BcU™ Certified Blockchain Ethereum Professional (CBEP) Sample Exam – 10 Questions with Answers

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Purpose of this document

This document contains 10 sample exam questions for BcU Certified Blockchain Ethereum Professional (CBEP) in the English language.

The sample questions, answer sets and associated justifications in this document have been created by a team of subject matter experts and experienced question writers with the aim of assisting people who are planning to take the BcU Certified Blockchain Ethereum Professional (CBEP) examination.

None of these questions are used in the official BcU Certified Blockchain Ethereum Professional (CBEP) examination, but they are written to the same level of difficulty as the official certification exam.

Instructions

The question and answer sets are organized in the following way:

- Learning Objectives / Chapters
- Question - including any scenario followed by the question stem
- Answer Set

General Information on the sample exam paper:

- Number of Questions: 10
- Number of points: 1 per question
- Please only choose one answer per question.

List of Chapters

- Chapter 1 - Introduction to Blockchain
- Chapter 2 - Smart Contracts
- Chapter 3 - Working with the Ethereum Platform, Tools and Development Environment
- Chapter 4 - Putting Together a Basic Framework
- Chapter 5 - Tokenomics

Main list of LOs for the BcU CBEP certification:

LO1	Explain what a Blockchain is and how it works under the hoods. (K1)
LO2	Understand the different types of Blockchain platforms and which ones to use for specific use cases. (K2)
LO3	Understand how smart contracts work and what problems they solve. (K2)
LO4	Write smart contracts for various use cases. (K1)
LO5	Explain how Ethereum works. (K2)
LO6	Install and administer Geth. (K3)
LO7	Understand what kinds of Blockchain projects are a good fit to build on Ethereum. (K2)
LO8	Install and setup Ethereum wallets for development and transactional use cases. (K3)
LO9	Setup a complete development environment for rapid application development. (K3)
LO10	Setup a basic DevOps workflow to automate testing and deploying Blockchain applications on AWS cloud. (K3)
LO11	Write smart contracts without using any framework. (K3)
LO12	Write smart contracts using the truffle framework. (K3)
LO13	Write unit tests to test and ensure the correctness of smart contract functionality. (K3)
LO14	Understand and explore the various Ethereum Request for Comments and how they help the ecosystem develop. (K2)
LO15	Understand the various issues and problems that are likely to occur in developing Blockchain applications and how to work around them. (K2)
LO16	Write complete smart contract driven applications that end-users can interact with through beautiful front-end UIs built using ReactJS. (K3)
LO17	Understand Ethereum Improvement Proposals (K2)
LO18	Understand the structure and working of common token contracts (K2)

Question 1

(Correct answer is worth 1 point)

What makes a Blockchain immutable?

- ☐ (a) Blocks are linked by hashes of the previous blocks.
- ☐ (b) Through the use of public key cryptography.
- ☐ (c) An underlying immutable data store.
- ☐ (d) The nonce of a block.

Question 2

(Correct answer is worth 1 point)

Ethereum 2.0 uses which consensus model?

- ☐ (a) Proof of work.
- ☐ (b) Delegated proof of stake.
- ☐ (c) Proof of stake.
- ☐ (d) Proof of authority.

Question 3

(Correct answer is worth 1 point)

What are the key components of the EVM?

- ☐ (a) Compiler, bytecode and ABI.
- ☐ (b) Memory, stacks and execution engine.
- ☐ (c) Memory, storage and execution engine.
- ☐ (d) Compiler, memory and storage.

Question 4

(Correct answer is worth 1 point)

Merkle tree is used in Blockchain because:

- ☐ (a) It helps create different forks of a Blockchain.
- ☐ (b) It allows for a quick and secure verification of transactions in a large database of transactions.
- ☐ (c) It ensures the immutability of transactions in a large database of transactions.
- ☐ (d) It helps create secure digital signatures for each transaction.

Question 5

(Correct answer is worth 1 point)

Which of the following statements is **FALSE**?

- ☐ (a) Ethers available in an account on a test network can be used only on that test network.
- ☐ (b) Ethers available in an account on the main network can be used only on the main network.
- ☐ (c) The same account can represent different amounts of ethers in the test network and the main network.
- ☐ (d) You can use the ethers from a test network in the main network as well.

