Reg. No. : | | | | | | | | | | | | |

Question Paper Code: U8406

B.E./B.Tech. DEGREE EXAMINATION, APRIL / MAY 2025

Professional Elective

21ITV406- CRYPTOCURRENCY AND BLOCKCHAIN TECHNOLOGIES

(Common to IT,CSE,AIDS & CSD & CSE(AIML) Engineering branches)

(Regulations 2021)

Duration: Three hours | Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1.	Define Block chain.	CO1- U
2.	Apply the longest chain rule scenario to add the Transaction T1 in the block of nodes in block chain	CO2- App
3.	Differentiate between coins and Tokens	CO1- U
4.	Apply the postfix notation for the expression (25*10+50)	CO2- App
5.	Summarize the main differences between Proof of Work (PoW) and Proof of Stake (PoS) consensus mechanisms.	CO1- U
6.	Apply a comparative analysis of Bitcoin's Proof of Work and Proof of Stake in terms of security and energy efficiency.	CO2- App
7.	What is the primary function of Chain code in Hyper ledger Fabric v1.1, and how does it relate to smart contracts?	CO1- U
8.	You are tasked with developing a smart contract on Hyper ledger Fabric. How would you create and deploy Chain code in a Fabric network?	CO2- App
9.	Describe the process of creating an NFT using blockchain technology.	CO1- U
10.	Apply the impact of blockchain technology on logistics and supply chain operations in terms of efficiency and transparency.	CO2- App

PART – B (5 x 16= 80 Marks)

11.	(a)	Apply Hash function in various image resistance and collision resistance algorithm	CO2-App	(16)

Or

	(b)	Apply SHA-256 Algorithm to compute the preceding nodes of a,b,c,d,e,f,g and h.	CO2-App	(16)
12.	(a)	Explain how a basic cryptocurrency is created and maintained.	CO 1- U	(16)
		Or		
	(b)	Explain and Compare Bitcoin Scripts with FORTH and highlight their similarities and differences.	CO 1- U	(16)
13.	(a)	Apply the idea of Proof of Burn (PoB) to improve the efficiency of a blockchain network. What are the possible challenges and benefits in comparison to Proof of Work?	CO2–App	(16)
		Or		
	(b)	Apply the permissioned blockchain model to a business that needs privacy and control over participants. What would be the advantages and challenges of using such a model compared to a public blockchain?	CO2–App	(16)
14.	(a)	Describe the architecture of Hyperledger Fabric v1.1, and explain how each of its components (peers, orderers, and Chaincode) facilitates the operation of permissioned blockchains.	CO1 - U	(16)
		Or		
	(b)	Define Gas in the Ethereum network. Discuss its significance in transaction processing, and how it relates to transaction fees, network scalability, and incentivization.	CO1 - U	(16)
15.	(a)	Discuss the significance of NFTs in digital asset ownership and copyright protection. How does blockchain ensure authenticity and security?	CO1-U	(16)
		Or		
	(b)	Explain in detail about the impact of blockchain technology on financial services, particularly in banking and insurance. How does it reduce fraud and increase efficiency?	CO1-U	(16)