UPES
End Semester Examination, December 2023

Course: Blockchain Components and Architecture   Semester   : V
Program: B.Tech (CSE-H+NH)-BT   Time   : 03 hrs.
Course Code: CSBL3009   Max. Marks: 100

Instructions:

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q1	Write a short note on Merkle Tree and its use in blockchain architecture.	4	CO1
Q2	Write a short note on Bloom Filter and its use in blockchain architecture.	4	CO1
Q3	i. Minimum of how many peers do need to endorse a transaction in Hyperledger Fabric? ii. If a transaction fails in Hyperledger Fabric what changes are being made to the ledger and the world state? iii. Does the Hyperledger Fabric have a native currency? iv. An ordering service up and running in Hyperledger Fabric can the consensus algorithms be changed?	1*4	CO3
Q4	i. Describe different kinds of peers in Hyperledger Fabric. ii. Explain the key benefits of the transaction flow process of Hyperledger Fabric.	2+2	CO2
Q5	i. Point-out the key difference in X.509 vs Identity mixer. ii. Write a short note on ZKP.	2+2	CO5

SECTION B
(4Qx10M= 40 Marks)

Q6	i. Describe the key goals of Hyper Ledger Composer (HLC). ii. With clear block diagram describe the role of business service provider in HLC. iii. With a clear block diagram descrive how vehicle auction application can be devloped using HLC?	5+5	CO4
Q7	Explain how identities and access control is doen using MSP?	10	CO2
Q8	i. Explain the role of different system chaincodes available in Hyperledger Fabric. ii. Explain transaction validation in HLF vs. Bitcoin UTXO model.	5+5	CO4

Q9	i. Discuss the role of channels and their use cases in Hyperledger Fabric. How do channels enable multiple parties to transact privately within the same network? ii. Explain the significance of endorsement policies and their impact on transaction validation. OR i. Explain unlikable transactions can be audited in HLF. ii. Write a short note on is ZKP. iii. Explain "privacy in achieved using ZKP in HLF". iv. Write a short note on Zerocash.	**5+5** **OR** **3+2+3+2**	**CO5**
SECTION-C **(2Qx20M=40 Marks)**			
Q10	i. Draw the architecture of Hyperledger Fabric and explain its main components and how do they interact with each other? ii. Describe the transaction flow in Hyper ledger Fabric. iii. Explain how Consensus is Achieved in Hyperledger Fabric? iv. P:oint-out are the key benefits of the transaction flow process of Hyperledger Fabric.	**5+10+2.5+2.5**	**CO2**
Q11	i. Describe security aspects in HLF. ii. Write the role of Intel SGX in HLF. iii. Describe coco framework. iv. Expalin different kinds of system chaincodes available in HLF. Describe their funcionalities. v. Explain chaincode is installed and validated in HLF. OR Explain achieving data privacy in HLF using i. Channels ii.. Encryption, iii. Smartcontract confidentiality iv. Anonymity and Unlinkability v. Describe the different components of ledger in HLF. vi. Explain how privacy is achieved using SideDB?	**5+2.5+2.5+5+5** **OR** **2.5*4+5+5**	**CO5**