Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

End - Term Examinations – December 2025

Date: 18 – 12- 2025 **Time:** 01:00pm – 04:00pm

School: SOCSE	**Program:** B.Tech CSE	
Course Code: CSE2019	**Course Name:** Foundations of Blockchain Technology	
Semester: VII	**Max Marks**: 100	**Weightage**: 50%

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

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. **10Q x 2M=20M**

1.	Discuss any two limitations of blockchain technology.	**2 Marks**	**L2**	**CO1**
2.	Explain distributed ledger.	**2 Marks**	**L2**	**CO1**
3.	Explain Proof of Stake (PoS) along with the suitable example.	**2 Marks**	**L2**	**CO2**
4.	Discuss one challenge faced in achieving consensus in distributed networks.	**2 Marks**	**L2**	**CO2**
5.	Explain the use of Bitcoin APIs.	**2 Marks**	**L2**	**CO3**
6.	Explain hardware wallet along with the suitable example.	**2 Marks**	**L2**	**CO3**
7.	Discuss mempool along with its usage.	**2 Marks**	**L2**	**CO3**
8.	Mention any two advantages of smart contracts.	**2 Marks**	**L2**	**CO4**
9.	Discuss gas in Ethereum.	**2 Marks**	**L2**	**CO4**
10.	Explain the purpose of the Ethereum Virtual Machine (EVM).	**2 Marks**	**L2**	**CO4**

Part B

Answer the Questions. **Total Marks 80M**

11.	**a.**	Discuss the concept of a shared ledger. How does it enhance efficiency and reduce fraud in organizations?	**10 Marks**	**L2**	**CO1**
	b.	Explain the generic elements of a blockchain system with a neat diagram and describe their roles in maintaining integrity and transparency.	**10 Marks**	**L2**	**CO1**
		Or			
12.	**a.**	Explain the three tiers of blockchain technology along with the role of each tier in the blockchain ecosystem.	**10 Marks**	**L2**	**CO1**
	b.	Explain the concept of distributed ledger technology (DLT). How does it differ from a traditional centralized database system.	**10 Marks**	**L2**	**CO1**

13.	**a.**	Describe any two major consensus mechanisms Proof of Work and Proof of Stake in detail along with their working principles, advantages and limitations.	**10 Marks**	**L2**	**CO2**
	b.	Discuss the concept of blockchain forks. Differentiate between hard fork and soft fork with real-world examples.	**10 Marks**	**L2**	**CO2**
		Or			
14.	**a.**	Discuss the key challenges in achieving distributed consensus in blockchain networks. Suggest possible solutions to overcome these issues.	**10 Marks**	**L2**	**CO2**
	b.	Explain blockchain governance in detail. Compare on-chain governance and off-chain governance, and evaluate their roles in maintaining consensus and network stability.	**10 Marks**	**L2**	**CO2**

15.	**a.**	Explain Bitcoin wallets along with it's with advantages, disadvantages, and use cases.	**10 Marks**	**L2**	**CO3**
	b.	Explain the process of Bitcoin installation along with steps for installing a full Bitcoin client (Bitcoin Core) and setting up a secure wallet environment.	**10 Marks**	**L2**	**CO3**
		Or			
16.	**a.**	Explain the steps involved in making a Bitcoin payment. Discuss how transactions are verified, confirmed, and recorded on the blockchain.	**10 Marks**	**L2**	**CO3**
	b.	Discuss Bitcoin clients. Compare full clients, lightweight (SPV) clients, and web-based clients with suitable examples.	**10 Marks**	**L2**	**CO3**

17.	**a.**	Discuss on the components of the Ethereum ecosystem.	**10 Marks**	**L2**	**CO4**
	b.	Discuss Smart Contracts along with their characteristics, benefits, limitations and examples.	**10 Marks**	**L2**	**CO4**
		Or			
18.	**a.**	Explain the evolution of blockchain leading to the development of Ethereum.	**10 Marks**	**L2**	**CO4**
	b.	Explain the complete lifecycle of deploying a smart contract using Remix IDE.	**10 Marks**	**L2**	**CO4**