



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 the working principles, advantages, and disadvantages of **Proof-of-Work (PoW)** and **Proof-of-Stake (PoS)** consensus mechanisms used in blockchain networks.

Apparatus/Software Used:

- Laptop
- WPS Office
- Google and Internet for research

Theory/Concept:

1. Proof-of-Work (PoW):

- In PoW, miners compete to solve complex mathematical puzzles.
- The first miner to find the correct solution gets the right to add a block to the blockchain and is rewarded

with cryptocurrency.

- Used by Bitcoin, Litecoin, etc.

2. Proof-of-Stake (PoS):

- In PoS, validators are chosen to create a block based on the amount of cryptocurrency they hold and are willing to “stake” as collateral.
- No mining puzzles are required, making it more energy efficient.
- Used by Ethereum (after The Merge), Cardano, etc.

Procedure:

- Study the basic concept of PoW and PoS from blockchain literature.
- Identify their working steps and list them.
- Compare parameters such as energy usage, speed, and security.
- Record findings in a comparison table.

Observation Table:

| Parameter | Proof-of-Work (PoW) | Proof-of-Stake (PoS) |
|------------------|-----------------------------------|-------------------------------------|
| Selection Method | Solving puzzles (mining) | Staking coins (validator selection) |
| Energy Usage | Very high | Very low |
| Hardware Need | Expensive mining rigs | Normal computers / servers |
| Speed | Slower (10 min/block for Bitcoin) | Faster (seconds to minutes) |
| Example | Bitcoin, Litecoin | Ethereum (PoS), Cardano |

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:**Signature of the Faculty:**

Name :

Regn. No.