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 : Mine It –Basic Proof-of-Work Simulation

Coding Phase : Pseudo Code/Flow Chart/Algorithm

Start

Take some data (block data)

Set nonce = 0

Make a hash of (data + nonce)

Check if the hash starts with required zeros

If yes → success (stop)

If no → increase nonce and go back to step 4

Show the correct nonce and hash

End

Apparatus/Software Used:

Computer

Code editor

Python software

Testing Phase:

Test 1: Run the program to check if a hash is generated.

Test 2: Verify the hash starts with the required number of zeros (difficulty).

Test 3: Change the difficulty and test if mining time increases or decreases.

Test 4: Give different input data and check if a new correct nonce and hash are produced.

Implementation Phase: Final Output (no error)

Proof of Work Simulator

Block Nr #1
Nonce: 15402
Data:
previous hash: 0000000000000000000000000000000
Hash: 00cf7b5b52ce70e5dc8898134b88
MINE

Block Nr #2
Nonce: 26180
Data:
previous hash: 00b7b4b1006542cc5cd7d1c9f3d2
Hash: 00fba1acf0dda503b8de6815693a
MINE

Block Nr #3
Nonce:
previous hash:

Block Nr #1
Nonce: 15402
Data:
previous hash: 0000000000000000000000000000000
Hash: 00cf7b5b52ce70e5dc8898134b88
MINE

Block Nr #2
Nonce: 42336
Data:
previous hash: 00cf7b5b52ce70e5dc8898134b88
Hash: 0092a244c4995e31ddca61db8eb7
MINE

Block Nr #3
Nonce: 86513
Data:
previous hash: 0092a244c4995e31ddca61db8eb7
Hash: 008efcbe14d82a66460960f2539e
MINE

Block Nr #4
Nonce:
previous hash:

Observations

The mining process takes more time when the difficulty level is increased.

The hash value changes completely even if the input changes slightly.

Only the correct nonce produces a hash that meets the difficulty requirement.

Mining is a trial-and-error process, requiring many attempts before success.

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 :

Signature of the Faculty:

Regn. No. :

Page No............

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