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22CAP319BN

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MCA DEGREE EXAMINATION MAY 2025
(Third Semester)

Branch- **COMPUTER APPLICATION**

MAJOR ELECTIVE COURSE- II: BLOCK CHAIN TECHNOLOGY

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	In Cryptocurrency systems, public keys are used as: _____ a) Transaction records b) Blockchain nodes c) User identities d) Cryptographic keys for decryption	K1	CO3
	2	A digital signature ensures which of the following? a) Transaction anonymity b) Data authenticity and integrity c) Faster transaction speed d) Public key encryption	K2	CO3
2	3	What is the key feature of a decentralized system in blockchain technology? a) Control is held by a single central authority b) Transactions are slow and costly c) All nodes are anonymous but central d) Control is distributed among multiple nodes	K1	CO1
	4	Which of the following is a risk of using online crypto currency wallets? a) High level of privacy b) Reduced exposure to hackers c) Higher security compared to offline wallets d) Vulnerability to hacking or theft	K2	CO5
3	5	What is the purpose of a Bitcoin script in a transaction? a) To store personal information b) To execute and validate transaction conditions c) To track the transaction history d) To encrypt transaction details	K1	CO2
	6	Which of the following components is NOT a part of Bitcoin block? a) Transaction fees b) Block header c) Merkle root d) List of transactions	K2	CO1
4	7	What consensus algorithm is primarily used in Bitcoin? a) Proof of Stake b) Delegated Proof of Stake c) Byzantine Fault Tolerance d) Proof of Work	K1	CO5
	8	How do governments typically view Bitcoin? a) As a form of legal tender b) As a globally accepted and regulated currency c) As a tool for government backed financial transactions d) With mixed views, sometimes as a potential thread to financial systems	K2	CO5
5	9	What is Merge Mining? a) Combining different consensus algorithm in one mining operation b) Merge blockchain data from multiple cryptocurrencies c) Using quantum computing to mine cryptocurrencies d) Mining Bitcoin and Altcoins simultaneously using the same proof-of-work	K1	CO3

Cont....

5	10	How Bitcoin-backed Altcoins are typically backed? a) By holding Bitcoin reserves in proportion to the issued Altcoins b) By using a different proof –of-work algorithm than Bitcoin c) By staking Ethereum in smart contracts d) By pegging to a fiat currency like USD	K2	CO4

SECTION - B (35 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	How does blockchain and cryptocurrencies address the challenges associated with online credit card?	K3	CO3
		(OR)		
	11.b.	How does public keys function as identities in a decentralized system like blockchain? Discuss.		
2	12.a.	Examine the concept of Decentralization in Block chain technology.	K4	CO4
		(OR)		
	12.b.	Analyze the use of techniques like Shamir's Secret Sharing in blockchain key management.		
3	13.a.	Discuss the role of the Merkle tree in organizing transactions within a Bitcoin block.	K3	CO3
		(OR)		
	13.b.	Demonstrate the limitations and proposed improvements to Bitcoin's protocol.		
4	14.a.	Explain the concept of Anonymity in Bitcoin.	K2	CO1
		(OR)		
	14.b.	Outline the concept of Consensus in Bitcoin.		
5	15.a.	Explain the key limitations of Bitcoin that led to the creation of Altcoins.	K4	CO2
		(OR)		
	15.b.	Compare and contrast the technical differences between Litecoin, Ripple and Monero.		

SECTION -C (30 Marks)

Answer **ANY THREE** questions

ALL questions carry **EQUAL** Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Compare the process of online credit card payments with cryptocurrency transactions.	K4	CO3
2	17	Analyze the limitations of Proof of Work in terms of scalability and energy consumption.	K4	CO4
3	18	Examine the ecological consequences of Bitcoin mining and its impact on energy consumption.	K4	CO4
4	19	Discuss the potential risks associated with using Bitcoin Mixers.	K5	CO4
5	20	Evaluate the impact of Ethereum smart contracts on Decentralized Finance (DeFi).	K5	CO5

Z-Z-Z END