Name:	
Enrolment No:	

UPES
End Semester Examination, December 2023
Course: Blockchain Components and Architecture   Semester : VII
Program: B.Tech (CSE-H+NH)-All Spec   Time : 03 hrs.
Course Code: CSBL4003P   Max. Marks: 100

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. Describe the different kinds of peers in Hyperledger Fabric. ii. Explain the key benefits of the transaction flow process of Hyperledger Fabric.	2+2	CO2
Q4	i. Minimum of how many peers do need to endorse a transaction in Hyperledger Fabric (HLF)? 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
Q5	i. Write a short note on ZKP. ii. Point-out the key difference in X.509 vs Identity mixer.	2+2	CO5

SECTION B
(4Qx10M= 40 Marks)

Q6	Describe how identities and access control is doen using MSP?	10	CO2
Q7	i. Explain 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?	2.5+2.5+5	CO4
Q8	i. Describe different system chaincodes available in HLF. ii. Point-out key difference in transaction validation in Fabric 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 how unlikable transactions can be audited in HLF? ii. Write a short note on ZKP. iii. Explain how privacy in achieved using ZKP? 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. Identify the key benefits of the transaction flow process of Hyperledger Fabric.	**5+10+2.5+ 2.5**	**CO2**
Q11	i. Describe security in HLF. ii. Describe role of SGX in HLF. iii. Describe coco framework. iv. Explain different kinds of system chaincodes available in HLF? Describe their funcionalities. v. Describe the process of chaincode is installed and validated in HLF? OR Explain how data privacy is achieved 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 in HLF?	**5+2.5+2.5+ 5+5 OR 2.5*4+5+5**	**CO5**