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**206EC004**

# Ph.D./M.S. (Engg.) by Research Degree Examination, Nov./Dec. 2024

# Blockchain Technology

Time: 3 hrs. Max. Marks: 100

**Note:** ***Answer any FIVE full questions, choosing ONE full question from each module.***

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

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## Module-1

**1** a. Explain the basic cryptographic primitives used in Block chain . **(10 Marks)**
b. Explain the Public key crypto systems with example. **(10 Marks)**

**OR**

**2** a. Explain the modeling faults and Byzantine general problems. **(10 Marks)**
b. Explain Consensus algorithms and their scalability problems. **(10 Marks)**

## Module-2

**3** a. Explain technologies borrowed in Blockchain. **(10 Marks)**
b. Explain the Bitcoin Blockchain in detail. **(10 Marks)**

**OR**

**4** a. Explain the Mathematical analysis and properties of Bitcoin. **(10 Marks)**
b. Explain the Bitcoin challenges and solutions. **(10 Marks)**

## Module-3

**5** a. Explain the Abstract model for Blockchain Gray model and RLA model. **(10 Marks)**
b. Explain the proof of work as random oracle and format treatment of consistency. **(10 Marks)**

**OR**

**6** a. Explain the Bitcoin Scripting language and their use. **(10 Marks)**
b. Explain the proof of stake based chains hybrid models. **(10 Marks)**

## Module-4

**7** a. Explain Ethereum virtual machine and wallets for Ethereum. **(10 Marks)**
b. Explain the turing completeness of smart contract language and verification challenges. **(10 Marks)**

**OR**

**8** a. Compare Bitcoin and Ethereum Smart contracts. **(10 Marks)**
b. Explain the Smart contracts and attacks on Smart contracts. **(10 Marks)**

## Module-5

**9** a. Explain Hyperledger fabric and plug and play platform. **(10 Marks)**
b. Explain applications of Blockchain in cyber security and Integrity of information. **(10 Marks)**

**OR**

**10** a. Explain E – Governance and other contract enforcement mechanisms. **(10 Marks)**
b. Explain limitations of Blockchain as a technology and compare myths and reality of Blockchain technology. **(10 Marks)**

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