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 : Hash Your First Block – Blockchain Basics and Setup

* **Coding Phase: Pseudo Code / Flow Chart / Algorithm**

ALGORITHM:

1. Start
2. Create a block with data, timestamp, and previous hash (0 for the first block).
3. Combine all block information into one string.
4. Apply a hash function (e.g., SHA-256) to the string.
5. Store the resulting hash as the block's unique ID.
6. Display or save the block.
7. Stop

Software used

Python – commonly used with libraries like hashlib to generate SHA-256 hashes easily.
Node.js / JavaScript – uses the built-in crypto module for hashing.
Go (Golang) – often used in real blockchain projects for efficient hashing.

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

PROCEDURE :

To hash the first block, first create a block containing basic details such as the block number, timestamp, data, and previous hash (which is set to 0 for the first or genesis block). Then, combine all this information into a single string. Apply a cryptographic hash function like SHA-256 to this string to generate a unique hash value for the block. This hash acts as the digital fingerprint of the block. Finally, store or display the block along with its generated hash value to complete the creation of the first block in the blockchain.

OBSERVATIONS :

The first block is called the **Genesis Block**.
It has **no previous hash** (set as 0 or null).
Each block generates a **unique, fixed-length hash**.
Any change in block data changes the hash completely.
This hashing ensures **data integrity and security** in the blockchain.

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.