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 : Smart Libraries – Libraries and Proxy Contracts

* Coding Phase: Pseudo Code / Flow Chart / Algorithm

Algorithm for Using Libraries:

1. **Define the library with reusable functions.**
2. **Deploy the library to the Ethereum network.**
3. **Link the library to a main contract using the Solidity compiler.**
4. **Call library functions from the main contract.**
5. **Execute and verify the output on the blockchain.**

Algorithm for Proxy Contract Operation:

1. **Deploy a logic contract (contains functions).**
2. **Deploy a proxy contract (stores state and logic address).**
3. **Store the address of the logic contract in the proxy.**
4. **When a user interacts, the proxy receives the function call.**
5. **The proxy uses delegate call to execute logic from the logic contract.**
6. **The result and data remain in the proxy contract.**
7. **To upgrade, change the logic contract address in the proxy.**

* Software used

1. MetaMask Wallet
2. Remix IDE.
3. MS Word.
4. Brave for researching.

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

* Implementation Phase: Final Output (no error)

- The **library contract** was successfully written and compiled in **Solidity**.
- The **Main contract** was linked with the library functions without any syntax or linking errors.
- The **Proxy contract** and **Logic contract** were both deployed successfully on the **Ethereum test network (e.g., Remix + MetaMask + Sepolia)**.
- The **delegatecall mechanism** correctly forwarded the function calls from Proxy → Logic contract.
- All functions executed as expected with **no compilation or runtime errors**

* Observations:

- Marketplace requires **approval** before listing NFTs.
- Each NFT listing is tracked by a unique listingId.
- Buyers must pay **exact ETH** price, otherwise transaction fails.
- Smart contract prevents self-purchase by the seller.
- Sellers can cancel or update their NFT listings anytime.

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:

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