



Centurion
UNIVERSITY
Shaping Lives...
Empowering Communities...

School: Campus:

Academic Year: Subject Name: Subject Code:

Semester: Program: Branch: Specialization:

Date:

Applied and Action Learning

(Learning by Doing and Discovery)

Name of the Experiment : PoW vs PoS – Consensus Mechanism Comparison

* Objective/Aim:

To compare Proof-of-Work and Proof-of-Stake consensus mechanisms in terms of operation, efficiency, and security in blockchain networks.

* Apparatus/Software Used:

- 1.Laptop
- 2.Brave browser

* Theory/Concept:

What Is Proof of Work (PoW)?

Proof of work (PoW) is a blockchain consensus mechanism that requires significant computing effort from a network of devices. The concept was adapted from digital tokens by Hal Finney in 2004 through the idea of "reusable proof of work" using the 160-bit secure hash algorithm 1 (SHA-1).^[1]

What is proof of stake?

Ethereum's developers understood from the beginning that proof of work would present limitations in scalability that would eventually need to be overcome — and, indeed, as Ethereum-powered decentralized finance (or DeFi) protocols have surged in popularity, the blockchain has struggled to keep up, causing fees to spike.

Proof of work

- Proof of work (PoW) is a decentralized consensus mechanism that requires network members to expend effort in solving an encryption puzzle.
- Proof of work is also called mining, in reference to receiving a reward for work done.
- Proof of work allows for secure peer-to-peer transaction processing without needing a trusted third party.
- Proof of work at scale requires vast amounts of energy, which only increases as more miners join the network.

Proof of stake

- The network selects a winner based on the amount of crypto each validator has in the pool and the length of time they've had it there — literally rewarding the most invested participants.
- Once the winner has validated the latest block of transactions, other validators can attest that the block is accurate. When a threshold number of attestations have been made, the network updates the blockchain.
- All participating validators receive a reward in the native cryptocurrency, which is generally distributed by the network in proportion to each validator's stake.

*** Observations****Proof of stake**

VS

Proof of work**Proof of Work**

- Validation is done by a network of miners
- Bitcoin paid as a reward and for transaction fees
- Competitive nature uses lots of energy and computational power

Proof of Stake

- Validation is done by participants who offer ether as collateral
- Ether is paid for transaction fees only
- Less computational power and energy used
- Consensus is reached faster because there is no difficulty

ASSESSMENT

Rubrics	Full Mark	Marks Obtained	Remarks
Concept	10		
Planning and Execution/ Practical Simulation/ Programming	10		
Result and Interpretation	10		
Record of Applied and Action Learning	10		
Viva	10		
Total	50		

Signature of the Student:

Name :

Regn. No. :

Signature of the Faculty:

Page No.....

** As applicable according to the experiment.
Two sheets per experiment (10-20) to be used.*