



# **SNS COLLEGE OF ENGINEERING**

Kurumbapalayam (Po), Coimbatore – 641 107

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## **DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

**COURSE NAME: 19CS622-Blockchain Technology**

**III YEAR /VI SEMESTER**

**Unit 1- INTRODUCTION TO BLOCKCHAIN**

**Topic 3: Block chain Architecture**

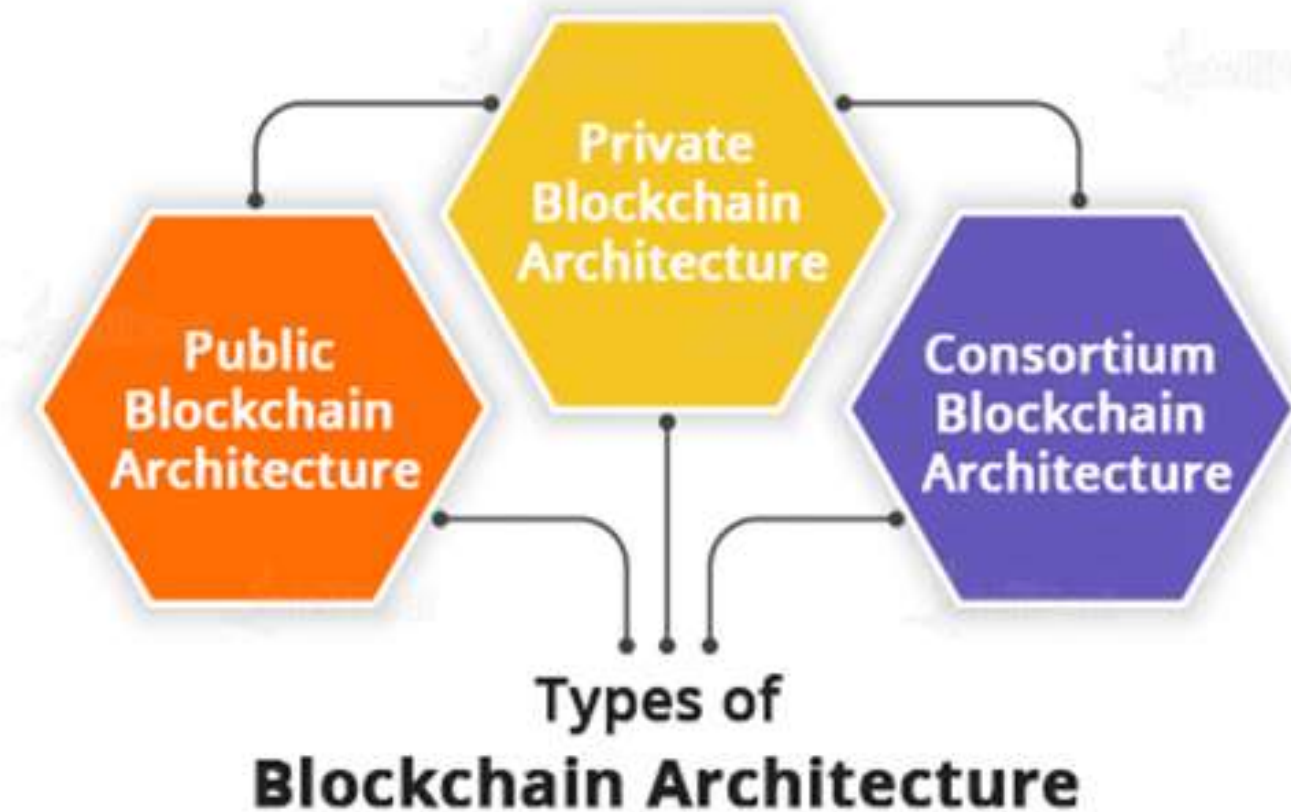


# BLOCKCHAIN ARCHITECTURE



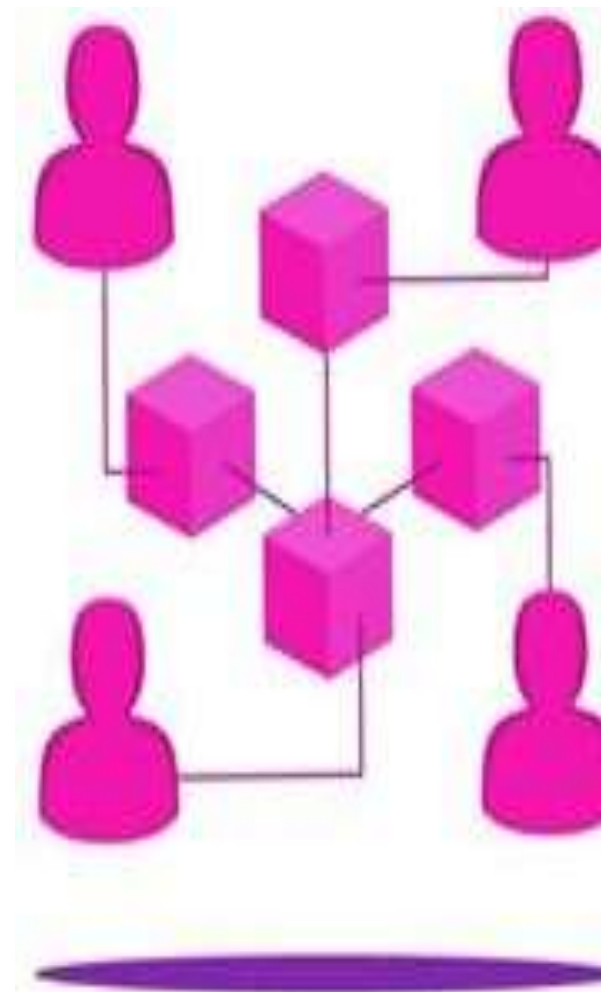
## Types of blockchain

1. Public Blockchains
2. Private Blockchains
3. Consortiums Blockchains
4. Hybrid Blockchains



# Public Blockchains

- Public blockchains are open, decentralized networks of computers accessible to anyone wanting to request or validate a transaction (check for accuracy).
- Those (miners) who validate transactions receive rewards.
- Public blockchains use proof-of-work or proof-of-stake consensus.
- permission-less distributed ledger system.
- Anyone who has access to the internet can sign in on a blockchain platform to become an authorized node and be a part of the blockchain network.
- Example : Bitcoin and Ethereum (ETH) blockchains.



## Public Blockchains

**Network Type:** Decentralized

**Access:** Anyone

**Participants:** Permissionless

**Security:** Consensus Mechanism,  
Proof of Work/Proof of Stake

