Unit I: Introduction to Blockchain

1. **Which of the following is a component of a block in the blockchain?**

    o   a) Block Header

    o   b) Block Footer

    o   c) Block Body

    o   d) Block Tail

2. **The first block in a blockchain is called the:**

    o   a) First Block

    o   b) Initial Block

    o   c) Genesis Block

    o   d) Prime Block

3. **How are blocks linked in a blockchain?**

    o   a) Via a common database

    o   b) Through pointers

    o   c) Using hash values

    o   d) Through linear chaining

4. **What is the main purpose of a Merkle Tree in a blockchain?**

    o   a) To compress data

    o   b) To improve search efficiency

    o   c) To provide data integrity and efficient verification

    o   d) To manage transaction speed

5. **Which element is not found in the block header?**

    o   a) Hash of the previous block

    o   b) Nonce

    o   c) Timestamp

    o   d) Merkle Tree root

6. **The Genesis Block in Bitcoin was created by:**

    o   a) Hal Finney

    o   b) Vitalik Buterin

    o   c) Satoshi Nakamoto

    o   d) Nick Szabo

7. **Which of the following best describes a simple blockchain?**

   o   a) A blockchain without smart contracts

   o   b) A blockchain with minimal data storage

   o   c) A basic chain of blocks without additional functionality

   o   d) A blockchain with only one node

8. **The term 'Nonce' in blockchain is used for:**

   o   a) Block identification

   o   b) Mining difficulty adjustment

   o   c) Ensuring uniqueness of block hashes

   o   d) Validating transactions

9. **What happens when a block is added to the blockchain?**

   o   a) It becomes the first block

   o   b) It changes the entire blockchain

   o   c) It is linked to the previous block via its hash

   o   d) It invalidates the previous block

10. **What ensures the immutability of blockchain data?**

   o   a) Decentralization

   o   b) Cryptographic hashing

   o   c) Consensus mechanisms

   o   d) All of the above

Answers:

1. **Block Header**
2. **Genesis Block**
3. **Using hash values**
4. **To provide data integrity and efficient verification**
5. **Merkle Tree root**
6. **c) Satoshi Nakamoto**
7. **c) A basic chain of blocks without additional functionality**
8. **c) Ensuring uniqueness of block hashes**
9. **c) It is linked to the previous block via its hash**
10. **d) All of the above**

Unit II: Blockchain Types

1. **Which type of blockchain is open for anyone to participate in?**

   o   a) Private Blockchain

   o   b) Public Blockchain

   o   c) Consortium Blockchain

   o   d) Permissioned Blockchain

2. **A blockchain that is partially private and partially public is known as:**

   o   a) Public Blockchain

   o   b) Private Blockchain

   o   c) Semi-private Blockchain

   o   d) Permissioned Blockchain

3. **Which blockchain type is controlled by a single organization but visible to the public?**

   o   a) Public Blockchain

   o   b) Private Blockchain

   o   c) Consortium Blockchain

   o   d) Fully private and proprietary Blockchain

4. **What is the main purpose of sidechains in blockchain technology?**

   o   a) To increase the size of the main blockchain

   o   b) To enhance blockchain security

   o   c) To enable transactions to be executed faster

   o   d) To facilitate cross-chain communication and scalability

5. **What differentiates a tokenized blockchain from a tokenless blockchain?**

   o   a) Use of cryptocurrencies

   o   b) Ability to create smart contracts

   o   c) Presence of digital tokens to represent assets

   o   d) Presence of a consensus mechanism

6. **Which type of blockchain is ideal for a group of organizations to maintain a shared ledger?**

   o   a) Private Blockchain

   o   b) Public Blockchain

   o   c) Consortium Blockchain

   o   d) Semi-private Blockchain

7. **Permissioned ledgers are best suited for:**

   o   a) Public blockchains

   o   b) Private organizations needing restricted access

   o   c) Cryptocurrencies

   o   d) Sidechains

8. **A blockchain that is only accessible and controlled by a single organization is called a:**

   o   a) Public Blockchain

   o   b) Consortium Blockchain

   o   c) Fully private and proprietary Blockchain

   o   d) Semi-private Blockchain

9. **Distributed ledgers provide:**

   o   a) A single point of failure

   o   b) Centralized data control

   o   c) Decentralized data storage and control

   o   d) Restricted access

10. **Which of the following is a shared ledger?**

    o   a) Distributed ledger across multiple nodes

    o   b) A ledger owned by a single entity

    o   c) A centralized database

    o   d) A ledger used for private transactions

Answers:

