PAPER ID-310944

**Roll No:** [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]

# BTECH
## (SEM VII) THEORY EXAMINATION 2023-24
## BLOCKCHAIN ARCHITECTURE DESIGN

**TIME: 3 HRS**                                                   **M.MARKS: 100**

**Note:** 1. Attempt all Sections. If require any missing data; then choose suitably.

## SECTION A

**1.**      **Attempt *all* questions in brief.**

| Qno. | Question | Marks | CO |
|---|---|---|---|
| a. | Define distributed ledgers. | 2 | 1 |
| b. | List the types of records that are present in the Blockchain database. | 2 | 1 |
| c. | Define the way to verify the accuracy of new transactions that are added to a Blockchain. | 2 | 2 |
| d. | List the general types of Blockchain. | 2 | 2 |
| e. | Mention the key design features of Hyperledger Fabric model. | 2 | 3 |
| f. | Differentiate between Blockchain and hyperledger. | 2 | 3 |
| g. | List the feature of Blockchain that make its application useful in financial services. | 2 | 4 |
| h. | Describe how Blockchain eliminates the problems associated with KYC. | 2 | 4 |
| i. | Name some use cases for Blockchain application in identity management. | 2 | 5 |
| j. | Mention the cryptographic algorithms used in Blockchain. | 2 | 5 |

## SECTION B

**2.**      **Attempt any *three* of the following:**

| | | | |
|---|---|---|---|
| a. | Explain the architecture of Blockchain. Also define blocks in Blockchain architecture. | 10 | 1 |
| b. | Define the need of consensus mechanism in Blockchain. Also explain different types of consensus algorithms used in Blockchain. | 10 | 2 |
| c. | Define policy. Discuss the policies that are needed in Hyperledger. | 10 | 3 |
| d. | Discuss the security and privacy issues in Blockchain. | 10 | 4 |
| e. | Explain how Blockchain uses cryptography and how cryptography provides trustless environment in Blockchain network. | 10 | 5 |

## SECTION C

**3.**      **Attempt any *one* part of the following:**

| | | | |
|---|---|---|---|
| a. | Explain the key principles of Blockchain that are helpful in eliminating the security threats that need to be followed. | 10 | 1 |
| b. | Explain the security and privacy protocols used in Blockchain architecture. | 10 | 1 |

**4.**      **Attempt any *one* part of the following:**

| | | | |
|---|---|---|---|
| a. | Explain Merkle root. Explain the way it is implemented in the Blockchain. | 10 | 2 |
| b. | Explain Proof of Work (PoW). Also differentiate between PoW and PoS. | 10 | 2 |

**5.**      **Attempt any *one* part of the following:**

| | | | |
|---|---|---|---|
| a. | Describe Hyperledger Fabric. Mention the key design features of Hyperledger Fabric model. | 10 | 3 |
| b. | Briefly discuss the Hyperledger Fabric architecture. | 10 | 3 |

**6.**      **Attempt any *one* part of the following:**

| | | | |
|---|---|---|---|
| a. | Discuss application of Blockchain in financial software and systems with respect to KYC (Know Your Customer). | 10 | 4 |
| b. | List the problems associated with traditional supply chain management. Discuss the role of decentralization in supply chain management to overcome these problems. | 10 | 4 |

**7.**      **Attempt any *one* part of the following:**

| | | | |
|---|---|---|---|
| a. | Explain government adoption of Blockchain in healthcare sector and energy resource management in smart city. | 10 | 5 |
| b. | Discuss the role of Blockchain for government with respect to digital identity, land records and other kinds of record keeping. | 10 | 5 |