PRESIDENCY UNIVERSITY
BENGALURU

SET B

SCHOOL OF MANAGEMENT
END TERM EXAMINATION – MAY / JUNE 2024

Semester: Semester IV - 2022
Course Code: COM3026
Course Name: Concept of Block chain
Program: BBA

Date: June 12, 2024
Time: 09.30am to 12.30pm
Max Marks: 100
Weightage: 50%

Instructions:
(i) Read all questions carefully and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and non-programmable calculator are permitted.
(iv) Do not write any information on the question paper other than Roll Number.

PART - A

ANSWER ANY 5 QUESTIONS   **5 X 2 = 10M**

1. What is 'Hash' in Block Chain?

(CO1) [Knowledge]

2. What is blockchain scalability, and why is it important?

(CO2) [Knowledge]

3. What are BlockChain Oracles?

(CO3) [Knowledge]

4. Write notes on process of ICO.

(CO4) [Knowledge]

5. Write notes on Ethereum Virtual Machine.

(CO5) [Knowledge]

6. What is Fiat Currency?

(CO1) [Knowledge]

7. What is the operation of Bitcoin in blockchain technology?

(CO2) [Knowledge]

PART - B

ANSWER ANY 5 QUESTIONS   **5 X 10 = 50M**

8. What challenges might arise in managing the scalability and performance of blockchain networks as the number of nodes grows?

(CO1) [Comprehension]

9. Compare and contrast different consensus mechanisms such as Proof of Work (PoW), Proof of Stake (PoS), Byzantine Fault Tolerance (BFT), Proof of Authority (PoA), and Proof of Elapsed Time (PoET).

(CO2) [Comprehension]

10. What are the implications of using blockchain oracles in a futures smart contract for accessing real-world data?

(CO3) [Comprehension]

11. How can Ethereum-based solutions cater to the needs of enterprises that require privacy and regulatory compliance?

(CO4) [Comprehension]

12. How to develop smart contracts to interact with the hosted frontend, enabling decentralized applications (dApps) to query data, execute transactions, and interact with the Ethereum blockchain.

(CO5) [Comprehension]

13. What are the distinguishing features of blockchain technology, and how do they address the limitations of traditional centralized systems?

(CO1) [Comprehension]

14. In a blockchain network where multiple consensus mechanisms coexist, how can interoperability and consensus be ensured across different nodes with varying validation protocols, and what are the implications for network security and scalability?

(CO2) [Comprehension]

PART - C

ANSWER ANY 2 QUESTIONS   2 X 20 = 40M

15. Company X, a multinational corporation specializing in consumer electronics, faces challenges in tracking and authenticating products throughout its complex supply chain. Counterfeit goods, supply chain inefficiencies, and opaque sourcing practices pose risks to brand reputation and consumer trust. To address these issues, Company X decides to integrate blockchain technology into its supply chain management system.

Although Company X is not utilizing the Bitcoin blockchain, understanding its operation provides valuable insights into blockchain fundamentals. Similar to Bitcoin, Company X's blockchain operates as a decentralized ledger where transactions (e.g., product movements, transfers of ownership) are recorded in blocks. Miners validate transactions through computational puzzles (Proof of Work) to add blocks to the chain,

1) In this Scenario explain how adoption of block chain will ensure consensus and security?

2) How company can overcome its supply chain issues?

(CO1) [Application]

16. Hyperledger Fabric is an open-source enterprise-grade permissioned blockchain platform, designed for developing decentralized applications with a modular architecture. One of the key features of Hyperledger Fabric is its Byzantine Fault Tolerant (BFT) consensus mechanism, which ensures the integrity and security of transactions even in the presence of malicious nodes.

In Hyperledger Fabric's BFT consensus mechanism, transactions are endorsed by a subset of nodes known as endorsers, which are typically chosen based on policies defined by the network administrators. These endorsers execute transactions and cryptographically sign them to indicate their validity. Once a transaction is endorsed by a sufficient number of endorsers, it is submitted to the ordering service.

i) Explain how this platform will bring scalability and ensure credibility in the block chain environment?

ii) By utilizing Byzantine Fault Tolerance, How Hyperledger Fabric provides a robust and resilient framework for entire enterprise blockchain applications?

(CO2) [Application]

17. "By leveraging Web3j, blockchain oracles, and sound supply chain principles, the project demonstrates the viability of decentralized futures trading on the Ethereum blockchain. Through strategic network design, data-driven optimization, and seamless integration of external data sources, the smart contract facilitates transparent and efficient trading while mitigating operational risks".

1) Comment on the above statement

2) How BLockchain along with smart contract integrations provides users on real time security and trust in various operations?

(CO3) [Application]