1. **b) Public Blockchain**
2. **c) Semi-private Blockchain**
3. **b) Private Blockchain**
4. **d) To facilitate cross-chain communication and scalability**
5. **c) Presence of digital tokens to represent assets**
6. **c) Consortium Blockchain**
7. **b) Private organizations needing restricted access**
8. **c) Fully private and proprietary Blockchain**
9. **c) Decentralized data storage and control**
   a) **Distributed ledger across multiple nodes**

Unit III: Consensus in Blockchain

1. **Proof of Work (PoW) is primarily associated with which blockchain?**

    o   a) Ethereum

    o   b) Bitcoin

    o   c) Ripple

    o   d) Hyperledger

2. **Which consensus algorithm is known for its energy efficiency compared to PoW?**

    o   a) Proof of Stake (PoS)

    o   b) Proof of Importance

    o   c) Proof of Elapsed Time

    o   d) Delegated Proof of Stake (DPoS)

3. **In Proof of Stake (PoS), what determines the likelihood of validating a new block?**

    o   a) Computing power

    o   b) Network age

    o   c) Ownership of the cryptocurrency

    o   d) Number of nodes

4. **Which consensus mechanism requires participants to lock up a deposit to participate?**

    o   a) Proof of Stake

    o   b) Proof of Work

    o   c) Deposit-based consensus

    o   d) Proof of Elapsed Time

5. **Delegated Proof of Stake (DPoS) involves:**

    o   a) Random selection of validators

    o   b) A group of elected delegates validating blocks

    o   c) Mining competition

    o   d) Voting for block producers

6. **Which consensus algorithm is employed by the NEM blockchain?**

    o   a) Proof of Work

    o   b) Proof of Importance

    o   c) Federated Consensus

    o   d) Practical Byzantine Fault Tolerance (PBFT)

7. **Federated Consensus is also known as:**

   - o a) Proof of Stake

   - o b) Federated Byzantine Agreement

   - o c) Proof of Elapsed Time

   - o d) Reputation-based consensus

8. **In Practical Byzantine Fault Tolerance (PBFT), how many faulty nodes can the system tolerate?**

   - o a) Up to 1/3 of the total nodes

   - o b) No tolerance for faulty nodes

   - o c) Up to 2/3 of the total nodes

   - o d) Only 1 faulty node

9. **Proof of Importance (PoI) considers which of the following for block validation?**

   - o a) Stake of cryptocurrency

   - o b) Computing power

   - o c) Network contribution and transaction history

   - o d) Age of the user

10. **Reputation-based consensus mechanisms rely on:**

    - o a) The amount of cryptocurrency owned

    - o b) The energy consumed during mining

    - o c) The reputation of participants in the network

    - o d) Random selection of nodes

Answers:

b) Bitcoin

a) Proof of Stake (PoS)

c) Ownership of the cryptocurrency

c) Deposit-based consensus

b) A group of elected delegates validating blocks

b) Proof of Importance

b) Federated Byzantine Agreement

a) Up to 1/3 of the total nodes

c) Network contribution and transaction history

c) The reputation of participants in the network

Unit IV: Cryptocurrencies

1. **Which cryptocurrency was the first to be created?**

   o   a) Ethereum

   o   b) Litecoin

   o   c) Bitcoin

   o   d) Ripple

2. **Bitcoin transactions are verified by:**

   o   a) Centralized authorities

   o   b) Proof of Stake

   o   c) Miners solving cryptographic puzzles

   o   d) Network nodes based on reputation

3. **The Ethereum Virtual Machine (EVM) is responsible for:**

   o   a) Storing Bitcoin transactions

   o   b) Executing smart contracts

   o   c) Mining Bitcoin

   o   d) Controlling Ethereum supply

4. **What is the maximum supply of Bitcoin?**

   o   a) 21 million

   o   b) 100 million

   o   c) 1 billion

   o   d) Unlimited

5. **In Ethereum, transactions are grouped into:**

   o   a) Blocks

   o   b) Contracts

   o   c) Nodes

   o   d) Shards

6. **Which of the following is true about Ethereum's consensus mechanism after the merge?**