Question 6

(Correct answer is worth 1 point)

The formula to calculate the fees for a transaction is:

- ☐ (a) Gas amount * gas price.
- ☐ (b) Ether price / gas.
- ☐ (c) Gas amount / gas price.
- ☐ (d) Ether price / gas price.

Question 7

(Correct answer is worth 1 point)

What are the 3 memory types in Ethereum Virtual Machine?

- ☐ (a) RAM, L1 Cache, L2 Cache.
- ☐ (b) Storage, Memory, Stack.
- ☐ (c) Memory, Register, Storage.
- ☐ (d) FIFO, LIFO, Stack.

Question 8

(Correct answer is worth 1 point)

What are events used for in Solidity smart contracts?

- ☐ (a) To log some data related to a transaction.
- ☐ (b) To make calls to external APIs.
- ☐ (c) To ensure that transactions are committed successfully.
- ☐ (d) To call a function in another smart contract.

Question 9

(Correct answer is worth 1 point)

What happens if you use **CALL** (instead of **DELEGATECALL** or **CALLCODE**) to call a library function that modifies state?

- ☐ (a) The function executes successfully.
- ☐ (b) The function throws an error unless it is a **pure** or **view** function.
- ☐ (c) The function reverts unless it is a **pure** or **view** function.
- ☐ (d) The function modifies the state, but returns an error.

Question 10

(Correct answer is worth 1 point)

Which **web3.js** method do you use to create a new transaction?

- ☐ (a) **.create()**
- ☐ (b) **.call()**
- ☐ (c) **.send()**
- ☐ (d) **.transact()**

Answer Key:

Question 1: Answer A is correct

- When blocks are linked to their previous blocks with the previous block's hash, it ensures that the chain of blocks cannot be modified without invalidating all the hashes, thereby breaking the entire chain. Due to this, a Blockchain is considered immutable since any attempt to modify a previous block will invalidate all future blocks. This property allows for preserving previous transaction data in an immutable manner.

Question 2: Answer C is correct

- The next version of Ethereum is expected to use the proof of stake consensus model. This allows Ethereum to scale better and eliminate its reliance on the slow and power consuming proof of work consensus mechanism

Question 3: Answer B is correct

- Memory, stack and execution engine: The memory is used for holding temporary data during function calls. The EVM uses a 1024 elements size virtual stack for operations. The execution engine is responsible for executing code deployed to the EVM.

Question 4: Answer B is correct

- Merkle trees are formed by hashing pairs of individual transaction's data repeatedly until there is only 1 root node left (known as Merkle root). By doing this, a Merkle represents an entire set of transactions and allows you to verify whether a specific transaction is included in a block or not.

Question 5: Answer D is correct

- The amount of ethers available in Ethereum is a result of receipts and withdrawals in the account. Due to this, if an account has transactions on the test network, it does not create transactions on the main network. Hence, if an account has received ethers in a test network, it will **NOT** have the same ethers received in the main network. Due to this, the same account can hold different amounts of ethers on different networks. Since ethers in a test network do not have any value, they cannot be transferred or used in the main network

Question 6: Answer A is correct

- The fees for a transaction (known as transaction fee) is determined by multiplying the amount of gas required for the transaction with the price per unit of gas.

Question 7: Answer B is correct

- Storage, Memory, Stack: The persistent data storage area is known as storage. Storage holds all state variables. Memory is a temporary storage area that holds data only till the lifetime of function execution. Function arguments are always held in memory while the function executes. Value types like **int**, when used in local variables, are stored on the stack.

Question 8: Answer A is correct

- Events are primarily used in smart contracts to log some data related to a transaction. Applications can listen for new events and perform some action (like notify the user) about changes that have occurred during the execution of a contract function.

Question 9: Answer C is correct

- When calling a library function that modifies the state of a contract, **DELEGATECALL** or **CALLCODE** must be used. If **CALL** is used, the function reverts back, unless the function is marked as pure or view (i.e., the function does not modify state).

Question 10: Answer C is correct

- **.send()** is a **web3.js** method used to call functions that modify state of a contract by creating new transactions. It takes the sender's address, amount of gas to spend for the transaction, and the amount of wei to transfer to the function as its parameters. The return value of the method is a transaction hash for successful execution, or an error object in case of failed execution.