NOC23 Blockchain and Its Applications
Assignment 7

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

1. Which statement(s) is/are false for practical distributed decentralized network assumptions:
    a. Communication channel can be unreliable
    b. The network may not be fully Connected
    c. Receivers can not always know the identity of the Senders
    d. None of the above

    Detailed Solution:
    Please refer to Lecture notes; decentralized system can have unreliable, partially connected networks with all of the participating parties, may not be known to all

2. Which of the following is/are true for PBFT (Practical Byzantine Fault Tolerance).

    a. PBFT gives priority to safety over liveliness.
    b. Use digital signature
    c. Based on State machine replication
    d. In general low overhead is associated

    Detailed Solution:
    Please refer to Lecture notes, all of the above are true for PBFT.

3. PBFT can use cryptographic techniques for authentication and authorization.
    a. True
    b. False

    Detailed Solution:
    Please refer to Lecture notes, PBFT uses cryptographic techniques for signing and authentication.

4. Which of the following is/are true for the view in PBFT?
    a. One replica in a view is considered as the primary (works like a
    b. The primary proposes a value, and the backups accept the value Acceptors)
    c. When the primary is detected as faulty, the view is changed and a new leader/primary is elected
    d. Only the messages from the current view are accepted

Detailed Solution:
All of the above are correct. Please refer to Lecture notes for PBFT uses primary and backup view configuration. The primary works as proposer and in case of fault a new primary is elected.

5. Is Hyperledger Fabric used for invoking smart contracts in public blockchain in its basic form?
    a. True
    b. False

    Detailed Solution:
    Please refer to Lecture notes, Fabric is primarily used for building permissioned blockchains for organizations. It is an open source project so anyone can use it to build a permissioned blockchain and deploy smart contracts on it.

6. Which of the following is an open source, enterprise-grade Permissioned DLT platform
    a. Hyperledger Explorer
    b. Hyperledger Burrow
    c. Hyperledger Fabric
    d. Hyperledger Indy

    Detailed Solution:
    Only Fabric is an enterprise-grade permissioned DLT Platform.
    Explorer is a tooling to inspect blockchains.
    Burrow is not an enterprise grade DLT since it uses EVM which has certain limitations in developing smart contracts.
    Indy is a specialized DLT for identity management.

7. Which of the following abstractions in Hyperledger Fabric provide confidentiality to individual ledgers ?
    a. Ordering Services
    b. Peers
    c. Channels
    d. Endorsement Policies

    Detailed Solution:
    Refer to Lecture 35: Fabric channels refer to different separate ledgers such that only organizations belonging to a particular channel can read/write to that ledger.

8. Suppose there are 5 channels present in a Hyperledger Fabric network, each of them has access to 3 chaincodes A, B and C. How many containers will run in each peer for running this system?
    a. 5
    b. 1
    c. 3
    d. 15

    Detailed Solution:
    Per peer 3 containers will be running, that is one for each chaincode.

9. Hyperledger Fabric allows any consensus to be plugged in to ensure a high degree of trustworthiness. True or False
    a. True
    b. False

    Detailed Solution:
    Hyperledger fabric is modular, and the consensus protocol is a pluggable component. Therefore any consensus protocol such as PBFT or Proof of Work can be plugged in and used.

10. Which of the following(s) is/are benefits of Blockchain for Business
    a. Reduced transaction time from days to near instantaneous
    b. Removes intermediaries overheads and cost
    c. Enables NewBusiness Models such as IoT Integration into supply chain
    d. All of the these

    Detailed Solution:
    Refer to Lecture 33. The benefits of enterprise blockchains include reduced transaction time, removal of intermediaries, and new business models such as IoT integration in supply chain.