   o   a) It uses Proof of Work

   o   b) It uses Proof of Stake

   o   c) It uses Proof of Elapsed Time

   o   d) It remains unchanged

7. **Which of the following is not a function of Bitcoin mining?**

   o   a) Verifying transactions

   o   b) Issuing new bitcoins

   o   c) Executing smart contracts

   o   d) Securing the network

8. **The Ethereum network primarily facilitates:**

   o   a) Simple peer-to-peer transactions

   o   b) Complex smart contract execution

   o   c) Cross-chain interoperability

   o   d) Federated consensus

9. **What is 'gas' in the context of Ethereum?**

   o   a) A fuel for Bitcoin mining

   o   b) A measure of computational work required for transactions

   o   c) A cryptocurrency

   o   d) An alternative consensus mechanism

10. **Ethereum's blockchain allows for:**

   o   a) Only financial transactions

   o   b) Development of decentralized applications (DApps)

   o   c) Centralized ledger management

   o   d) Cross-chain communication

Answers:

c) Bitcoin

c) Miners solving cryptographic puzzles

b) Executing smart contracts

a) 21 million

a) Blocks

b) It uses Proof of Stake

c) Executing smart contracts

b) Complex smart contract execution

b) A measure of computational work required for transactions

b) Development of decentralized applications (DApps)

Unit V: Blockchain Use Cases

1. **Which of the following is a blockchain application in supply chain management?**

   o a) Tracking goods from origin to delivery

   o b) Managing cloud storage

   o c) Executing smart contracts

   o d) Mining cryptocurrencies

2. **Blockchain technology in healthcare is used for:**

   o a) Cryptocurrency trading

   o b) Managing electronic health records

   o c) Centralized patient data storage

   o d) Real-time transaction processing

3. **Digital identity management on blockchain provides:**

   o a) Centralized control of identities

   o b) Anonymity and privacy

   o c) Simplified identity theft

   o d) Governmental access to all data

4. **Which financial service can be enhanced using blockchain technology?**

   o a) Cross-border payments

   o b) Identity theft

   o c) Manual auditing

   o d) Paper-based contract signing

5. **Blockchain in the insurance industry can help by:**

   o a) Reducing claims processing time

   o b) Increasing paperwork

   o c) Centralizing customer data

   o d) Delaying transactions

6. **What is the key benefit of blockchain in digital identity management?**

   o a) Decentralization of identity information

   o b) Faster internet speeds

   o c) Increased manual verification

   o d) Limited access to identity data

7. **Which blockchain feature is most beneficial in supply chain management?**

   o a) Transparency and traceability

   o b) Slower transaction speeds

   o c) Centralized authority

   o d) Increased data storage costs

8. **How does blockchain improve healthcare record management?**

   o a) By centralizing patient records

   o b) By providing immutable, accessible records

   o c) By eliminating electronic health records

   o d) By slowing down data retrieval

9. **In finance, blockchain can reduce costs by:**

   o a) Replacing physical bank branches

   o b) Eliminating the need for intermediaries

   o c) Centralizing all transactions

   o d) Using traditional auditing processes

10. **Which of the following is not a blockchain use case?**

    o a) Supply Chain Management

    o b) Digital Identity

    o c) Email Communication

    o d) Healthcare Record Management

Answers:

a) Tracking goods from origin to delivery

b) Managing electronic health records

b) Anonymity and privacy

a) Cross-border payments

a) Reducing claims processing time

a) Decentralization of identity information

a) Transparency and traceability

b) By providing immutable, accessible records

b) Eliminating the need for intermediaries

c) Email Communication