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(b) Explain the role of Ethereum as a platform for smart contracts. (5)

7. (a) Analyze the applications of blockchain technology in the domains given below :

- Banking and Finance
- Supply Chain Management (10)

(b) Differentiate between public and private blockchain with help of suitable example. (5)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 7293

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Unique Paper Code : 2343010030

Name of the Paper : Blockchain and its Applications

Name of the Course : **B.Sc. (H)**

Semester : VIII

Duration : 3 Hours

Maximum Marks : 90

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. The paper has **two** sections. **All** questions in “**Section A**” are compulsory.
3. Attempt any **four** questions from “**Section B**”.
4. Parts of a question must be answered together.

Section A

1. (a) How blockchain is helpful in e-commerce. (2)
(b) State the any two-scalability issue in blockchain. (2)

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- (c) What is a genesis block? Explain. (3)
 - (d) Explain the concept of “Immutability” in blockchain. (3)
 - (e) Describe Bitcoin address with the help of suitable example. (3)
 - (f) What is a digital wallet? Explain. (3)
 - (g) Compare Bitcoin System and Bank System. (3)
 - (h) List any three advantages of Cryptocurrency. (3)
 - (i) What is ‘Gas’ in the context of the Ethereum platform? (3)
 - (j) Describe the role of Solidity in blockchain with the help of an example. (5)
2. (a) Explain the concept of blockchain technology as a distributed ledger system. Compare blockchain with traditional databases. Highlight at least four differences. (10)
- (b) Describe the five key characteristics of blockchain. (5)

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3. (a) Describe the importance of Merkle Trees in blockchain. Construct a Merkle Tree for 4 transactions T1, T2, T3 and T4. Explain its working. (8)
- (b) Illustrate the step-by-step working of a blockchain transaction from initiation to validation. (7)
4. (a) Describe the Bitcoin transaction lifecycle and analyze its advantages and limitations in modern financial systems. (10)
- (b) Explain the concept of mining and its importance. (5)
5. (a) Explain the architecture of a permissioned blockchain system and its use in enterprise applications. (5)
- (b) Explain SHA-256 hashing process in blockchain. (5)
- (c) Explain how transactions are validated and recorded in blockchain. (5)
6. (a) Explain the concept of Smart Contracts in blockchain. How do they work? Describe the advantages and limitations of Smart Contracts in blockchain. (10)

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