B.E./VII/COMP/C-Scheme/NOV-24/14-12-2024.

(3 Hours)　　　　　　　　　　　　　　　　　　　　(Total Marks: 80)

N.B.:　1. Question No. 1 is compulsory.
　　　　　2. Answer any three out of the remaining questions.
　　　　　3. Assume suitable data if necessary.
　　　　　4. Figures to the right indicate full marks.

Q1.　Attempt the following (any 4):　　　　　　　　　　　　(20)

　　a. What is a Merkle tree? Explain the structure of a Merkle tree.

　　b. Compare Bitcoin and Ethereum

　　c. Differentiate between PoW and PoS.

　　d. What is a Smart Contract? What are the different types of smart contracts?

　　e. Explain five challenges of Blockchain Implementation.

Q2.　Attempt the following:

　　a. Explain the components of Blockchain.　　　　　　　　　(10)

　　b. What is RAFT consensus algorithm? Explain in detail.　　　(10)

Q3.　Attempt the following:

　　a. What is cryptocurrency? Explain different types of Cryptocurrencies.　(10)

　　b. Explain state machine replication.　　　　　　　　　　(10)

Q4.　Attempt the following:

　　a. Explain the following terms with respect to Ethereum: Miner and Mining Node, Gas, Accounts, Ether, Transactions.　　　　　　　(10)

　　b. Write a program in solidity to implement multi-level inheritance.　(10)

Q5.　Attempt the following:

　　a. What is double spending problem? Which algorithm helps in solving it and how? (10)

　　b. Explain view and pure functions in solidity with suitable examples.　(10)

Q6.　Write short notes on (any 2):　　　　　　　　　　　(20)

　　a. Quorum

　　b. Hyperledger Fabric v1 Architecture

　　c. PAXOS consensus algorithm

　　d. Corda

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