO1	BT2
2	A digital signature is a cryptographic mechanism used to demonstrate that a transaction or message was authorized using a private key. Two purposes are: Authentication of the signer. Integrity assurance for the signed data.	2	CO1	BT1
3	**Corda:** Corda Designed around business transactions and need-to-know data sharing Uses states, contracts, commands, flows and notaries **Quorum:** Ethereum-based enterprise blockchain architecture Uses Ethereum-style accounts, smart contracts and permissioning/privacy mechanisms	2	CO1	BT2
4	A Letter of Credit is a financial instrument in which a bank provides payment assurance to a seller subject to specified conditions. Blockchain can help digitize LC workflows by: Sharing trade documents among authorized participants. Automating condition checks. Improving document traceability. Reducing duplication and reconciliation.	2	CO2	BT2
5	AML (Anti-Money Laundering) refers to policies and processes designed to prevent and detect money laundering and related financial crime. **Digital identity can support KYC/AML by enabling:** Verified identity information. Reusable credentials where legally permitted. Faster customer onboarding. More consistent identity verification.	2	CO2	BT2

PART B : Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT

ANSWER KEY

PTO (Please Turn Over)

6	Quorum, historically including the GoQuorum implementation, is an Ethereum-based enterprise blockchain architecture designed for permissioned environments. **Major Architectural Elements** Ethereum-compatible execution Supports smart contracts and Ethereum-oriented development concepts. Permissioning Controls which organizations or nodes can participate. Privacy Enterprise deployments can use mechanisms designed to restrict transaction visibility. Consensus Enterprise consensus mechanisms can be configured depending on the implementation and version. Smart Contracts Business logic can be implemented through Ethereum-compatible smart contracts. **Financial Applications:** Quorum-style enterprise architectures can support Asset management. Inter-bank workflows. Trade finance. Payments. Shared financial records. Digital assets. **Benefits:** Permissioned participation. Smart-contract capability. Enterprise-oriented governance. Ethereum ecosystem compatibility. Controlled transaction visibility in supported configurations. **Challenges:** Integration complexity. Scalability requirements. Governance. Privacy configuration. Regulatory compliance. Long-term platform support. **Important Current Context** GoQuorum's original repository was archived in 2026, so it should be treated carefully as a historical/reference enterprise Ethereum architecture rather than automatically presented as a currently maintained platform. **Conclusion** Quorum/GoQuorum illustrates how Ethereum-based technologies can be adapted for enterprise and financial environments through permissioning, privacy and enterprise consensus mechanisms.	10	CO1	BT2

ANSWER KEY

7	**Comparison of Corda and Quorum/GoQuorum** Corda is a business transaction platform designed specifically for business and financial workflows, whereas Quorum/GoQuorum is an Ethereum-based enterprise blockchain platform. In Corda, data is shared on a need-to-know basis, meaning only the parties involved in a particular transaction generally receive the relevant transaction information. In Quorum/GoQuorum, participation is permissioned and privacy mechanisms can be used to control transaction visibility. The core transaction model of Corda is based on states and transactions, while Quorum/GoQuorum follows an Ethereum-style account and transaction model. In Corda, contracts define the rules that transactions must satisfy, while Quorum/GoQuorum supports Ethereum-compatible smart contracts for implementing business logic. For workflow management, Corda uses flows to coordinate communication and business transactions between participants. Quorum/GoQuorum primarily uses smart contracts and enterprise transaction mechanisms to implement and automate business processes. Corda uses a notary service to provide uniqueness and finality services and help prevent double-spending. Quorum/GoQuorum uses configured consensus mechanisms to enable participating nodes to reach agreement on the state of the network. For financial applications, Corda is particularly suited to bilateral or multi-party business transactions where selective data sharing is important. Quorum/GoQuorum is suitable for enterprise applications where Ethereum compatibility, smart contracts, permissioning, and enterprise blockchain capabilities are required. Selection Factors A financial institution should consider: Privacy requirements Transaction model Smart-contract requirements Integration requirements Governance Scalability Regulatory requirements Developer expertise Interoperability Long-term platform support Example For a financial process involving selective information sharing between identified parties, a Corda-style architecture may align with the workflow. For an organization requiring Ethereum-compatible smart-contract technology, an enterprise Ethereum approach may be considered, subject to platform support and governance requirements. Conclusion Architecture selection should be based on documented business, technical, privacy, regulatory and operational requirements rather than selecting a platform solely because it uses blockchain.	10	CO1	BT5

