Blockchain and Its Applications
Assignment 11

Correct choices are highlighted in Yellow. Give partial marks for partially correct answers.

1. If an attacker initially populates the victim node's peer tables with attacker's IP addresses in blockchain network, this attack is known as:
    a. Sybil Attack
    b. Eclipse Attack
    c. Selfish Mining Attack
    d. 51% Attack

2. Which of the following can be used to identify a good blockchain use-case? (Mark multiple options if applied)
    a. Participants
    b. Assets
    c. Transactions
    d. Independent of everything

3. Alice is performing an Eclipse Attack, and If her IP replaces another attacker IP, the evicted IP is resent and eventually replaced by honest IP. Is this a valid statement?
    a. Yes
    b. No

4. In a decentralized blockchain network, which scenario poses a significant risk known as the "51% Vulnerability"?
    a. When a majority of users hold more than 51% of the cryptocurrency tokens.
    b. When a single entity or a group controls more than 51% of the network's computing power.
    c. When more than 51% of the nodes in the network experience a temporary outage.
    d. When more than 51% of the transactions in a block are invalid due to cryptographic errors.

5. Alice possesses 5 Bitcoins and initiates two separate transactions with the same Bitcoin. In which case does the double spending vulnerability occur?
    a. Alice pays for a coffee and a book with the same 5 Bitcoins.
    b. Alice accidentally sends 6 Bitcoins to a friend.
    c. Alice sends 2 Bitcoins to one friend and 3 Bitcoins to another.
    d. Alice checks her wallet balance but forgets to confirm the transaction.

6. In a selfish mining attack, discovering more blocks by pool develops a longer lead on the public chain, and continues to keep these new blocks _____
    a. Private
    b. Public

7. Which of the following scenarios is NOT a good use case for blockchain technology?
    a. A supply chain network where participants require real-time visibility into the movement and origin of goods.
    b. An online voting system aiming to enhance transparency, reduce fraud, and ensure the integrity of election results.

c. A centralized banking system seeking to improve transaction speed and reduce costs.
d. A healthcare system aiming to securely share patient records among different healthcare providers for better coordinated care.

8. What is a major problem with Proof Of Work?
    a. It is difficult to implement
    b. It is unreliable
    c. Multiple miners have to be rewarded
    d. It is CPU-intensive and consumes enormous amount of power.

9. In Practical Byzantine Fault Tolerance, ___.
    a. A master node selects the next node that adds the next block
    b. The node with most coins is chosen for adding the next block
    c. The nodes elect a leader and that leader adds the next block
    d. None of the above

10. Alice places a bulk order for a cryptocurrency, and before it is processed, Bob, who is a miner, inserts his own buy order with a slightly higher price. In which case does the front-running attack occur?
    a. Alice's order is confirmed first due to network congestion.
    b. Bob's order is prioritized and confirmed ahead of Alice's order.
    c. Both Alice and Bob's orders are cancelled due to conflicting transactions.
    d. The network rejects both Alice and Bob's orders, causing delays in confirmation.