Code : 105812

B.Tech 8th Semester Exam., 2022

(New Course)

BLOCKCHAIN

Time : 3 hours *Full Marks* : 70

Instructions :

(i) The marks are indicated in the right-hand margin.

(ii) There are ***NINE*** *questions in this paper.*

(iii) Attempt ***FIVE*** *questions in all.*

(iv) Question No. ***1*** *is compulsory.*

1. Choose the correct answer (any seven) : 2×7=14

(a) What is a blockchain?

(i) Centralized digital ledger consisting of records called blocks

(ii) Decentralized, distributed, digital ledger consisting of records called blocks

(iii) Digital database consisting of records called class

(iv) Chain of laptops

(b) Which is not a part of asymmetric encryption?

(i) Mining

(ii) Confusion and diffusion

(iii) Public key

(iv) Private key

(c) P2P stands for

(i) peer-to-peer

(ii) peer-to-private

(iii) peer-to-public

(iv) peer-to-public/private

(d) Bitcoin is created by

(i) Saifedean Ammous

(ii) Satoshi Nakamoto

(iii) Vitalik Buterin

(iv) None of them

(e) Fork in blockchain means

(i) a child process

(ii) a background script

(iii) a split

(iv) None of the above

(f) A node in blockchain environment is

(i) a type of cryptocurrency

(ii) a blockchain

(iii) a computer on a blockchain network

(iv) an exchange

(g) A cryptocurrency is stored in

(i) bank account

(ii) floppy disk

(iii) wallet

(iv) your pocket

(h) A miner is

(i) a type of blockchain

(ii) a computer program that validates and process blockchain transactions

(iii) a fast calculator

(iv) an algorithm with high complexity

(i) What is a genesis block?

(i) The first block

(ii) The last block

(iii) The most valued block

(iv) Block just created after the fork

(j) _____ characteristic makes blockchain tamper-proof.

(i) Cryptocurrency

(ii) VPN

(iii) Immutability

(iv) All of the above

2. (a) What is encryption? What is its role in blockchain? 7

(b) Name two consensus algorithms, and explain their work in brief. 7

3. Explain the following components in blockchain architecture : 3½×4=14

(a) Node

(b) Chain

(c) Miner

(d) Transaction

4. Explain, with the help of neat diagrams pertaining to the flow of information, how you can design an online voting paradigm using blockchain architecture. 14

5. A hash tree, also known as a Merkle tree, is a tree in which each leaf node is labelled with the cryptographic hash of a data block. In the context of the Merkle trees, answer the following questions : 7+7=14

(a) Where is Merkle tree used in blockchain?

(b) Why are Merkle trees ideal for blockchain?

6. (a) Define blockchain ledger with its properties. 7

(b) Explain how a blockchain ledger is different from an ordinary one. 7

7. Explain what are smart contracts and why they are advantageous. 14

8. With the help of well-labelled diagram, explain what is a 51% attack. 14

9. Write short notes on the following : 3½×4=14

(a) Proof of burn

(b) Mining pool *vs* Mining difficulty

(c) RAFT

(d) Supply-chain financing

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