PART C: Answer Any 1 Following Questions. 10 M				
Q.N.	**Questions**	**M**	**CO**	**BT**
8	Trade finance involves financial activities that support international trade. A Letter of Credit is one important instrument used to provide payment assurance subject to specified conditions. Traditional LC Process A simplified process is: Importer → Importer's Bank → Exporter's Bank → Exporter Multiple documents and verification steps may be involved. Blockchain-Based LC Process Buyer and seller agree on trade terms. Importer's bank issues the digital LC. LC information is recorded/shared through an authorized blockchain network. Exporter receives the relevant digital information. Trade documents are submitted. Authorized parties verify documents. Smart-contract rules can automate eligible workflow steps. Conditions are satisfied. Payment is initiated according to the agreed process. Transaction records are maintained for audit purposes. Benefits Reduced paperwork. Faster document exchange. Improved traceability. Reduced duplication. Better coordination. Automated workflow rules. Challenges Legal recognition of digital documents. Integration with banks and trade platforms. Privacy. Data standards. Regulatory compliance. Off-chain information verification. Important Limitation Blockchain can provide evidence of what information was recorded, but it cannot automatically guarantee that an off-chain document or physical event is truthful. Conclusion Blockchain-based LC digitization can improve trade-finance workflows by creating a shared and traceable environment, provided that legal, technical and regulatory requirements are addressed.	10	CO2	BT3

ANSWER KEY

9	Digital Identity Digital identity represents information used to identify an individual or organization in an electronic environment. KYC KYC involves collecting and verifying customer information before or during the provision of financial services. AML AML controls are designed to prevent and detect money laundering and related financial crime. Problems in Traditional Identity Processes Repeated submission of documents. Multiple verification processes. Data duplication. Administrative costs. Data silos. Blockchain-Based Identity Blockchain can support identity ecosystems in which authorized parties verify credentials and exchange trusted proofs. Decentralized Identifiers A Decentralized Identifier (DID) is a digital identifier designed to support decentralized identity systems without necessarily depending on a single centralized identity provider. Verifiable Credentials A verifiable credential is a digitally signed credential that can be presented and verified. Example: Bank/Authority → Issues Credential → Customer → Presents Credential → Financial Institution Verifies Benefits Reusable credentials. Faster verification. Improved interoperability. Reduced repeated document submission. Greater user control in appropriate architectures. Privacy Considerations Sensitive personal information should not automatically be stored directly on a public blockchain. Appropriate designs may keep sensitive information off-chain while recording proofs, references or other limited information. AML Limitation Digital identity supports identification and verification, but it does not by itself perform the complete AML function. Financial institutions still need appropriate transaction monitoring and regulatory controls. Conclusion Blockchain-enabled digital identity can improve KYC processes when combined with privacy-preserving technology, trusted credential issuers and regulatory compliance mechanisms.	10	CO2	BT4

PART D: Answer Any 1 Following Questions. 10 M				
Q.N.	**Questions**	**M**	**CO**	**BT**
10	Stellar is a blockchain network designed to facilitate transfers of digital assets and value. Main Components Stellar Network Distributed network supporting transactions. XLM Stellar's native asset. Issued Assets Assets representing other forms of value can be issued on the network according to the protocol and ecosystem design. Accounts Hold and transact assets. Transaction Process A simplified process is: Sender → Transaction → Stellar Network → Validation/Consensus → Ledger Update → Receiver Financial Use Cases Stellar can support: Cross-border payments. Digital asset transfers. Remittance-related applications. Stablecoin transfers. Tokenized assets. Financial inclusion initiatives. Benefits Digital asset transfer. Global network accessibility. Programmable asset functionality. Potentially faster transaction processing compared with traditional multi-step processes. Challenges Regulatory compliance. Asset issuer trust. Market and liquidity considerations. Integration with traditional financial systems. Security and operational risks. Conclusion Stellar provides blockchain infrastructure for transferring digital assets and can support financial applications involving payments, remittances and tokenized value.	10	CO2	BT2

