Course Name: Blockchain and its Applications (NOC25_CS08)

Assignment 12 - Week 12 (Jan 2025)

TYPE OF QUESTION: MCQ/MSQ

Number of questions: 10 **Total mark: 10 X 1 = 10**

QUESTION 1

How does the use of blockchain technology enhance the management of Land Registry records?

a) Blockchain eliminates the need for physical land titles by storing them in a centralized digital ledger.
b) Blockchain ensures that land records can be accessed by any government entity at any time without restrictions.
c) Blockchain prevents fraud in land transactions by providing a secure, transparent, and immutable record of ownership.
d) Blockchain allows land records to be altered instantly without the need for a verification process by authorities

Answer: (c)

Detailed solution:
Blockchain technology improves the security and transparency of land registries by creating a decentralized ledger that is immutable, meaning once a record is entered, it cannot be altered. This reduces the risk of fraud, ensures a clear ownership history, and makes the system more trustworthy and efficient.

QUESTION 2

Which of the following is/are advantages of blockchain?

a) Provides decentralized platforms and marketplace
b) Requires intermediaries for verification
c) Limited scalability
d) Better transparency

Answer: (a) and (d)

Detailed solution:
Please refer to the Week 12 Lecture 56.

QUESTION 3

Which of the following is an essential feature of federated voting?

a) It requires a central authority to validate votes
b) Nodes vote independently without needing majority approval to win
c) A majority of nodes' votes determine the outcome
d) All nodes must agree unanimously for a decision to be accepted

Answer: (c)

Detailed solution:
Please refer to the Week 12 Lecture 57.

QUESTION 4

Which of the following was/were **NOT** utilized in Singapore's Project Ubin to enhance interbank settlements?

a) Distributed Ledger Technology
b) Tokenization of the Singapore Dollar (SGD) for digital representation.
c) cross-border payments
d) Proof-of-work (PoW) consensus mechanism to validate transactions

Answer: (d)

Detailed solution:
Singapore's Project Ubin explored blockchain technology to enhance interbank settlements, focusing on **smart contracts** for automating transactions and **tokenization** of the Singapore Dollar (SGD) for digital representation. The project did **not** integrate **public blockchains** for cross-border payments but rather used private, permissioned blockchains for enhanced security and control. Additionally, **Proof-of-Work (PoW)** was not employed, as it is resource-intensive and was not suited for the project's goals. Instead, the project tested more efficient consensus mechanisms, such as **Practical Byzantine Fault Tolerance (PBFT)**. The project aimed to improve financial systems' efficiency, privacy, and scalability.

QUESTION 5

Which type of attack allows an attacker to create multiple fake identities to gain unauthorized access to consortium services?

a) Byzantine faults
b) Sybil attacks
c) DDoS attacks
d) Sensitive information leakage

Answer: (b)

Detailed solution:
A **Sybil attack** occurs when an attacker creates multiple fake identities to gain control or influence over a system, often to disrupt consensus or access services. This is a specific threat in decentralized networks, where trust and identity verification are essential.

QUESTION 6

To allocate consumer requests among Service Providers, which of the following scheduling algorithms is implemented?

a) Fair Scheduling Algorithm
b) Capacity Scheduling Algorithm
c) Dynamic Round Robin
d) A* Algorithm

Answer: (a)

Detailed solution:
In Cloud Federation, to allocate consumer requests among Service Providers, Fair scheduling algorithm is implemented. Each SP will be allocated the number of consumer requests proportional to its infrastructure contribution to the federation.

QUESTION 7

Which of the following are key advantages of Hyperledger?

a) It is open-source
b) The identities of the participants can be accessed by any outsider
c) It supports private channels
d) It is exclusively designed for public blockchain

Answer: (a) and (c)

Detailed solution:
Hyperledger's key advantages include being **open-source**, allowing for widespread collaboration, and supporting **private channels** that ensure confidentiality for participants in a network.

QUESTION 8

Quorum, an enterprise-focused blockchain platform based on Ethereum, supports transaction management with privacy enhancements. Which type of state can Quorum handle during a transaction?

a) Only private state
b) Only public state
c) Both private and public state at the same time
d) Either private or public state for a transaction

Answer: (c)

Detailed solution:
Quorum allows both private and public transactions, providing the flexibility to handle sensitive data privately while also enabling transparent public interactions when required. Therefore, it can handle either private or public state depending on the needs of the transaction.

QUESTION 9

What feature of blockchain helps prevent fraud in decentralized marketplaces?

a) Central authority
b) Smart contracts
c) Manual validation
d) Third-party monitoring

Answer: (b)

Detailed solution:
Smart contracts automatically execute predefined rules and agreements without intermediaries, ensuring transactions are tamper-proof and fraud-resistant in decentralized marketplaces. This eliminates the risk of manual errors or malicious interference.

QUESTION 10

What does a "man-in-the-middle" attack do in a decentralized marketplace?

a) Changes in the price of goods in the marketplace
b) Intercepts and alters messages between users
c) Steals cryptocurrency directly from wallets
d) Prevents users from accessing the marketplace

Answer: (b)

Detailed solution:

A man-in-the-middle (MITM) attack in a decentralized marketplace primarily intercepts and alters messages between users. In this type of attack, the attacker secretly intercepts and potentially manipulates the communication between two parties (e.g., buyers and sellers) without either party being aware. This could involve changing transaction details, redirecting payments, or modifying the data being exchanged. MITM doesn't change the marketplace's prices.