Register Number:……..

KUMARAGURU
college of technology
character is life

B.E DEGREE EXAMINATIONS: NOV/DEC 2024

(Regulation 2018)

Seventh Semester

INFORMATION SCIENCE AND ENGINEERING

U18ISE0011: Blockchain Technology

COURSE OUTCOMES

CO1: Understand foundational concepts of blockchain and how cryptography is applied.
CO2: Understand the basic concepts of bitcoin and how it works in practice.
CO3: Comprehend the crucial role of mining in bitcoin and analyze ways to improve its anonymity
CO4: Design, code, deploy and execute a smart contract.
CO5: Trace the evolution of Hyperledger fabric services and the broader blockchain ecosystem.

Time: Three Hours **Maximum Marks: 100**

1.	List the consensus protocol used in blockchain technology.	CO1	[K_1]
2.	How does Ethereum differ from Bitcoin in terms of blockchain functionality.	CO1	[K_2]
3.	Recall the role of hash functions in blockchain.	CO2	[K_1]
4.	Outline the functionalities of Ethereum Virtual Machine (EVM).	CO2	[K_2]
5.	Outline how Bitcoin mixing services help to enhance transaction privacy.	CO3	[K_2]
6.	Define the terms Zerocoin and Zerocash.	CO3	[K_2]
7.	Identify the purpose for smart contract in blockchain technology.	CO4	[K_3]
8.	Mention the datatypes used in solidity.	CO4	[K_2]
9.	Differentiate between permissioned blockchain and permissionless blockchain.	CO5	[K_2]
10.	List the advantages of IPFS.	CO5	[K_1]

Answer any FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

11.	a)	Differentiate between Hard fork and Soft fork within an examples	8	CO1	[K_2]
	b)	Explain the role of public-key cryptography, hashing and digital signatures to secure transactions in a blockchain.	8	CO1	[K_2]
12.		Illustrate the process of key splitting and sharing in secure access control within distributed systems.	8	CO2	[K_2]
		Describe the Bitcoin Escrow transaction and Micro payment in the Blockchain	8	CO2	[K_2]

13.		Explain the reward distribution methods used in mining pools and their effects on miners.	16	CO3	[K_2]
14.	a)	Demonstrate the impact of mining hardware evolution on Bitcoin mining efficiency and network security.	8	CO3	[K_2]
	b)	Compare decentralized mixing protocols with traditional centralized mixing services in terms of privacy, security, and trust.	8	CO3	[K_4]
15.	a)	Create a "Greeter" smart contract in Solidity with following requirements o The contract should allow a user to set a greeting message. o Provide a function to retrieve the greeting. o Include an "owner-only" restriction, so only the contract owner can change the greeting.	8	CO4	[K_3]
	b)	Explain how time-based conditions can be enforced in a smart contract with an example for smart contract.	8	CO4	[K_3]
16.	a)	Describe the architecture of Decentralized Applications (Dapps) with a focus on the role of blockchain servers and Ethereum APIs.	8	CO5	[K_2]
	b)	Compare and contrast Hyperledger Fabric and Ethereum.	8	CO5	[K_2]

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