



# SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

**An Autonomous Institution**

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Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

## DEPARTMENT OF COMPUTER SCIENCE AND TECHNOLOGY

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

III YEAR /VI SEMESTER

Unit 4- HYPERLEDGER

Topic- Consensus and Its Interaction with Other Architectural Layers



# Hyperledger Consensus

- The term “consensus” means an agreement or a decision taken by a group of individuals.
- It also states that regarding a certain topic or problem, all the members of a team or group have concluded that everyone will accept the certain way or method using which they will solve the problem.
- Consensus is taken into account in certain situations where to solve a particular problem or reach a goal or something, an entire group or team is involved, and there are at least two different opinions on how to solve the problem or reach the goal.
- Blockchain Technology depends heavily on consensus mechanisms.



# Consensus and Its Interaction with Other Architectural Layers

## Network Layer:

- Every consensus requires smooth and reliable communication between each node in the network to reach an agreement.
- Networking protocols are used to exchange information and do transactions.



# Consensus and Its Interaction with Other Architectural Layers

## Data Layer:

- Every node in the network consists of validated transaction information, consensus protocol ensures the order of these blocks by discussing with other nodes.



# Consensus and Its Interaction with Other Architectural Layers

## Cryptography Layer:

- Cryptography plays a crucial role in doing transactions and keeping the network secure.
- Different techniques like [Hash Function](#), [Digital Signature](#), etc. are used in various consensus mechanisms.



# Consensus and Its Interaction with Other Architectural Layers

## Smart Contract Layer:

- These are executed based on the condition of the network, consensus mechanisms ensure the state of the network which ensures consistent execution of transactions among each node.



# Consensus and Its Interaction with Other Architectural Layers

## Incentive Layer:

- Many consensus mechanisms use Incentive mechanisms or reward mechanisms to encourage more miners to join.



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## Governance Layer:

- Some mechanisms of voting are used to select miners, validators, etc.
- This layer controls all the governance-related things such as voting to select the miner, upgrading the network protocols, etc.



# Consensus and Its Interaction with Other Architectural Layers

## Security Layer:

- The use of the Proper consensus mechanism plays a vital role in securing the network



# Consensus and Its Interaction with Other Architectural Layers

## User Interface Layer:

- This provides information about the current state of the network i.e. entire Blockchain.
- The consensus mechanism makes sure that all the nodes are in a stable state and that the transactions are happening smoothly.