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| **Trimester: Oct - Dec 2022**  **Examination: End term Examination/Supplementary Examination** | | |
| **Program code: 09**  **Program: MCA 2021-2023 Batch** | **Class: SY** | **Trimester: V**  **(SVU 2022)** |
| **Name of the Constituent College:**  **K. J. Somaiya Institute of Management** | **Name of the department/Section/Center: DST** | |
| **Course Code: 117P09C501** | **Name of the Course: Blockchain Technologies** | |

**Maximum Marks: 50 Date: 26/12/2022**

**Duration: 3 Hrs**

**Instructions:-**

1. **Question No.1 is Compulsory.**
2. **Attempt any four from Q2 to Q6**
3. **Do not mix up sub questions**

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| **Question No.** |  | **Max.**  **Marks** |
| Q 1 | 1. Explain the different types of blockchain. What are the properties of blockchain? 2. What are Merkle trees? How important are Merkle trees in blockchain? | (05 M)  (05 M) |
| Q 2 | 1. What is the double-spending problem and how it is addressed by blockchain technology? 2. What is the significance of digital signature in blockchain? Demonstrate with an example where the digital signature is implemented. | (05 M)  (05 M) |
| Q 3 | 1. What is consensus in blockchain? Explain the various types of consensus algorithms used in blockchain. 2. What are decentralized applications (DApps)? Explain with an example. | (05 M)  (05 M) |
| Q 4 | 1. How does Bitcoin record transactions? What is unspent transaction output (UTXO)? What is script code embedded in each Bitcoin transaction and how flexible a programming language is it? 2. What is permissioned or private distributed ledger technology? How does it differ from permissionless or open blockchain applications? | (05 M)  (05 M) |
| Q 5 | 1. What is Ethereum framework? How it is different from bitcoin? 2. What do you mean by blocks in block chain technology? Blockchain is a distributed database. How does it differ from traditional databases? | (05 M)  (05 M) |
| Q 6 | 1. Discuss in detail Smart Contract in blockchain. Discuss any two platforms where smart contracts could be written in blockchain. 2. What is sharding in blockchain? Discuss the types of forks in blockchain. | (05 M)  (05 M) |