ANSWER KEY

11	Blockchain can support lending by recording loan-related transactions, automating contractual rules and enabling digital representation of loan-related rights. DeFi Lending DeFi lending uses smart contracts to facilitate lending and borrowing without relying on a conventional bank as the sole intermediary. Basic Process Lender Deposits Assets → Liquidity Pool → Borrower Deposits Collateral → Borrowing → Interest → Repayment Example: Aave Aave uses liquidity pools where users can supply supported assets and borrowers can borrow subject to protocol rules and collateral requirements. Tokenized Loans A loan or economic interest associated with a loan can be represented through digital tokens. Potential applications: Loan participation. Debt instruments. Receivables. Asset-backed financing. Credit Scoring Blockchain itself does not automatically determine creditworthiness. A blockchain-based credit system may combine: Verified financial information. Transaction history. Authorized credentials. External data. Smart-contract rules. Benefits Automation. Transparency. Programmability. Faster processing. Potential fractional participation. Risks Smart-contract vulnerabilities. Collateral volatility. Data quality. Privacy. Regulatory uncertainty. Oracle risks. Liquidity risks. Conclusion Blockchain can provide infrastructure for programmable lending and tokenized credit instruments, but reliable credit assessment still requires appropriate data, models and regulatory controls.	10	CO2	BT3

PART E: Answer Any 1 Following Questions. 10 M				
Q.N.	**Questions**	**M**	**CO**	**BT**
12	Clearing and settlement are critical stages of financial-market transactions. Clearing Clearing determines the obligations of the parties involved in a transaction. Settlement Settlement completes the actual transfer of the financial asset and associated payment. Traditional Workflow Trade Execution → Confirmation → Clearing → Settlement Multiple systems may need to exchange and reconcile information. Blockchain-Based Approach A shared ledger can allow authorized participants to maintain synchronized records. Potential advantages include: Reduced reconciliation. Automated processing. Improved traceability. Faster information sharing. Programmable settlement. T+0 T+0 refers to settlement taking place on the trade date, subject to applicable market rules and operational arrangements. Delivery versus Payment DvP links asset delivery and payment. Example: Buyer pays ₹10 lakh ↔ Seller transfers securities The mechanism is designed so that the two legs are linked rather than being completed independently. Blockchain and DvP A smart-contract-based workflow could: Verify buyer funds. Verify seller's asset. Lock or reserve both sides. Execute delivery and payment according to predefined rules. Record the final state. Challenges Legal settlement finality. Interoperability. Scalability. Privacy. Integration with existing systems. Regulatory requirements. Conclusion Blockchain can support synchronized clearing and settlement workflows and may facilitate T+0 and programmable DvP in suitable financial-market environments.	10	CO2	BT4

ANSWER KEY

13	Blockchain implementation in financial services requires consideration of technical, business, security and regulatory factors. 1. Scalability The platform must handle the required transaction volume and performance. 2. Privacy Financial information is sensitive. The architecture should provide appropriate access control and data-sharing mechanisms. 3. Regulatory Compliance Blockchain solutions must comply with: KYC requirements. AML requirements. Data-protection rules. Financial regulations. Record-keeping requirements. 4. Interoperability Blockchain networks need to communicate with: Banking systems. Payment systems. Trading platforms. Identity systems. Existing databases. 5. Security Important concerns include: Private-key security. Smart-contract vulnerabilities. Node security. Access control. Cyberattacks. 6. Data Quality Blockchain protects recorded information but does not guarantee that external information entered into the blockchain is correct. 7. Governance Organizations must define: Who can participate. Who can validate transactions. Who can update the system. How disputes are handled. How changes are approved. 8. Legal Recognition Digital assets, digital documents and blockchain records need appropriate legal and regulatory treatment. 9. Cost and Integration Organizations must evaluate: Development costs. Migration costs. Infrastructure. Training. Maintenance. Integration with legacy systems. 10. Business Need Blockchain should be considered when multiple parties need a shared, trusted record or coordinated workflow. It should not be adopted merely because it is a new technology. Conclusion Successful blockchain adoption in financial services requires a combination of technology, security, privacy, interoperability, governance, regulatory compliance and clear business value.	10	CO2	BT5

ANSWER KEY