C **Reg. No. :** | | | | | | | | | | | | |

**Question Paper Code: U4308**

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2025

Professional Elective

Electronics and Communication Engineering

21ECV308- BLOCKCHAIN TECHNOLOGY

(Regulations 2021)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 5 = 25 Marks)

| | | | |
|---|---|---|---|
| 1. | Explain different types of blockchain and in detail? | CO1-U | |
| 2. | Imagine a scenario where multiple financial institutions need to share transaction data securely and transparently. Apply the concept of decentralization to design a blockchain-based solution that ensures interoperability among these institutions. | CO3-App | |
| 3. | Demonstrate how the concept of tokens can be used to develop a cryptographic token for a specific use case such as loyalty rewards, gaming, or digital identity. Explain the key steps involved in the development process | CO3-App | |
| 4. | Analyze the alternate blockchain (Rootstock) with the traditional blockchain technology. | CO6-Ana | |
| 5. | Examine Everledger's use of blockchain for asset provenance. How does it enhance transparency and reduce fraud in high-value goods industries. | CO6-Ana | |

PART – B (5 x 15= 75 Marks)

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|---|---|---|---|---|
| 6. | (a) | Compare and analyze multiple real-life case studies where blockchain technology has been implemented (e.g., in supply chain management, healthcare, finance, or voting systems). Demonstrate how the core principles of blockchain such as transparency, immutability, and decentralization were applied in each case and evaluate their impact on efficiency, trust, and security. | CO2 -App | (15) |
| | | Or | | |
| | (b) | Identify two major benefits of using blockchain in cyber security and the security challenges faced in Blockchain. | CO2 -App | (15) |

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|---|---|---|---|---|
| 7. | (a) | Design a system that ensures transparency in public land records by applying the concept of data distribution in blockchain. | CO4 -App | (15) |
| | | Or | | |
| | (b) | Design a tamper-proof digital voting system by applying the principle of immutability in blockchain technology. Explain how the consensus mechanism and transaction layer work together to ensure transparency, integrity, and resistance to fraud. Support your design with practical considerations and possible challenges | CO4 -App | (15) |
| 8. | (a) | Apply the use of digital currencies in cross-border transactions for an international e-commerce platform. | CO4 -App | (15) |
| | | Or | | |
| | (b) | Apply smart contracts in a DAO environment to manage member voting and funding proposals. | CO4 -App | (15) |
| 9. | (a) | Analyze and how to develop an alternative block chain by apply the concept of Block chain technology. | CO6-Ana | (15) |
| | | Or | | |
| | (b) | How have recent technological revolutions, particularly the adoption of financial blockchain, transformed traditional financial systems? Analyze the key benefits brought by these innovations in terms of transparency, efficiency, security, and decentralization, and identify their broader impact on global financial ecosystems. | CO6-Ana | (15) |
| 10. | (a) | Identify a startup that stores your identity onto bitcoin's blockchain so that you can prove your identity whenever you need to provide. | CO4- App | (15) |
| | | Or | | |
| | (b) | Apply the concept of decentralized data control used by GEM Health to a national healthcare system. How would this benefit patients and medical providers. | CO4- App | (15) |