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 Experiement : **Chains Beyond Ethereum – Platform Comparisons**

Objective/Aim:

To study and compare major blockchain platforms beyond Ethereum, analyzing their consensus mechanisms, scalability, transaction speeds, and use cases.

Apparatus/Software Used:

Remix IDE – for writing, compiling, and deploying smart contracts.
• MetaMask Wallet / Chain Wallets – for interacting with dApps across Ethereum, BSC, Polygon, and Avalanche.
• Alchemy / Infura – for connecting to blockchain nodes and managing RPC endpoints.
• Block Explorers (Etherscan, BscScan, Polygonscan, Snowtrace) – for tracking transactions and verifying contracts. • Command-Line Interfaces (Hardhat, Solana CLI, Cardano CLI) – for testing, debugging, and deploying on respective networks.

Theory:

While **Ethereum** is the most widely used blockchain for decentralized applications (DApps) and smart contracts, many other blockchains have emerged to overcome its limitations like **high gas fees** and **scalability issues**.

These newer blockchains focus on performance, interoperability, and user-friendly ecosystems.

Popular Blockchain Platforms Beyond Ethereum:

1. **Binance Smart Chain (BSC)**
   - o Consensus: Proof of Staked Authority (PoSA)
   - o High-speed transactions with low fees
   - o Compatible with Ethereum Virtual Machine (EVM)
   - o Popular for DeFi and token-based projects

Theory:

2. **Polygon (Matic Network)**
- Layer-2 scaling solution for Ethereum
- Uses Proof of Stake
- Provides faster and cheaper transactions
- Excellent for bridging Ethereum DApps

3. **Solana**
- Consensus: Proof of History (PoH) + Proof of Stake (PoS)
- Extremely fast with 65,000+ TPS
- Very low transaction cost
- Used for NFTs, gaming, and DeFi

4. **Polkadot**
- Consensus: Nominated Proof of Stake (NPoS)
- Enables interoperability between multiple blockchains (parachains)
- Focused on scalability and cross-chain communication

5. **Avalanche**
- Consensus: Avalanche Protocol
- High throughput and fast finality (under 2 seconds)
- Supports Ethereum-compatible smart contracts
- Used for DeFi and enterprise-grade apps

Procedure:

1. Open web browser and visit the official documentation or explorer for each blockchain (e.g., Solana, BSC, Polygon, Polkadot, Avalanche, Cardano).

2. Note down technical specifications like consensus type, transaction speed, average fee, and use case.

3. Compare the features with Ethereum for reference.

4. Record your observations in a comparison table.

5. Analyze which platform is most suitable for specific DApp types (e.g., NFTs, DeFi, gaming).

6. Conclude based on performance, scalability, and adoption.

Observation:

Blockchain	Consensus Mechanism	TPS (Approx.)	Avg. Fee	Smart Contract Support	Key Use Cases
Ethereum	Proof of Stake (PoS)	~30	High	Yes (Solidity)	DeFi, NFTs, DApps
Binance Smart Chain	PoSA	~160	Low	Yes (EVM)	DeFi, Tokens
Polygon	PoS (Layer 2)	~7,000	Very Low	Yes (EVM)	Scaling Ethereum DApps
Solana	PoH + PoS	~65,000	Very Low	Yes (Rust, C)	NFTs, Gaming, DeFi
Polkadot	NPoS	~1,000	Low	Yes (Substrate)	Interoperable Networks
Avalanche	Avalanche Consensus	~4,500	Low	Yes (EVM)	DeFi, Enterprises
Cardano	Ouroboros PoS	~250	Low	Partial (Plutus)	Education, Identity, Finance

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.