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Printed Page:-3 **Subject Code:- AMICA0802**

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA
(An Autonomous Institute Affiliated to AKTU, Lucknow)
MCA Integrated
SEM: VIII - THEORY EXAMINATION (2025 - 2026)
Subject: Block Chain Technology

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:-

(1.1) Consensus mechanism is used for (CO1,K2) 1

(a) Storage
(b) Encryption
(c) Speed
(d) Agreement

(1.2) Ethereum currency is (CO1,K2) 1

(a) Bitcoin
(b) Ether
(c) Ripple
(d) Token

(1.3) A block in blockchain contains (CO2,K3) 1

(a) Only keys
(b) Only data
(c) Transactions and hash
(d) Only timestamp

(1.4) Cryptographic hash function is used for (CO2,K1) 1

(a) Storage
(b) Data integrity
(c) Networking
(d) Speed

(1.5) Hyperledger is hosted by (CO3,K3) 1

(a) Microsoft
(b) Google
(c) Linux Foundation
(d) IBM

(1.6) Smart contracts are (CO3,K3) 1

(a) Legal docs
(b) API
(c) DB
(d) Self-executing programs

(1.7) Ethereum supports (CO4,K2) 1

(a) Emails
(b) Files
(c) Smart contracts
(d) OS

(1.8) Solidity is used for (CO4,K2) 1

(a) Smart contracts
(b) UI
(c) Database
(d) OS

(1.9) Identify a cryptocurrency.(CO5,K1) 1

(a) Physical currency
(b) Digital currency secured by cryptography
(c) Bank deposit
(d) Paper money

(1.10) Interpret interoperability in blockchain (CO5,K2) 1

(a) Mining process
(b) Encryption
(c) Communication between blockchains
(d) Data deletion

2. Attempt all parts:-

(2.1) Discuss the role of mining in Blockchain Technology (CO1,K2) 2

(2.2) Illustrate the role of Merkle tree in blockchain (CO2,K3) 2

(2.3) Explain the purpose of Hyperledger.(CO3,K2) 2

(2.4) Describe decentralized autonomous organization.(CO4,K3) 2

(2.5) Define cross-border payments.(CO5,K2) 2

SECTION-B 30

Answer any one of the following:-

(3.1) Describe the history and evolution of blockchain technology. (CO1,K3) 6

(3.2) Explain how blocks are linked using hashing in blockchain. (CO1,K3) 6

Answer any one of the following:-

(3.3)	Illustrate how blocks are connected to form a continuous chain. (CO2,K4)	6
(3.4)	Outline the working principles of a permissioned blockchain model.(CO2,K4)	6

Answer any one of the following:-

(3.5)	Use Ethereum network for transaction processing.(CO3,K3)	6
(3.6)	Demonstrate the execution of smart contracts in blockchain.(CO3,K3)	6

Answer any one of the following:-

(3.7)	Define DAO. Explain its characteristics. Illustrate with diagram.(CO4,K4)	6
(3.8)	Describe EVM working. Explain execution process. Illustrate with diagram.(CO4,K4)	6

Answer any one of the following:-

(3.9)	Discuss the integration of blockchain with IoT and its benefits.(CO5,K4)	6
(3.10)	Apply blockchain technology to improve cross-border payment systems.(CO5,K4)	6

SECTION-C 50

4. Answer any one of the following:-

(4.1)	Describe types of blockchain: public, private, and consortium .Explain how consortium blockchains work with real-world examples.(CO1,K4)	10
(4.2)	Compare and contrast public, private, and consortium blockchains with examples and use cases. .(CO1,K4)	10

5. Answer any one of the following:-

(5.1)	Illustrate how transactions are validated and added to a blockchain with a neat diagram.(CO2,K4)	10
(5.2)	Apply the longest chain rule to resolve conflicts in blockchain networks with an example and diagram.(CO2,K4)	10

6. Answer any one of the following:-

(6.1)	Examine legal challenges in blockchain implementation.(CO3,K3)	10
(6.2)	Apply decentralized applications (DApps) in real-world scenarios with a diagram.(CO3,K3)	10

7. Answer any one of the following:-

(7.1)	Analyze Ethereum scalability issues, examine solutions, and evaluate performance.(CO4,K4)	10
(7.2)	Explain Solidity programming, describe syntax, and illustrate with example.(CO4,K4)	10

8. Answer any one of the following:-

(8.1)	Explain Decentralized Finance (DeFi) and describe its key features. (CO5, K3)	10
(8.2)	Analyze the role of Non-Fungible Tokens (NFTs) in digital ownership systems. (CO5, K3)	10