NOC22-CS44: Blockchain and Its Applications
Assignment 5

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

1. The height of the block is the ____ in the chain between it and the genesis block.
    a. Metafiles
    b. Hash
    c. Log size
    d. Number of blocks

2. What is the CLI command used to send ethers after the nodes have been initialized?
    a. eth.submitTransaction()
    b. eth.sendTransaction()
    c. eth.sendIBANTransaction()
    d. eth.sendRawTransaction()

    Hint: Once the transaction is prepared using syntax
    var **transaction** = {from: "0x7dad3a076678a05b2b4e2b93206dbecef0d7b0",
    to:"0x35F18427567108F800BDC2784277B9246eED3A" ,
    value: Web3.utils.numberToHex(10000000000000000) },
    it can be sent using:
    web3.eth.sendTransaction(transaction).then(console.log)

3. Which of the following syntax is correct to write data in a smart contract using solidity
    a. myContract.methods.store("55").set()
    b. myContract.methods.write("55").send()
    c. myContract.methods.store("55").send()
    d. myContract.methods.write("55").set()

    Hint: Please refer to the Week 5 Lecture slides on how to execute smart contract.

4. What is the limitation of using the consensus algorithm Proof of Work (PoW)?
    a. A lot of mining power is wasted as only one gets success in mining at a time
    b. PoW is used for permissioned blockchain
    c. It is used for blockchain mining
    d. High transaction throughput

    Hint: Please refer to the slide Week 5 slide. The PoW has limitation of wastage of power and low throughput.

5. Which statement(s) is/are true for PoS(Proof of Stake) consensus?
    a. Depends on the work done by the miner
    b. Depends on the amount of crypto currency the miner holds
    c. Provides less protection in general
    d. None of the above

Hint: Refer to the Week 5 Lecture slide for description of PoS. Amount of bitcoin that the miner holds decides its stake.

6. Which of the following is/are applicable for PoET(Proof of Elapsed Time) consensus
    a. Each participant in the blockchain network waits a random amount of time
    b. The first participant to finish becomes the follower for the new block
    c. Trusted execution platform and attestation are used to verify that the proposer has really waited
    d. The first participant to finish becomes the leader for the new block.

Hint:POET uses a trusted execution platform, say as Intel SGX and H/W attestation. Please refer to the slide for details.

7. Proof of Burn consensus algorithms also consider virtual resources or digital coins for participating in the mining activity?
    a. True
    b. False

Hint: Proof of Burn consensus algorithms consider virtual resources or digital coins for participating in the mining activity unlike PoW which uses real resources.

8. 15 ether equals
    a. 15X(10 ^ 16) wei
    b. 15X(10 ^ 18) wei
    c. 15X(10 ^ 6) wei
    d. 15X(10 ^ 8) wei

Hint: Ether to Wei converter: https://eth-converter.com/.

9. How an attacker could manipulate the transaction history of an existing blockchain
    a. The attacker hard-forked the network and created a new blockchain network.
    b. The attacker modified the smart contract and recovered the investor's cryptocurrency.
    c. The attacker gained control of more than 51% of the network's computing power.
    d. The attacker gained control of less than 49% of the network's computing power.

Hint: Refer to the Week 5 Lecture slide for 51% attack.

10. What library/API is used for smart contract deployment and invocation from Dapp ?
    a. Contract
    b. web3
    c. admin
    d. eth

Hint: web3 is the Collection of libraries that allow you to interact with a local or remote ethereum nodes