Register Number:……..

KUMARAGURU
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B.E DEGREE EXAMINATIONS: NOVEMBER 2024

(Regulation 2018)

Fifth / Seventh Semester

COMPUTER SCIENCE AND ENGINEERING

U18CSE0012**:** Blockchain Technology and Applications

COURSE OUTCOMES

CO1: Understand emerging abstract models for Blockchain Technology.

CO2: Discover the secure and efficient transactions with crypto-currencies.

CO3: Experiment with cryptocurrency trading and crypto exchanges.

CO4: Develop private blockchain environment and develop a smart contract on Ethereum.

CO5: Build the Hyperledger architecture and the consensus mechanism applied in the Hyperledger.

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

Answer all the Questions:-
PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)

1.	Compare centralized, decentralized and distributed System.	CO1	[K_2]
2.	Compare permissioned and permissionless blockchain.	CO1	[K_2]
3.	Outline the properties of cryptographic hash functions.	CO2	[K_2]
4.	How is the double spending attack handled in Bitcoin?	CO2	[K_2]
5.	Outline the steps involved in payment services used in Bitcoin.	CO3	[K_2]
6.	Explain the role of online wallets and cryptoexchanges.	CO3	[K_2]
7.	List the steps to deploy smart contract using Remix IDE.	CO4	[K_2]
8.	Describe the components of Ethereum Eco System.	CO4	[K_2]
9.	Explain the purpose of Hashgraph.	CO5	[K_2]
10.	Demonstrate how blockchain transforms supply chain management.	CO1	[K_3]

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

11.	a)	Compare the characteristics of PoW, PoS, and BFT consensus algorithms.	(8)	CO1	[K_2]
	b)	Illustrate the structure of block and blockheader.	(8)	CO1	[K_2]

12.	a)	Demonstrate how the digital signature is used in bitcoin.	(8)	CO2	[K_2]
	b)	Consider a block having 4 transactions- T1, T2, T3, T4. Construct Merkle tree by including these transactions. Also, demonstrate how Merkle tree provides proof of membership.	(8)	CO2	[K_3]
13.	a)	Demonstrate how the keys are shared in Bitcoin.	(8)	CO3	[K_2]
	b)	Illustrate the Bitcoin network with an example.	(8)	CO3	[K_2]
14.	a)	Show the purpose of Solidity programming constructs, including mapping, payable functions, and contracts, by applying an example.	(8)	CO4	[K_3]
	b)	Develop a smart contract to implement simple cryptocurrency transaction.	(8)	CO4	[K_4]
15.	a)	Illustrate the architecture of Hyperledger Composer framework.	(8)	CO5	[K_2]
	b)	Demonstrate the role of IPFS in decentralized file storage and retrieval systems.	(8)	CO5	[K_2]
16.	a)	Demonstrate the DApp application stack.	(8)	CO1	[K_2]
	b)	Compare the characteristics of Bitcoin, Ethereum and Hyperledger framework.	(8)	CO5	[K_4]

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