Printed Page:- 04 **Subject Code**:- **ACSAI0601**

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: VI - THEORY EXAMINATION (2023 - 2024)

Subject: Blockchain Technology and Application Development

Time: 3 Hours **Max. Marks: 100**

General Instructions:

IMP: *Verify that you have received the question paper with the correct course, code, branch etc.*

1. *This Question paper comprises of* **three Sections -A, B, & C.** *It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.*

2. *Maximum marks for each question are indicated on right -hand side of each question.*

3. *Illustrate your answers with neat sketches wherever necessary.*

4. *Assume suitable data if necessary.*

5. *Preferably, write the answers in sequential order.*

6. *No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.*

SECTION A **20**

1. Attempt all parts:-

1-e. The purpose of Ether is (CO3) 1

(a) To be used as a currency

(b) To be used as a fuel for the Ethereum network

(c) To be used as a store of value

(d) None of the above

1-a. Who created Bitcoin? (CO1) 1

(a) Satoshi Nakamoto

(b) Samsung

(c) John Macafe

(d) Arthur Young

1-f. Soft fork is (CO3) 1

(a) A change in the protocol of the blockchain

(b) A split in the blockchain that creates two separate chains

(c) A merger of two different blockchains

(d) None of the above

1-b. In crytocurrencies a ledger records?(CO1) 1

(a) list of balances

(b) list of transactions

(c) list of accounts

(d) none of these

1-c. The block in the block chain consist of (CO2) 1

(a) Transaction Data

(b) Hash Point

(c) Time stamp

(d) All of these

1-d. Blockchain is a peer-to-peer _____ distributed ledger technology that makes the records of any digital asset transparent and unchangeable.(CO2) 1

(a) Decentralized

(b) Demanding

(c) Secure

(d) Popular

1-g. The purpose of the Solidity compiler (CO4) 1

(a) To compile JavaScript code

(b) To compile Solidity code into bytecode for the Ethereum Virtual Machine

(c) To compile C++ code

(d) To compile Python code

1-h. A gas limit in the context of Ethereum application development (CO4) 1

(a) The maximum amount of gas that can be used in a transaction

(b) The minimum amount of gas that must be used in a transaction

(c) The amount of gas that is used in a transaction

(d) None of the above

1-i. The role of a peer node in the Hyperledger Fabric network? (CO5) 1

(a) Verify and validate transactions

(b) Order transactions

(c) Execute smart contracts

(d) Manage access control

1-j. Which of the following is not a Hyperledger Fabric endorsement policy? (CO5) 1

(a) Any

(b) all

(c) Anonymous

(d) Unanynomous

2. Attempt all parts:-

2.a.	Name three versions of the block chain. (CO1)	2
2.b.	Write the extension of the file for the creation of the smart contract. (CO2)	2
2.c.	How does the EVM execute smart contracts? (CO3)	2
2.d.	Define smart contract.(CO4)	2
2.e.	Explain the advantages of using Hyperledger for enterprise applications. (CO5)	2

SECTION B **30**

3. Answer any <u>five</u> of the following:-

3-c.	Describe the whole procedure of the bitcoin network wrt block chain framework.(CO1)	6
3-a.	Define the cryptographic hash function.(CO2)	6
3-d.	Explain the concept of the Proof of work in details.(CO1)	6
3-b.	Explain the Permissioned model of the block chain in details.(CO2)	6
3.e.	Define a hash rate in Ethereum mining.(CO3)	6
3.g.	How does Hyperledger ensure security and privacy for enterprise applications?(CO5)	6
3.f.	Define a the importance of remix.ethereum.org.(CO4)	6

SECTION C **50**

4. Answer any <u>one</u> of the following:-

4-a.	Explain the Block diagram of the block chain in details. (CO1)	10
4-b.	Write a case study of the block chain and its applications to the Supply chain management.(CO1)	10

5. Answer any <u>one</u> of the following:-

5-a.	Elobrate the Ethereum network in details.(CO2)	10
5-b.	Explain how blockchain Technology can be used for Cross border payment.(CO2)	10

6. Answer any <u>one</u> of the following:-

6-a.	Define the role of mining in the Ethereum blockchain, and how do developers interact with miners to ensure the smooth operation of their decentralized	10

applications?(CO3)

6-b. Define the role of smart contracts in managing and enforcing the rules of decentralized autonomous organizations (DAOs) on the Ethereum blockchain, and how do developers create and manage these organizations?(CO3) 10

7. Answer any <u>one</u> of the following:-

7-a. What is the gas limit in the Ethereum blockchain, and how do developers optimize their smart contracts to minimize gas usage and ensure efficient transaction processing?(CO4) 10

7-b. How do developers design and implement user interfaces (UIs) for decentralized applications built on the Ethereum blockchain, and what are the best practices for creating intuitive and user-friendly interfaces?(CO4) 10

8. Answer any <u>one</u> of the following:-

8-a. Analyze the differences between writing chaincode in Hyperledger Fabric 1.x and Hyperledger Fabric 2.x.(CO5) 10

8-b. Create a set of best practices for writing efficient and secure chaincode in Hyperledger.(CO5) 10