Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

Mid - Term Examinations – MARCH 2026

Date: 10 – 03- 2026 **Time:** 02:00pm – 03:30pm

School: SOIS	**Program:** BCA	
Course Code: CSA3802	**Course Name:** AI IN BLOCKCHAIN	
Semester: IV	**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	What is a peer-to-peer (P2P) network?	**2 Marks**	**L1**	**CO1**
2	Define Merkle Tree.	**2 Marks**	**L1**	**CO1**
3	Label the need for digital signatures in blockchain.	**2 Marks**	**L1**	**CO1**
4	What is phishing fraud in cryptocurrency systems?	**2 Marks**	**L1**	**CO2**
5	What is the purpose of risk scoring models in blockchain security?	**2 Marks**	**L1**	**CO2**

Part B

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

6.	**a.**	Illustrate the decentralization concept in blockchain technology and explain the different categories of blockchain with its characteristics.	**10 Marks**	**L2**	**CO1**
		Or			
7.	**a.**	Explain the structure of a blockchain, detailing block header, hash functions, Merkle trees, chain linking, and block validation process.	**10 Marks**	**L2**	**CO1**

8.	**a.**	Explain the need for consensus mechanisms in decentralized systems. Describe the working mechanism and challenges of Proof of Work (PoW) and Proof of Stake (PoS).	**10 Marks**	**L2**	**CO1**
		Or			
9.	**a.**	Demonstrate the significance of collision resistance and the avalanche effect in blockchain hashing. Why are these properties critical for maintaining trust in decentralized systems?	**10 Marks**	**L2**	**CO1**

10.	**a.**	Explain supervised and unsupervised learning approaches used in blockchain fraud detection. Compare both approaches with suitable examples and discuss their advantages and limitations.	**10 Marks**	**L2**	**CO2**
		Or			
11.	**a.**	Explain the concept of anomaly detection in blockchain transactions. Distinguish between normal and abnormal transaction behavior. Discuss the importance of anomaly detection in decentralized systems.	**10 Marks**	**L2**	**CO2**

12.	**a.**	Illustrate graph-based analytics and network behavior analysis for threat detection in blockchain systems. Discuss AI-based intrusion prediction models and their advantages	**10 Marks**	**L2**	**CO2**
		Or			
13.	**a.**	Summarize the real-world blockchain security breaches and explain case studies on cryptocurrency exchange fraud detection, illicit transaction detection, DeFi attack detection, and enterprise blockchain security. Highlight success factors, failure points, and future scope of AI in blockchain security.	**10 Marks**	**L2**	**CO2**