

Code No.: R22CY741PE

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**CMR ENGINEERING COLLEGE: : HYDERABAD**  
**UGC AUTONOMOUS**

**IV–B.TECH–I–Semester End Examinations (Regular) - December- 2025**

**BLOCK CHAIN TECHNOLOGY**

**(CSC)**

**[Time: 3 Hours]**

**[Max. Marks: 60]**

**Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 10 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

**PART-A**

**(10 Marks)**

1. a) Compare a block and a blockchain by analyzing their structural differences [1M]
- b) Evaluate the role of smart contracts in reducing manual intervention. [1M]
- c) Apply the principles of blockchain to describe the workflow of a Bitcoin transaction [1M]
- d) Analyze the role of oracles in connecting smart contracts with real-world data. [1M]
- e) Apply the concept of permissioned access to describe how a private blockchain operates. [1M]
- f) Differentiate between ICOs and traditional fundraising mechanisms [1M]
- g) Distinguish between privacy and security in blockchain networks. [1M]
- h) Illustrate how blockchain is used for authentication in IoT devices [1M]
- i) Analyze the benefits of blockchain adoption in banking and financial services [1M]
- j) Demonstrate how Python can be used to create a basic blockchain structure [1M]

**PART-B**

**(50 Marks)**

2. Explain the basic components of blockchain. [10M]
- OR**
3. Analyze blockchain scalability issues and compare how different consensus mechanisms attempt to solve them. [10M]
4. Evaluate the effectiveness of oracles in ensuring trust between on-chain and off-chain systems. [10M]
- OR**
5. Explain the potential and limitations of public blockchain. [10M]
6. Create a consortium blockchain framework using Hyperledger for inter-bank settlements [10M]
- OR**
7. Develop a conceptual design of a blockchain-based fundraising platform using ICO methodology [10M]
8. Assess the limitations and future research challenges of blockchain in real-world applications. [10M]
- OR**
9. Evaluate the security and privacy challenges that affect large-scale blockchain adoption. [10M]
10. Write a case study in blockchain for energy trading. [10M]
- OR**
11. Evaluate the future potential of blockchain platforms Python & Hyperledger in solving cross-domain industrial challenges. [10M]

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