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| PRN No. | |
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| PAPER CODE | U315-273 (RE) |
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**(AY:2025-26) December 2025 (ENDSEM) EXAM
TY (SEMESTER - I)**

COURSE NAME:
Blockchain Technology

Branch: CSE (IoT, Cyber Security,
Blockchain Technology)
(T.Y (Pattern 2023))

COURSE CODE:
CI31233

Time: [1Hr 30 Min]

[Max. Marks: 40]

(*) Instructions to candidates:

- 1) **Figures to the right indicate full marks. Use of scientific calculator is allowed**
- 2) **Use suitable data wherever required**
- 3) **All questions are compulsory. Solve any two sub question each from Questions 1 , 2 ,3 and 4**

| Q. No. | Question Description | Max. Marks | CO mapped | BT Level |
|--------|---|------------|-----------|----------|
| Q.1 | a) Define the public blockchain environment and discuss its characteristics, including open accessibility and transparency. | [5] | 1 | 3 |
| | b) Explain the concept of forks in blockchain technology, including soft forks and hard forks. | [5] | 1 | 2 |
| | c) Provide an overview of prominent players in the blockchain market, such as Bitcoin, Multichain, Ethereum, Hyperledger, and R3 Corda. | [5] | 1 | 2 |
| Q2 | a) How does the chaining of blocks ensure the immutability and integrity of the data stored in a blockchain? | [5] | 2 | 2 |
| | b) What is the Byzantine General Problem, and how does it relate to consensus mechanisms in blockchain? | [5] | 2 | 2 |
| | c) Compare the functionalities and responsibilities of different types of blockchain nodes, emphasizing their roles in maintaining network integrity and consensus. | [5] | 2 | 3 |
| Q3 | a) What are Ethereum accounts, and how do they facilitate interactions with the Ethereum network? | [5] | 3 | 2 |
| | b) Describe the role of Infura in providing access to the Ethereum network and its significance for developers. | [5] | 3 | 3 |
| | c) Enlist the sequence of steps involved in a typical transaction flow within Hyperledger Fabric. | [5] | 3 | 2 |

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|----|---|-----|---|---|
| Q4 | a) How blockchain technology enhances the security and integrity of medical records in IoT-based systems? | [5] | 4 | 3 |
| | b) Describe how zero-knowledge proofs differ from traditional cryptographic techniques. | [5] | 4 | 2 |
| | c) Analyze the challenges of integrating blockchain with AI in real-world applications. | [5] | 4 | 4 |

BT Levels- Remember (1)- Understand (2)- Apply (3)- Analyze (4)