Blockchain Technology
CCA - Assignment 01

Q1] How has the concept of "credit to cash" evolved with the emergence of cryptocurrencies?

→ The concept of "credit to cash" has evolved with the emergence of cryptocurrencies by offering a more direct & decentralized means of exchanging value without relying on traditional banking system or intermediaries like banks. Instead of converting credit into physical cash, user can directly transact using digital currencies. by passing traditional banking systems this evolution has introduced the idea of a decentralized financial system where individual have more control over their fund & can transact globals with greater ease and speed.

Q2] What is Bitcoin? Mention your views

→ Bitcoin is a decentralized digital currency that operate on a peer-to-peer network, allowing user to transact directly without the need for intermediaries like bank. It's based on blockchain technology and offers a transparent, immutable ledger. Bitcoin has gained popularity as a store of value & a hedge against inflation, but its volatile nature and scalabilities issue are subject of debate.

Q3] Discuss the Bitcoin consensus algorithm and how it ensures agreement among network participants?

→ The Bitcoin consensus algorithm, known as Proof of work ensures agreement among network participants by requiring miners to solve complex mathematical puzzles to validate transaction and add them to the blockchain. This process secure the accurate and present double spending by making it computationally expensive to alter the blockchain history.

Q4] What is centralised and decentralised cryptocurrency?

→ Centralized cryptocurrency refer to digital currencies that are controlled by a single entity or authority such as a company or govt.
Decentralized cryptocurrency, like Bitcoin, operate on a distributed network of nodes, where no single entity has control over the currency or its transactions.
Decentralization provides increased transparency, security and censorship resistance.

Q3] List and state various bitcoin block parameters

→ Various Bitcoin block parameters include

Block height - The sequential number assigned to each block in the blockchain

Block size - The maximum data size a block can hold typically measured in bytes

Block timestamp - The time when the block was mined recorded in Unix time format

Merkle root - The hash of all the transaction in the block ensuring the integrity of the data

Nonce - A random no. generated during mining that when combined with other block data, produces a hash below a certain target value, required for blocked validation.