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18IC71

Seventh Semester B.E. Degree Examination, Dec.2023/Jan.2024
Blockchain Technology

Time: 3 hrs.   Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1   a. With a neat diagram, explain the generic elements of a block and block chain.   **(10 Marks)**
    b. Describe the features of block chain. Also state and explain benefits and limitations of block chain.   **(10 Marks)**

OR

2   a. Explain the following:
        i)   CAP Theorem
        ii)   Consensus Mechanism.   **(10 Marks)**
    b. Write a short notes on the following terms:
        i)   Smart contract
        ii)   Consensus
        iii) Hashcash
        iv)   Shared ledger.   **(10 Marks)**

Module-2

3   a. Explain in detail about symmetric cryptography describing stream and block ciphers.   **(10 Marks)**
    b. Explain in detail about RSA encryption and decryption algorithm with an example.   **(10 Marks)**

OR

4   a. Explain in detail about Keccak algorithm also specify how it is different from SHA-2.   **(10 Marks)**
    b. Explain in detail about Elliptic Curve Digital Signatures Algorithm (ECDSA).   **(10 Marks)**

Module-3

5   a. Give the generic structure of a block and block header and explain them briefly.   **(10 Marks)**
    b. Describe various types of block chain transactions in detail.   **(10 Marks)**

OR

6   a. Write a short note on Zcash along with trading and mining process.   **(10 Marks)**
    b. Write a short note on: i) PoW   ii) PoS   iii) PoD   iv) PoA.   **(10 Marks)**

Module-4

7   a. Explain in detail about Ricardian contract with the help of the model diagram (BowTie).   **(10 Marks)**
    b. Explain in detail about the Ethereum Block chain structure.   **(10 Marks)**

<p style="text-align:center">**OR**</p>

8 a. Explain in detail about various components of Ethereum eco system including Ethereum Virtual Machine (EVM). **(08 Marks)**

b. Write a short note on precompiled/native contracts, specified in Ethereum Byzantium release. **(12 Marks)**

<p style="text-align:center">**Module-5**</p>

9 a. Explain in detail about kadena block chain along with its consensus mechanism. **(10 Marks)**

b. Explain in detail about Stellar. **(10 Marks)**

<p style="text-align:center">**OR**</p>

10 a. Define IoT. Explain the 5-layer IoT model and block chain based IoT model. **(10 Marks)**

b. Explain in detail about how block chain used in health sector with examples. **(10 Marks)**

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