1. Which of the following tasks are executed by the Ethereum virtual machine (EVM)?
    a. Verifying transaction signatures
    b. Mining new Ether
    c. Executing smart contracts
    d. Managing decentralized storage

Ans: C. EVM executes the the Ethereum code which is the smart contract. The others are executed by the Miner.

2. In Ethereum, what is the purpose of the nonce in a transaction?

A) It represents the transaction timestamp
B) It prevents double-spending
C) It determines the gas price
D) It encrypts the transaction data

Ans: B Prevents double spending. Explained in the lectures.

3. Which of the following is a benefit of the Ethereum Virtual Machine's (EVM) Turing completeness?

a. Increased security and efficiency
b. Faster consensus using proof-of-stake
c. Support for a wide range of computations
d. Reduced transaction fees

Ans: C Can execute any smart contract. Fundamental to claim of executing arbitrary programs on EVM.

4. What is the purpose of “gas” in Ethereum?

a. As an incentive to miners for executing smart contracts

b. As a reward to miners and attestors for successful block creation and attestation

c. Limiting the length and time of execution for smart contracts

d. All of the above

Ans: a, c. Gas is paid to the miners to execute the smart contracts and also to limit the size and execution of the smart contract such that no one can put arbitrarily long smart contracts. Miners and attestors are paid block reward and attestation reward in ether for successful block creation and attestation.

5. Which of the following statements about the Ethereum Virtual Machine (EVM) is true?

a. It is a device stored in each node
b. A state based computing environment stored by Ethereum network
c. It is a runtime environment for smart contracts
d. Can run Solidity and other programming languages.

Ans: b,c,d EVM is a state based virtual machine whose states i.e world states are stored by the ethereum blockchain/network. This EVM runs the smart contracts written primarily in Solidity but can also be written using Vyper, Yul, Python, etc.

6. What is true for contract accounts?

a. Can be invoked by external owned accounts

b. Can be invoked by other contract account

c. Can hold ether and execute codes

d. Secured by public and private key of the owner

Ans: A, B, C. From the slides. Contract accounts do not have private and public-key pairs. Only EOAs have.

7. Which of the following is not possible in Ethereum but possible in Bitcoin?

a. Multi-Sig transactions

b. Escrow account

c. Micropayment

d. None of the above

Ans: D, Ethereum can execute any type of program so everything is possible.

8. How to update a contract deployed in Ethereum?

a. Making an update transaction and invoking the contract

b. Removing the contract completely and re-deploy

c. Making a transaction to mark the old contract invalid so no miner process any call to that contract

d. None of the above

Ans: D. Once a contract is deployed in the Ethereum no update or change is possible.

9.In the Ethereum, which of the following statement(s) related to world state is/are true?

A) The world state is stored off-chain in a centralized database
B) It includes the current balances of all Ethereum addresses
C) The world state is immutable and cannot be modified
D) Miners determine the world state of the Ethereum

Ans: B, D. World state is contains the values of variable in the smart contract, balances of both CA and EOA among many other things. Also, the local state of one of the miners become the world state of Ethereum of that miner wins the puzzle.

10. Which of the following can be retrieved through oracle calls

A) Real-time market prices
B) Weather conditions
C) Random numbers generated within the smart contract
D) Current block number on the Ethereum blockchain

Ans: A, B, D. Oracle calls can be used to retrieve some data which changes with time. For random numbers it changes in each execution.