Name: Enrolment No:	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
Supplementary Examination, MAY 2023

Course: **Crypto Currency**	**Semester:** **3rd**
Program: **B. Tech. (CSE) Blockchain**	**Time:** **03 hrs.**
Course Code: **CSBL 2002**	**Max. Marks: 100**

Instructions: (i) Exam is Close Book, (ii) Exchange of mobile phone, calculator or any other item is not allowed, (iii) Start answers to a new question on a fresh page, (iv) All parts of a question should be answered together and (v) Scattered part answers will not be evaluated.

SECTION A

S. No.		Marks	CO
Q 1	What are the basic crypto primitives, and how can they be used to ensure information security? How can public and private keys be used to encrypt and decrypt information? What are the steps involved in creating and verifying a digital signature?	4	CO1
Q 2	Analyze the use of tokens as a funding mechanism and the challenges associated with the regulation and governance of ICOs. Critically examine the rise of security tokens and their potential to disrupt traditional finance.	4	CO2
Q 3	Consider the issue of anonymity in cryptocurrency transactions. Evaluate the pros and cons of using mixing and altcoins as solutions for preserving anonymity, and propose alternative approaches that could be used to address this issue.	4	CO5
Q 4	What is the period of a stream cipher with a key stream of 100 bits that is repeated every 20 bits?	4	CO3
Q 5	If a substitution cipher uses a monoalphabetic key where each letter of the alphabet is mapped to a unique letter in the ciphertext alphabet, how many possible keys are there?	4	CO4

SECTION B

Q 6	What are the emerging trends and technologies in information security, and how are they impacting the field? How can one anticipate and respond to new threats and challenges in information security? What are the implications of information security for businesses, governments, and individuals, and how can they be addressed?	10	CO2
Q 7	What are the key trade-offs and considerations involved in designing and implementing a Bitcoin-based system? How can one evaluate the security and efficiency of different Bitcoin implementations, and what are the key factors to consider when selecting a Bitcoin system?	10	CO1

	What are the potential risks and rewards associated with Bitcoin, and how can one assess them?		
Q 8	How are tokens being used as a funding mechanism, and what are some of the benefits and risks associated with this approach? What is the ICO phenomenon, and how have ICOs disrupted traditional fundraising models? How are security tokens different from other types of tokens, and what are the implications for investors and issuers?	10	CO3 & CO4
Q 9	In the context of the ongoing Bitcoin block size war, what are the main arguments for and against increasing the block size, and how do these arguments relate to the overall goal of scaling the Bitcoin network? OR Design a new cryptocurrency scaling solution that leverages both sidechains and sharding-layer 2 approaches, and explain how it could improve upon existing scaling solutions.	10	CO4 & CO5
	SECTION-C		
Q 10	What is the significance of Bitcoin, and how has it impacted the financial industry? What are some of the key applications and security considerations for Bitcoin? What are the main mechanics and optimizations of Bitcoin, and how do they work together to ensure security and efficiency? OR What are altcoins, and how do they differ from Bitcoin and other cryptocurrencies? What are sidechains and merge mining, and how do they enhance the functionality and security of the cryptocurrency ecosystem? What is Ethereum, and how does it relate to Bitcoin 2.0?	20	CO3 & CO5
Q11	A. Evaluate the concept of crypto economics in the context of cryptocurrency networks. Analyze how the use of tokens as incentives affects the behavior of network participants and the overall health of the network. Critically evaluate the impact of crypto economics on the sustainability and scalability of cryptocurrency networks. B. Explain the concept of cryptocurrency mechanism design and its relevance to rethinking the traditional firm. Evaluate the benefits and drawbacks of using blockchain technology and tokens to enable decentralized decision making and incentivization. Analyze the role of mining and non-fungible tokens in the mechanism design of cryptocurrency networks.	20	CO1,CO2 & CO4