**Transaction Speed:** Slow



# Public Blockchains



## A public blockchain features:

- Write-only, immutable, transparent data storage.
- It brings trust among the whole community of users
- Decentralized, no need for intermediaries.
- Consistent state across all participants.
- Resistant against malicious participants.
- Anyone can join the public blockchain.

## Disadvantages

They suffer from a lack of transaction speed.





# Private Blockchains



- A Private Blockchain is just like a relational database i.e. fully centralized and owned by a single organization.
- Private blockchains are not open, they have access restrictions.
- People who want to join require permission from the system administrator.
- They are typically governed by one entity, meaning they're centralized.
- For example, Hyperledger is a private, permissioned blockchain.



## Private Blockchains

**Network Type:** Partially Decentralized

**Access:** Single Organization

**Participants:** Permissioned

**Security:** Pre-approved participants,  
Voting/Multi-party Consensus

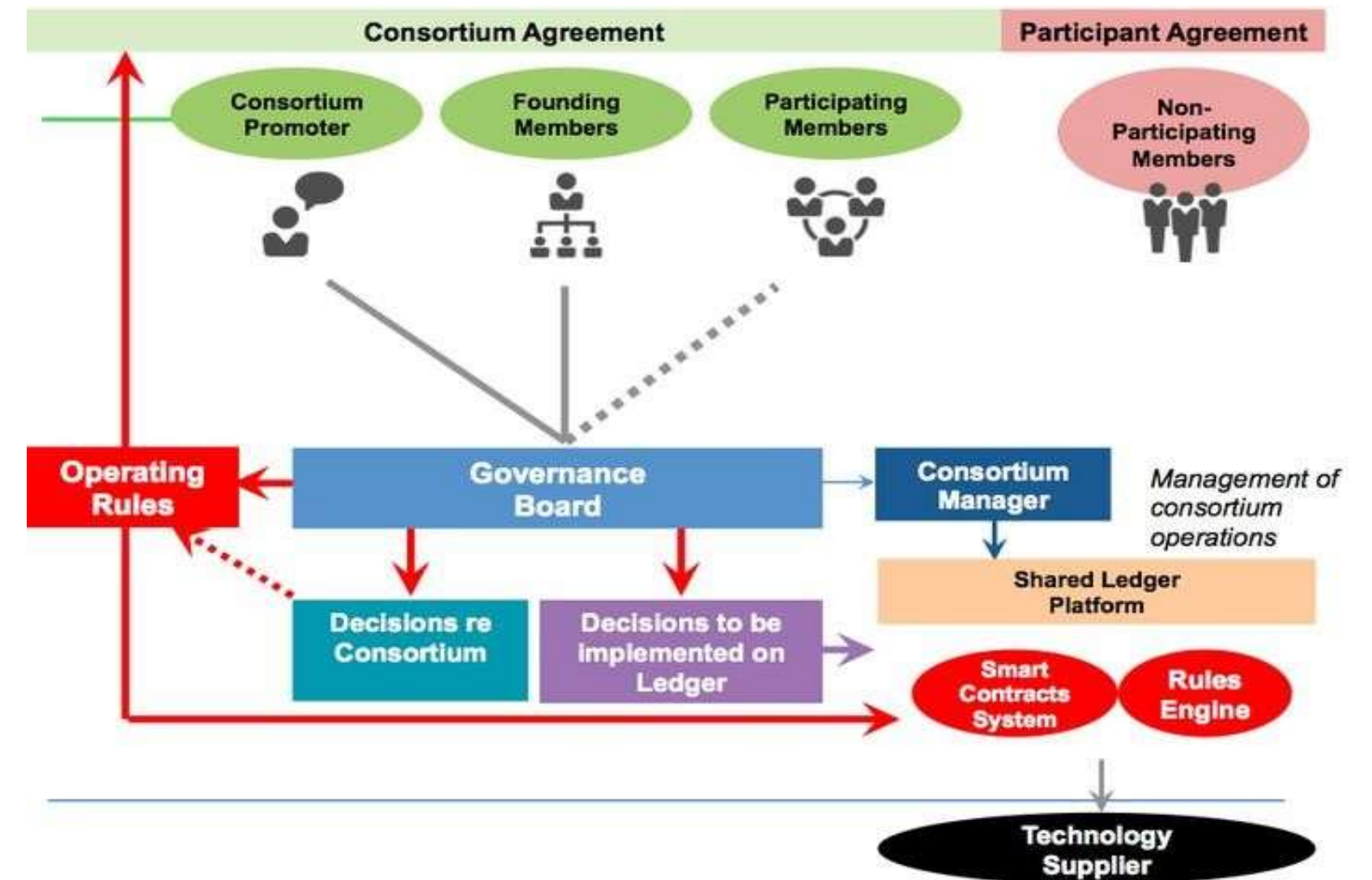
**Transaction Speed:** Lighter and Faster



