**a) Describe the difference between a centralized and a decentralized ledger system, highlighting the positives and negatives of each approach. **(10marks)****

A centralized ledger system is controlled by a single entity for example a financial institution like a bank or a government like the traditional currency we use, while decentralized ledger system distributes transactions records across multiple nodes making it indipendent.

Centralized ledger systems are more prone to attacks if the main server is breached while it is difficult to breach the decentralized system since the storage system is distributed and not centralised.

Centralized systems are faster in transactions while decentralized are much slower

Centralized is more expensive due to intermediaries and such while decentralized is more cheaoer as it removes all the middlemen and intermediaries.

**b) Are blockchains truly immutable? What is the 51% Rule?**(5marks)****

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We can say that blockchains are designed to be immutable. This means that once a transaction ha been recorded, it cannot be altered.

Owever, there are circumstances where they are jot so much immutable. For example in case of the 51st rule, developers changing the the blockchaij rules to potentially alter records.

We can say they have been designed to be immutable but sometimes they are not 100 percent so.

**The 51**st **Rule**

This occurs where a miner or a certain group controls more than 51 percent of the hashing power of the blockchain. This allows that miner or the group to block new chains from being confirmed and entering the chain, reversing transactions to double spend coins and even preventing others from mining making it a centralized system.