BRAINWARE UNIVERSITY

Term End Examination 2025-2026
Programme – B.Sc.(ANCS)-Hons-2024
Course Name – Blockchain and Cryptocurrency
Course Code - BNC40204
(Semester IV)

Full Marks : 60 **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A
(Multiple Choice Type Question) 1 x 15=15

1. *Choose the correct alternative from the following :*

(i) Who is considered the pseudonymous creator of Bitcoin and blockchain?
a) Nick Szabo b) Wei Dai
c) Satoshi Nakamoto d) Adam Back

(ii) How does a Merkle Tree help improve blockchain efficiency?
a) By reducing mining difficulty b) By allowing verification of a transaction without downloading all transactions
c) By eliminating the need for consensus d) By increasing transaction speed

(iii) What is the purpose of a hash function in cryptocurrency systems?
a) To encrypt messages b) To generate private keys
c) To ensure data integrity d) To compress data

(iv) Identify the primary purpose of a Blockchain class.
a) Store user data b) Manage blocks and ensure chain integrity
c) Create databases d) Handle networking

(v) Identify the meaning of blockchain validation.
a) Adding new blocks b) Checking block hashes and links
c) Encrypting transactions d) Broadcasting data

(vi) Identify the main purpose of chain validation.
a) Increase block size b) Detect tampering in blocks
c) Speed up transactions d) Store private keys

(vii) Identify the meaning of test chain validation.
a) Adding blocks to blockchain b) Checking hash and previous hash consistency
c) Broadcasting blocks d) Creating wallets

(viii) Identify the meaning of Blockchain API.
a) A consensus rule b) A user interface

c) A set of endpoints to interact with blockchain d) A cryptographic hash

(ix) Identify the meaning of blockchain synchronization across peers.

a) Encrypting blocks b) Sharing the latest blockchain state among nodes

c) Mining new blocks d) Creating wallets

(x) Choose the correct definition of Proof of Work in blockchain.

a) A consensus mechanism requiring computation b) A data storage method

c) A hashing algorithm d) A wallet type

(xi) Choose the relationship between nonce and hash.

a) Nonce encrypts hash b) Nonce helps generate a valid hash

c) Hash generates nonce d) They are unrelated

(xii) Choose the correct relationship between wallet and keys.

a) Wallet replaces blockchain b) Wallet stores keys

c) Wallet validates blocks d) Wallet creates consensus

(xiii) Choose the correct statement about digital signatures.

a) Created using public key b) Created using private key

c) Replace hashing d) Replace wallets

(xiv) Choose the correct flow of a blockchain transaction.

a) Address → Key → Block b) Key → Wallet → Node

c) Sign → Broadcast → Confirm d) Mine → Store → Encrypt

(xv) What is coinbase transaction?

a) User transaction b) First transaction rewarding miner

c) Invalid transaction d) Wallet transfer

Group-B

(Short Answer Type Questions) 3 x 5=15

2. What do you mean by immutability in blockchain? (3)
3. Define SHA-256 briefly in respect of cryptocurrencies . (3)
4. Discuss some tools for testing blockchain. (3)
5. Illustrate about blockchain API and its usability. (3)
6. Analyze the role of P2P connection in Blockchain ecosystem. (3)

OR

Illustrate about WebSocket server and its applications in blockchain. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. What are the components of a genesis block? (5)
8. Discuss the key testing areas of a blockchain. (5)
9. Analyze the working principle of WebSocket server. (5)
10. Identify the key aspects of POST transactions. (5)
11. Analyze how to manage the transaction pool (mempool). (5)
12. Catagorize the different types of cryptocurrencies. (5)

OR

Explain the features of cryptography. (5)

****