

✔ Congratulations! You passed!

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1. Which of the following are included in a block mined by proof-of-work? *Select all that apply.*

1 / 1 point

☒ The hash of the previous block



Correct

Correct, the hash of the previous block is found in the header of a block mined by proof-of-work.

☒ A nonce



Correct

Correct, a nonce, which stands for "number used once" is found in the header of a block mined by proof-of-work.

☒ A list of transactions



Correct

Correct, the list of transactions is found in the block.

☐ A list of miners

2. Which of the following describe the role of *consensus mechanisms* in a blockchain? *Select all that apply.*

1 / 1 point

☐ Consensus mechanisms allow all nodes in the network to hold a different state of the blockchain.

☒ Consensus mechanisms prevent a single authority from maintaining/deciding the state of the blockchain.



Correct

Correct, consensus mechanisms allow a set of users to collectively perform state transitions via some algorithm, and prevent a single actor or colluding actors from deciding the state of the blockchain.

☒ Consensus mechanisms allow consensus and agreement on state to be achieved even with failing or maliciously acting nodes.



Correct

Correct, consensus mechanisms help prevent malicious actors from modifying the blockchain.

3. Proof-of-work and proof-of-stake are examples of what?

1 / 1 point

☐ Blockchains

☐ Hash functions

☐ Decentralized autonomous organizations, created to mine the blockchain.

☒ Consensus mechanisms



Correct

Correct. Both are consensus mechanisms used in the verification of blocks.

4. Identify the statement below that describes *proof-of-work*.

1 / 1 point

☒ Proof-of-work is a consensus mechanism by which miners compete to solve a challenging computational problem in order to create the next block on a blockchain.

☐ Proof-of-work is a consensus mechanism in which miners prove that they have done work by staking currency in exchange for the right to write a block to the blockchain.

☐ Proof-of-work is a consensus mechanism in which a group of delegates verify that work has been done by miners before allowing them to create blocks.



Correct

Correct. This is an accurate description of Proof-of-Work consensus.

5. Which of the following are differences between the Ethereum public blockchain and private or consortium blockchains? *Select all that apply.*

1 / 1 point

☐ The public Ethereum blockchain is run by the Ethereum foundation, while private or consortium blockchains can be run by any organization that chooses to set them up.

☐ The public Ethereum blockchain uses the cryptocurrency Ether as the native token, while private or consortium blockchains use Bitcoin and Zcash, respectively.

☒ It is possible for anyone to participate in using the public Ethereum blockchain. Private or consortium blockchains can place restrictions on who is able to join and participate in their networks.



Correct

Correct, the public Ethereum blockchain allows anyone to participate in it. A private or consortium blockchain can place restrictions on who has access to it and what they may do when interacting with it.

☒ The public Ethereum blockchain uses proof-of-work as the consensus mechanism, while a private or consortium blockchain can choose that or a different consensus mechanism to agree on new blocks.



Correct

Correct, the public Ethereum blockchain uses proof-of-work, while the private or consortium blockchains can use proof-of-stake, proof-of-authority, or other types of consensus mechanisms to agree on new blocks. Quorum, for example, uses raft-based consensus, which you can learn more about [here](#) [↗](#).

6. Which of the following is true about nodes mining blocks in proof-of-work?

1 / 1 point

☐ It is mathematically *impossible* for two nodes in different parts of the network to mine a new block at the same time.

☒ It is mathematically *possible* for two nodes in different parts of the network to mine a new block at the same time.



Correct

Correct. It's unlikely, but possible, that a new block will be mined by two independent nodes at the same time. When that happens, the network temporarily forks until the balance of computational power on the network gets behind one side of the fork or the other, after which point all the other nodes jump on the longest chain.

7. A blockchain should be considered if the following conditions are true. *Select all that apply.*

1 / 1 point

☒ A database is required.



Correct

Correct. If you do not have to store data, you don't need blockchain.

☐ Shared write access is not needed.

☐ All parties are known and trusted.

☐ There's third party that can be trusted to manage the database.

8. What is blockchain interoperability?

1 / 1 point

☒ Blockchain interoperability refers to the idea of blockchains that can interact with one another.

☐ Blockchain interoperability refers to the idea that different consensus mechanisms can co-exist in the same blockchain implementation.



Correct

Correct, blockchain interoperability can offer new value to users by combining the advantages of different systems.