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Sub Code:KCS-714
Roll No.

B.TECH.
(SEM VII) THEORY EXAMINATION 2022-23
BLOCKCHAIN ARCHITECTURE DESIGN

Time: 3 Hours ***Total Marks: 100***

Note: Attempt all Sections. If you require any missing data, then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2x10 = 20

(a) How does Blockchain differ from relational databases?
(b) What are the types of records that are present in the blockchain database?
(c) Why is consensus mechanism required in the blockchain?
(d) Explain different types of consensus algorithms.
(e) Explain consensus algorithm used in the Hyperledger Fabric.
(f) What is chaincode?
(g) List any two financial application that are using blockchain.
(h) How blockchain can be used in the supply chain management with example?
(i) Explain Non-Fungible Tokens in land-records.
(j) What are security aspects of blockchain?

SECTION B

2. Attempt any *three* of the following: 10x3 = 30

(a) Explain the key principles of blockchain that are helpful in eliminating the security threats that need to be followed.
(b) Explain the major elements in blockchain ecosystem in detail with example.
(c) Explain practical Byzantine Fault Tolerance (pBFT) in detail.
(d) Illustrate blockchain in financial software and system with respect to insurance with example.
(e) Draw and explain the architecture of digital identification system using blockchain.

SECTION C

3. Attempt any *one* part of the following: 10x1 = 10

(a) Draw and explain blockchain architecture in detail. What are the primary benefits of immutability in blockchain.
(b) Explain the block in blockchain in detail. What is the block size of a block in the Bitcoin and the Ethereum blockchain.

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4. **Attempt any *one* part of the following:** **10 x1 = 10**

(a) Explain the concept of double spending. How is it works in the Bitcoin blockchain?

(b) What is the Merkle root? How is it implemented in the blockchain?

5. **Attempt any *one* part of the following:** **10x1 = 10**

(a) Discuss the Hyperledger Fabric. What are the different types of transaction validation policies available in Hyperledger Fabric?

(b) Explain Hyperledger composer tool. Discuss various projects under the Hyperledger umbrella?

6. **Attempt any *one* part of the following:** **10x1 = 10**

(a) Discuss "Fish supply chain" use case using blockchain.

(b) What is the concept of executing accounting? Does blockchain supports the same?

7. **Attempt any *one* part of the following:** **10x1 = 10**

(a) How blockchain can be used in public distribution system and social welfare system? Discuss in detail.

(b) What are the security and privacy issues in blockchain?

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