**Duration: 3hrs**        **[Max Marks:80]**

N.B.:  (1) Question No 1 is Compulsory.
      (2) Attempt any three questions out of the remaining five.
      (3) All questions carry equal marks.
      (4) Assume suitable data, if required and state it clearly.

| | | | Marks |
|---|---|---|---|
| Q1. | | Attempt **any four** | |
| | a. | What is a block header? How are blocks linked in blockchain? | 5 |
| | b | Enumerate the interoperability and scalability issues in Hyperledger fabric. | 5 |
| | c. | Explain Simplified Payment Verification Nodes. What is the Privacy solution for SPV nodes? | 5 |
| | d | List the different advantages and disadvantages of ICO. | 5 |
| | e. | What is nonce in blockchain and how does it work? | 5 |
| | | | |
| Q2. | a. | What is a Blockchain fork? Differentiate between soft fork and hard fork. | 10 |
| | b. | Describe the various projects covered under Hyperledger umbrella projects. | 10 |
| | | | |
| Q3. | a. | Discuss the different challenges addressed by blockchain in the Energy sector. | 10 |
| | b | Differentiate between Bitcoin blockchain and Ethereum Blockchain. | 10 |
| | | | |
| Q4 | a. | Explain bitcoin mining with the help of a neat diagram. | 10 |
| | b | Explain different List and explain the parts of EVM memory. | 10 |
| | | | |
| Q5 | a. | What is an ERC20 token? Explain the steps to create ERC20 tokens. | 10 |
| | b. | With the help of a suitable diagram explain the life-cycle of a smart contract in Ethereum. | 10 |
| | | | |
| Q6 | | Write short notes on **(any 4)** | 20 |
| | a. | Key features of blockchain | |
| | b. | EOA and contracts address | |
| | c. | UTXO in Bitcoin | |
| | d. | Stock Trading Offering | |
| | e. | Channels in Hyperledger Fabric | |

************