Examination: Spring-2026
Course Code: CIS 331 (Batch: 17_A)
Course Title: Introduction to Blockchain and Cryptocurrencies
Date: 27/01/2026
Class Test (2)

Time: 30 Minutes **Total Marks: 15**

1. ***Read the following scenario and answer the question accordingly:***

A fintech company wants to secure sensitive customer transaction records exchanged between its central server and branch offices. The system must encrypt large amounts of data quickly, but the company is also concerned about secure key distribution and authentication of communicating parties.
Based on this scenario, answer the following:

a. Which cryptographic technique is more suitable for fast bulk data encryption? Justify your answer. [3]
b. What is the main limitation of symmetric cryptography in this scenario? [2]
c. Explain how asymmetric cryptography can help solve this limitation. [2]

2. Compare symmetric key cryptography and asymmetric key cryptography in terms of key usage, speed, scalability, and common applications. [4]

3. Explain the purpose of hashing in cryptography. Briefly discuss two properties of a good hash function and mention two practical applications of hashing in blockchain or cybersecurity. [4]

Class Test (3)

Time: 30 Minutes **Total Marks: 15**

1. ***Read the following scenario and answer the question accordingly:*** [6]

A national food-export network wants to build a digital system where farmers, transport companies, warehouses, customs offices, and retailers can share product records. The participants belong to different organizations, but access should not be open to everyone. Only approved members should be allowed to add records, while the system should still provide transparency, traceability, and efficient transaction processing.

Based on this scenario, which type of blockchain architecture would you recommend? Justify your answer briefly.

2. Explain the main components of a blockchain block, including block header, previous hash, Merkle root, timestamp, nonce, and transactions. Briefly discuss why these components are important for blockchain security and integrity. [5]

3. What is a consensus mechanism in blockchain? Compare Proof of Work (PoW) and Proof of Stake (PoS) in terms of working process, energy consumption, and security approach. [4]