

1. What is a blockchain? What is the difference between a fully private blockchain, a consortium blockchain, and a public blockchain? ---Limit your response to **120 words**.

A blockchain is a digital technology used to host a distributed, decentralized ledger of events.

In a public blockchain, anyone can participate. Every new block is verified by and copied to all nodes before being accepted. The public blockchain removes the middlemen completely. It is perfect if you want full decentralization and transparency.

In a private blockchain you have a middleman. The owner of the blockchain decides what is written to the blockchain and also who can read it, thus adding privacy to it.

A consortium blockchain is similar to a private blockchain with the difference that it is not controlled by a single entity (node), but by a group of predefined entities.

2. What is cryptocurrency? ---Limit your response to **30 words**.

A cryptocurrency is a digital asset based on blockchain technology that is meant to be used instead of traditional FIAT currencies.

3. List any three differences between Bitcoin and Ethereum? ---Limit your response to **100 words**.

i) Bitcoin aims to be a currency alternative to the traditional ones we use today, while ethereum is a platform aimed at hosting distributed applications such as smart contracts, and ether is just its cryptographic token used to facilitate its operation.

ii) Ethereum uses its own hashing algorithm called ethash, while blockchain uses the traditional and widespread SHA-256 algorithm.

iii) Ethereum has its own turing complete programming language, while bitcoin does not.

4. What is 'distributed consensus' and at a very a high level explain how 'Proof of work' and 'Proof of stake' work? ---Limit your response to **100 words**.

Distributed consensus is a computer science concept referring to a collective decision making process to agree what is true. In the case of blockchain it involves the way that all the nodes of the blockchain can decide what is true and should be added to it.

This can be achieved with different techniques two of the most widespread ones are "Proof of work" and "Proof of stake".

Proof of work defines that of the nodes participating in a blockchain, if the nodes that make up the majority of the computing power accept a transaction as true, then it is assumed true.

Proof of stake requires nodes to stake some asset in order to participate in the voting process. If the nodes controlling the majority of the staked assets define a transaction as true, then it is assumed true.

5. What is a smart contract? ---Limit your response to **30 words**.

Smart contracts are digital artifacts used to automatically carry out and enforce transactions or other kinds of agreements without the need for intermediaries.

6. Go to this [link \(Links to an external site.\)Links to an external site.](#), choose a contract and draw a [flowchart \(Links to an external site.\)Links to an external site.](#) explaining what is happening in that contract? You can hand draw a clean flowchart.

Flowchart submitted through bCourses.

7. What are the two most exciting applications of blockchain that you can think of? ---Limit your response to **30 words**.

i) Storing of sensitive data such as medical records.

ii) Use of blockchain technology for electoral systems to shield them from tampering and ensure authenticity of results.