

**IV B. TECH I SEMESTER REGULAR EXAMINATIONS, NOVEMBER - 2023  
BLOCKCHAIN TECHNOLOGIES  
(CSE – INTERNET OF THINGS)**

Time: 3 hours

Max. Marks: 70

**Note : Answer ONE question from each unit (5 × 14 = 70 Marks)**

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UNIT-I

- 1. a) Explain in detail the characteristics and methods of various security attacks. [7M]
- b) Describe the process of the following ciphers [7M]  
(i) Playfair cipher, (ii) Vigenere Cipher.

(OR)

- 2. a) List various security services and describe their importance in data communications. [7M]
- b) Summarize the process of DES with a neat diagram. [7M]

UNIT-II

- 3. a) Illustrate the process of hash value generation using MD5. [6M]
- b) Differentiate between Kerberos v4 and v5. Explain how does it work in detail. [8M]

(OR)

- 4. a) Given the public key  $(n, e)=(3233,17)$  and the private key  $d=2753$ . Calculate encrypted message for the message  $M = 123$  using RSA. Also describe the process of RSA with an example. [7M]
- b) Discuss in detail process of Chinese remainder theorem with an example. [7M]

UNIT-III

- 5. a) Define Byzantine Faults and summarize the characteristics of BFT model. [7M]
- b) Discuss security concerns, scalability challenges, or any other risks that may arise with the integration of blockchain in the Global Payments sector. [7M]

(OR)

- 6. a) Summarize the functionalities of different types of blockchains [7M]
- b) Differentiate between Centralized vs. Distributed systems and describe the limitations of centralized systems. [7M]

**UNIT-IV**

7. a) Illustrate the life cycle of smart contracts in Blockchain network. [7M]  
b) Describe the Proof of Work (PoW) consensus mechanism. How does it achieve consensus in a blockchain network? [7M]

(OR)

8. a) Differentiate between Ethereum vs. Bitcoin. Provide an overview of what the EVM is and its role in the Ethereum ecosystem. [7M]  
b) Outline how blockchain can be used to enhance transparency and traceability in supply chain management. [7M]

**UNIT-V**

9. a) Describe three common categories of private Blockchain networks along with their characteristics. [7M]  
b) List and describe the Technical challenges related to the integration blockchain and IoT. [7M]

(OR)

10. a) Identify the differentiation among any four blockchain frameworks or platforms. [7M]  
b) Elaborate on the need for private blockchains. [7M]

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