Roll No: | | | | | | | | | | | |

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Bengaluru

Mid Term Examinations - October 2026

Date: 08/10/2026 **Time:** 11:45 AM - 01:15 PM

Course Code: CBC2502 **Course Name:** Distributed Ledger Technology

Semester: Fifth Semester **Max. Marks:** 50 **Weightage:** 50%

CO - Levels	CO1	CO2
Marks	92	88

PART A: Answer Following Questions. 10 M

Q.N.	Questions	M	CO	BT
1	Define Distributed Ledger Technology (DLT). Mention any one difference between a distributed ledger and a centralized system.	2	CO1	BT1
2	What is a Merkle Tree? State its purpose in blockchain.	2	CO1	BT1
3	Differentiate between public and private blockchains.	2	CO1	BT2
4	What is a fork in blockchain? Name any two types of forks.	2	CO2	BT1
5	Mention any two challenges faced by blockchain consensus mechanisms.	2	CO2	BT1

PART B : Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
6	Explain the construction and working of a Merkle Tree with a suitable example. Discuss how Merkle Trees help in the efficient verification of transactions.	10	CO1	BT3
7	Compare public and private blockchains based on access, participation, control, transparency, privacy, and use cases. Also explain the role of peer-to-peer networking in blockchain.	10	CO1	BT4

PART C: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
8	Explain the architecture of a blockchain in detail. Describe the structure of a block with a neat diagram.	10	CO2	BT2
9	Explain the Proof of Stake (PoS) consensus mechanism. Describe the process of validator selection, block creation, validation, rewards, and penalties. Compare PoS with PoW.	10	CO2	BT4

PART D: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
10	Explain the construction and working of a Merkle Tree with a suitable example. Discuss how Merkle Trees help in the efficient verification of transactions.	10	CO1	BT3
11	Explain cryptographic primitives used in blockchain, including hash functions, public-key cryptography, digital signatures, and their role in securing transactions.	10	CO1	BT2

PART E: Answer Any 1 Following Questions. 10 M

PTO (Please Turn Over)

Q.N.	Questions	M	CO	BT
12	Explain Byzantine Fault Tolerance (BFT) and its role in blockchain consensus. Describe the Byzantine Generals Problem, the working of BFT, and how BFT-based mechanisms achieve agreement in a distributed network.	10	CO2	BT2
13	Explain forks and block finality in blockchain. Discuss soft forks and hard forks with examples, and explain probabilistic and deterministic finality with suitable examples.	10	CO2	BT4