

(Time: 2 $\frac{1}{2}$ hours)

[Total Marks: 60]

- N. B.: (1) All questions are compulsory.
 (2) Make suitable assumptions wherever necessary and state the assumptions made.
 (3) Answers to the same question must be written together.
 (4) Numbers to the right indicate marks.
 (5) Draw neat labeled diagrams wherever necessary.
 (6) Use of Non-programmable calculator is allowed.

1. Attempt any two of the following: 12
 a. Write a note on centralized and decentralized systems in detail.
 b. Write a note on symmetric key cryptography and asymmetric key cryptography.
 c. What is Bitcoin? Explain working of Bitcoin Blockchain.
 d. Explain Blockchain structure in detail.
2. Attempt any two of the following: 12
 a. Write a note on EVM.
 b. What are different types of values and functions available in solidity programming?
 c. Write down different characteristics of Transactions and Messages.
 d. Discuss complementary currency.
3. Attempt any two of the following: 12
 a. Write a note on smart contracts.
 b. Write a note on hyperledger, composer and fabric.
 c. What do mean by cryptocurrency? Discuss "cryptocurrency is a measure of time".
 d. Discuss "Token as social contract".
4. Attempt any two of the following: 12
 a. What do you mean by Mining in blockchain? Discuss different factors required for Blockchain validation.
 b. Write a note on "Cryptoeconomics".
 c. Explain concept of Block Time and PoW.
 d. Explain terms: i. Nonce ii. Stale Block iii. Geth
5. Attempt any two of the following: 12
 a. What are different seven ways to Think About Smart contracts?
 b. Write a note on Blockchain Application Development.
 c. Discuss public and private blockchain.
 d. Write a note on Decentralized Application Architecture.