Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

Mid - Term Examinations – October 2025

Date: 07-10-2025 **Time:** 11.45am to 01.15pm

School: SOIS	**Program:** BCA	
Course Code: CSA3006	**Course Name:** BLOCKCAIN TECHNOLOGY	
Semester: V	**Max Marks**: 50	**Weightage**: 25%

CO - Levels	**CO1**	**CO2**	**CO3**	**CO4**	**CO5**
Marks	**26**	**24**	**-**	**-**	**-**

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks. **5Q x 2M=10M**

1	Define a consortium blockchain with an example.	2 Marks	L2	CO1
2	What is decentralized system?	2 Marks	L1	CO1
3	Define immutable feature of blockchain.	2 Marks	L1	CO1
4	Defend the necessity of online and offline wallet in bitcoin network.	2 Marks	L2	CO2
5	Summarize the purpose of nonce in Bitcoin mining.	2 Marks	L2	CO2

Part B

Answer the Questions. **Total Marks 40M**

6.	**a.**	Explain the architecture of blockchain, such as nodes, blocks, transactions, and ledgers. Additionally, describe the role and functioning of a peer-to-peer network in blockchain.	**10M**	**L2**	**CO1**
Or					

7.	**a.**	Explain Proof of capacity (PoC) and Proof of Stake (PoS) in detail. Additionally, discuss the various types of incentives used in blockchain networks.	**10M**	**L2**	**CO1**
8.	**a.**	Describe the working of blockchain and how it ensures immutability and security in data storage. Additionally, discuss the major challenges associated with blockchain adoption.	**10M**	**L2**	**CO1**
		Or			
9.	**a.**	Explain the key differences between PoW, PoA, and PBFT in terms of consensus efficiency. How does PoC help businesses decide whether to implement blockchain technology?	**10M**	**L2**	**CO1**
10.	**a.**	Explain the working of the Unspent Transaction Output (UTXO) model in Bitcoin. Compare it with the account-based model used in Ethereum, highlighting their key differences.	**10M**	**L2**	**CO2**
		Or			
11.	**a.**	Illustrate the risks associated with mining pool centralization and ways to mitigate them. Additionally, explain the challenges of using renewable energy sources for Bitcoin mining.	**10M**	**L2**	**CO2**
12.	**a.**	Explain the significance of the Merkle Tree in Bitcoin and its role in transaction verification. Discuss how it enhances efficiency, security, and scalability in the blockchain network.	**10M**	**L2**	**CO2**
		Or			
13.	**a.**	Explain the concept of Bitcoin scripts and describe how they enable advanced transaction types such as time-lock and multi-signature transactions.	**10M**	**L2**	**CO2**