Course Name: Blockchain and its Applications (NOC25_CS08)

Assignment 5 - Week 5 (Jan 2025)

TYPE OF QUESTION: MCQ/MSQ

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

QUESTION 1

What is/are the limitations 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 typically used for permissioned blockchain
c. It is used for blockchain mining
d. High costs and difficulty in supporting large-scale adoption

Answer: (a) and (d)

Detailed solution:
Please refer to the slide Week 5 slide. The PoW has limitations of wastage of power, high costs, and large-scale adoption.

QUESTION 2

Which of the following is/are not 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.

Answer: (b)

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

QUESTION 3

How an attacker could manipulate the transaction history of an existing blockchain whose ledger cannot be modified, only it is possible to append?

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.

Answer: (c)

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

QUESTION 4

What is the role of the Ethereum Virtual Machine (EVM)?

a. To directly connect the Ethereum nodes
b. To execute smart contracts in a decentralized manner
c. To directly mine blocks
d. To disrupt the Ethereum network and cause failures

Answer: (b)

Detailed solution:
The EVM executes smart contracts and ensures decentralized agreement on computations.

QUESTION 5

Which of the following syntax is correct to write data in a smart contract using solidity

```
a. myContract.methods.store("10").set()
b. myContract.methods.write("10").send()
c. myContract.methods.store("10").send()
d. myContract.methods.write("10").set()
```

Answer: (c)

Detailed solution:
Please refer to the Week 5 Lecture slides on how to execute a smart contract.

QUESTION 6

2.5 ether equals

a. 25×10^8 Gwei
b. 25×10^{10} Gwei
c. 25×10^7 Gwei
d. 25×10^9 Gwei

Answer: (a)

Detailed solution:
Ether to Wei converter: https://eth-converter.com/.

QUESTION 7

Which JSON-RPC method is used to query the balance of an Ethereum account?

a. eth_sendTransaction
b. eth_getBalance
c. eth_getBlockByNumber
d. eth_getTransactionByHash

Answer: (b)

Detailed solution:
The eth_getBalance method retrieves the current balance of a specified Ethereum account.

QUESTION 8

What parameter in an Ethereum transaction specifies the fee for computational resources required?

a. Gas
b. Nonce
c. Data
d. Value

Answer: (a)

Detailed solution:
Gas defines the fee required for computational operations in a transaction

QUESTION 9

Which of the consensus algorithms requires miners to show a proof of sending coins to a verifiably un-spendable address?

a. Proof of Work (PoW)
b. Proof of Stake (PoS)
c. Proof of Burn (PoB)
d. Proof of Elapsed Time (PoET)

Answer: (c)

Detailed solution:
Proof of Burn consensus algorithm requires miners to show a proof of burning coins i.e sending coins to a verifiably un-spendable address

QUESTION 10

What is the main difference between PoS (Proof of Stake) and PoW (Proof of Work)?

a. PoS requires computational work; PoW requires a stake.
b. PoS relies on the stake held by miners; PoW relies on computational power.
c. PoS consumes external resources; PoW consumes virtual resources.
d. PoS eliminates the need for block validation.

Answer: (b)

Detailed solution:
In PoS, block mining probability depends on the amount of stake held, unlike PoW, which depends on computational effort.