



Paper id: 251075

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Subject Code: KIT061

Roll No:

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**BTECH**  
**(SEM VI) THEORY EXAMINATION 2024-25**  
**BLOCKCHAIN ARCHITECTURE DESIGN**

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

**Note:** Attempt all Sections. In case of any missing data; choose suitably.

**SECTION A**

**1. Attempt all questions in brief. 2 x 10 = 20**

Q No.	Question	CO	Level
a.	List financial applications that use blockchain technology.	1	K1
b.	How distributed ledger plays important role in blockchain?	1	K3
c.	What are the advantages of permissioned blockchain networks?	1	K1
d.	Differentiate between symmetric and asymmetric key cryptography.	2	K2
e.	In which situation will you prefer practical Byzantine Fault Tolerance (pBFT) protocol?	2	K5
f.	What is the role of chain code?	2	K3
g.	Define the term "Channels" used in the Hyper-ledger fabric.	3	K1
h.	Explain Hyperledger composer tool.	3	K2
i.	Justify the significance of trust in use case of Blockchain.	4	K2
j.	Discuss the major advantages of using Blockchain in Healthcare Applications.	4	K2

**SECTION B**

**2. Attempt any three of the following: 10 x 3 = 30**

Q No.	Question	CO	Level
a.	Explain the use of (a) Merkle tree and (b) Noance (c) 51% attack in blockchain in detail.	1	K2
b.	Compare the centralized, decentralized and distributed system architecture based on their unique properties.	1	K4
c.	What are the various types of consensus protocol used in permissioned blockchain networks? Which one you think is better and why?	2	K5
d.	For an organization employing the Hyperledger Fabric, illustrate the transaction flow in.	3	K3
e.	Summarize role of Non-Fungible Tokens in land-records.	4	K5

**SECTION C**

**3. Attempt any one part of the following: 10 x 1 = 10**

Q No.	Question	CO	Level
a.	Draw and explain blockchain architecture in detail. Why are the aspects Decentralization, Transparency, Security and in blockchain are important.	1	K3
b.	Differentiate hash functions and Digital Signature. Also, discuss the characteristics and applications of hash functions in blockchain.	1	K2



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**4. Attempt any one part of the following: 10 x 1 = 10**

Q No.	Question	CO	Level
a.	Discuss PoW algorithm in detail with its advantages and disadvantages.	2	K2
b.	Compare and contrast Pow vs PoS Consensus Protocols.	2	K4

**5. Attempt any one part of the following: 10 x 1 = 10**

Q No.	Question	CO	Level
a.	Create the smart contract for withdrawal and deposit functionality of banking application using the modifier.	3	K3
b.	Describe the different transaction validation policies offered by Hyperledger Fabric. Illustrate the multi-organizations used in Hyperledger Fabric	3	K4

**6. Attempt any one part of the following: 10 x 1 = 10**

Q No.	Question	CO	Level
a.	Compare and contrast the major characteristics of permissioned and permissionless blockchains.	3	K4
b.	Illustrate the 'Fish Supply Chain' use case by using blockchain	4	K3

**7. Attempt any one part of the following: 10 x 1 = 10**

Q No.	Question	CO	Level
a.	Defend the application of Blockchain for Government Departments with respect to Digital identity record keeping between different government entities.	4	K5
b.	Illustrate blockchain in financial software and system with respect to insurance with an example.	4	K3