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**PRESIDENCY UNIVERSITY**

**Bengaluru**

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| **End - Term Examinations – JANUARY 2025** |
| **Date:** 04- 01- 2025 **Time:** 1:00 pm – 04:00 pm |

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| --- | --- | --- |
| **School:** SOCSE | **Program: B.Tech -** ISR/ISE | |
| **Course Code :** CSE2019 | **Course Name :** Foundations of Blockchain Technology | |
| **Semester**: III | **Max Marks**: 100 | **Weightage**: 50% |

|  |  |  |  |  |
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| **CO - Levels** | **CO1** | **CO2** | **CO3** | **CO4** |
| **Marks** | **24** | **26** | **26** | **24** |

**Instructions:**

1. *Read all questions carefully and answer accordingly.*
2. *Do not write anything on the question paper other than roll number.*

**Part A**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Answer ALL the Questions. Each question carries 2marks. 10Q x 2M=20M** | | | | |
| **1** | What is a blockchain. | **2 Marks** | **L1** | **CO1** |
| **2** | How can Networks be labeled? | **2 Marks** | **L1** | **CO2** |
| **3** | How Does Consensus Work? | **2 Marks** | **L1** | **CO2** |
| **4** | Describe how Proof of Capacity (PoC) works? | **2 Marks** | **L2** | **CO2** |
| **5** | Discuss what is the role of block records in Bitcoin transactions | **2 Marks** | **L2** | **CO1** |
| **6** | Define digital keys. | **2 Marks** | **L1** | **CO3** |
| **7** | List the different types Bitcoin. | **2 Marks** | **L1** | **CO3** |
| **8** | Examine thes basic Purpose of Ethereum. | **2 Marks** | **L1** | **CO3** |
| **9** | Define Smart Contract. | **2 Marks** | **L1** | **CO4** |
| **10** | Define smart contract and its evolution Timeline? | **2 Marks** | **L1** | **CO4** |

**Part B**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Answer the Questions Total 80 Marks.** | | | | | |
| **11.** | **a.** | Discuss Cryptographic Hashing in the Blockchain with example. | **20 Marks** | **L1** | **C01** |
| **Or** | | | | | |
| **12.** | **a.** | How Does a Consensus Mechanism Work? Discuss any 2-consensus mechanisms in detail | **20 Marks** | **L2** | **CO1** |
|  |  |  |  |  |  |
| **13.** | **a.** | Differentiate DPOS and POI with block diagrams. | **20 Marks** | **L4** | **CO2** |
|  | **b.** | Differentiate PoB and BFT. | **L4** |  |
| **Or** | | | | | |
| **14.** | **a.** | Elaborate the Pros and Cons of Consensus Mechanisms | **20 Marks** | **L2** | **CO2** |
|  | **b.** | Review the differences between Byzantine vs. Crash Fault | **L2** |  |

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| **5.** | **a.** | What is a Merkle tree? Explain with a block diagram, how can Merkle tree be used as a fundamental data structure to organize and secure digital information. | **20 Marks** | **L2** | **CO3** |
| **Or** | | | | | |
| **16.** | **a.** | Analyze how confidentiality, integrity, and authenticity is achieved by applying digital keys. Explain the role of a Bitcoin address in this regard. | **20 Marks** | **L3** | **CO3** |

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| **17.** | **a.** | Demonstrate how a smart contract on the Ethereum platform can automate a business process. Provide an example of a smart contract and explain how it executes without intermediaries. | **20 Marks** | **L2** | **CO4** |
| **Or** | | | | | |
| **18.** | **a.** | Evaluate the System architecture of Ethereum with a block diagram. Explain its working mechanism. | **20 Marks** | **L3** | **CO4** |

**\*\*\*\*\* BEST WISHES \*\*\*\*\***