

Q.What is blockchain technology? What are its potential applications? (10 marks)

Introduction:

A blockchain is essentially a digital ledger of transactions that is duplicated and distributed across the entire network of computer systems on the blockchain. Each block in the chain contains a number of transactions, and every time a new transaction occurs on the blockchain, a record of that transaction is added to every participant's ledger.

Body:

The potential benefits of blockchain technology include:

- **Money transfers**

The original concept behind the invention of blockchain technology is still a great application. Money transfers using blockchain can be less expensive and faster than using existing money transfer services. This is especially true of cross-border transactions, which are often slow and expensive. Even in the modern U.S. financial system, money transfers between accounts can take days, while a blockchain transaction takes minutes.

- **Financial exchanges**

Many companies have popped up over the past few years offering decentralized cryptocurrency exchanges. Using blockchain for exchanges allows for faster and less expensive transactions. Moreover, a decentralised exchange doesn't require investors to deposit their assets with the centralized authority, which means they maintain greater control and security. While blockchain-based exchanges primarily deal in cryptocurrency, the concept could be applied to more traditional investments as well.

- **Lending**

Lenders can use blockchain to execute collateralized loans through smart contracts. Smart contracts built on the blockchain allow certain events to automatically trigger things like a service payment, a margin call, full repayment of

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the loan, and release of collateral. As a result, loan processing is faster and less expensive, and lenders can offer better rates.

- **Insurance**

Using smart contracts on a blockchain can provide greater transparency for customers and insurance providers. Recording all claims on a blockchain would keep customers from making duplicate claims for the same event. Furthermore, using smart contracts can speed up the process for claimants to receive payments.

- **Real estate**

Real estate transactions require a ton of paperwork to verify financial information and ownership and then transfer deeds and titles to new owners. Using blockchain technology to record real estate transactions can provide a more secure and accessible means of verifying and transferring ownership. That can speed up transactions, reduce paperwork, and save money.

- **Secure personal information**

Keeping data such as your Social Security number, date of birth, and other identifying information on a public ledger (e.g., a blockchain) may actually be more secure than current systems more susceptible to hacks. Blockchain technology can be used to secure access to identifying information while improving access for those who need it in industries such as [travel](#), healthcare, finance, and [education](#).

- **Voting**

If personal identity information is held on a blockchain, that puts us just one step away from also being able to vote using blockchain technology. Using blockchain technology can make sure that nobody votes twice, only eligible voters are able to vote, and votes cannot be tampered with. What's more, it can increase access to voting by making it as simple as pressing a few buttons on your smartphone. At the same time, the cost of running an election would substantially decrease.

- **Government benefits**

Another way to use digital identities stored on a blockchain is for the

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administration of government benefits such as welfare programs, Social security, and Medicare. Using blockchain technology could reduce fraud and the costs of operations. Meanwhile, beneficiaries can receive funds more quickly through digital disbursement on the blockchain.

- **Securely share medical information**

Keeping medical records on a blockchain can allow doctors and medical professionals to obtain accurate and up-to-date information on their patients. That can ensure that patients seeing multiple doctors get the best care possible. It can also speed up the system for pulling medical records, allowing for more timely treatment in some cases. And, if insurance information is held in the database, doctors can easily verify whether a patient is insured and their treatment is covered.

Conclusion: Since blockchains are decentralised and visible to their various nodes, they are perceived to be transparent -- any computer part of the blockchain network can view it in real time. Governments around the world and in India are moving fast to leverage this technology for purposes of governance and public administration.