# Consortiums blockchain



- consensus is reached by a relatively small number of nodes in accordance to the governance scheme.
- Increased scalability - Bitcoin's block transmits only up to 1 Mb\* (from 1500 to 2700 transactions) per 10 minutes, when a consortium blockchain can optimize it to 1000 and more transactions per second.
- A consortium platform is more flexible.
- voting-based system, it ensures low latency and superb speed.



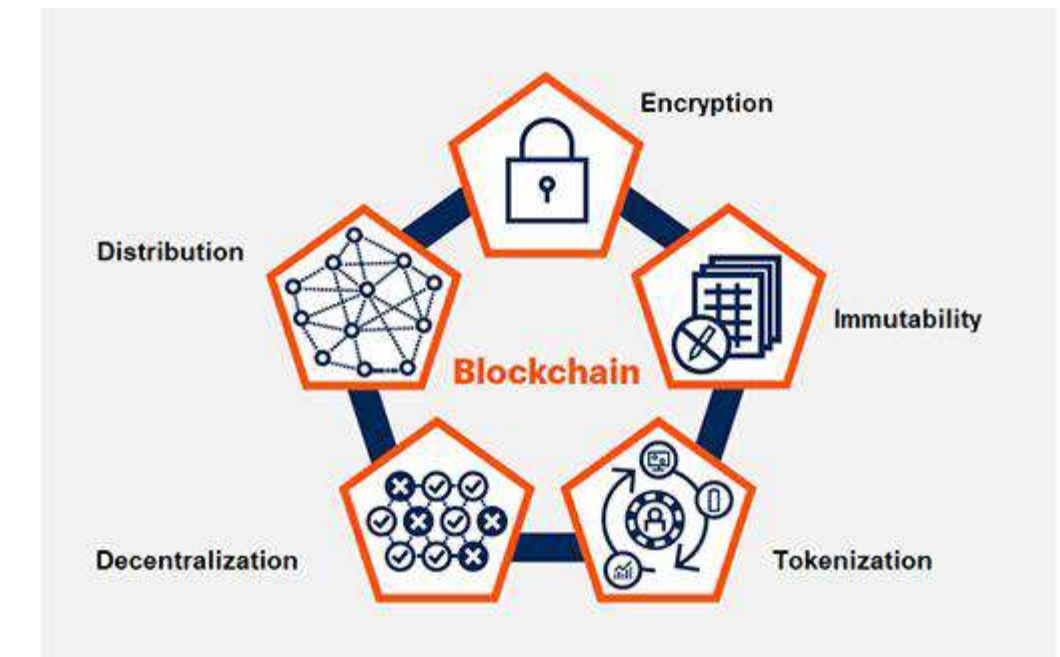


# Pillars of Blockchain

## 5 components: Decentralization, encryption, Immutability, Tokenization, Decentralization

**Distribution:** Blockchain participants are located physically apart from each other and each node copy of a ledger that updates with new transactions as they occur.

- **Encryption:** Blockchain uses technologies such as public and private keys to record the data in the blocks securely.
- **Immutability:** Completed transactions are cryptographically signed, time-stamped and sequentially added to the ledger.
- **Tokenization:** Transactions and other interactions in a blockchain involve the secure exchange of value.
- **Decentralization:** Both network information and the rules for how the network operates are maintained by nodes due to consensus mechanism.







# Assessment 1



1. A blockchain provides

Ans : \_\_\_\_\_

2. 5 elements of block chain

Ans : \_\_\_\_\_







# References



## TEXT BOOKS

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2. Imran Bashir, “Mastering Blockchain: Distributed Ledger Technology, Decentralization and Smart Contracts Explained”, Second Edition, Packt Publishing, 2018.
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## REFERENCES

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# Thank You