UPES
UNIVERSITY OF TOMORROW

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2023

Course: Introduction to Blockchain   **Semester: V**
Program: B.Tech. CSE (Minor)   **Time : 03 hrs.**
Course Code: GBC01SG028   **Max. Marks: 100**

Instructions: Attempt all Questions.

	SECTION A (5Qx4M=20Marks)		
S. No.		Marks	CO
Q 1	How the blocks mined at the same time are added to the "bitcoin" blockchain?	4	CO1
Q2	Specify the purpose of a Distributed Ledger with an example?	4	CO1
Q3	Differentiate between permissioned vs. permissionless Blockchains?	2+2=4	CO1
Q4	List out any four limitations of blockchain.	4	CO2
Q5	Explain the basic design primitives necessary for a blockchain?	4	CO3
	SECTION B (4Qx10M= 40 Marks)		
Q6	How the consensus is achieved in most of the blockchains? Exemplify any 4 consensus mechanisms in detail.	5+5=10	CO1
Q7	Explain the various components of a Blockchain architecture?	10	CO1
Q8	What are Hyperledger and Chaincode? Explain in brief, any one project under Hyperledger Foundation.	10	CO2
Q9	Explain the importance of smart contracts in blockchain? Discuss any two applications where smart contracts can be used with examples. **OR** Name any three languages in which one can write a chain code for Hyperledger Fabric. How one can start, close, and create a new channel in Hyperledger Fabric?	10	CO3

		SECTION-C (2Qx20M=40 Marks)		
Q10	a) What are the essential components to develop blockchain for a supply chain management system? b) Design and explain the necessary components to create a new cryptocurrency.		**10+10**	**CO2**
Q11	a) Mention the various use cases where a blockchain can be developed for Government sectors and explain any one of them in detail? b) Explain the steps involved in the process of record keeping between Government entities using a blockchain? **OR** a) Discuss any 5 applications other than cryptocurrency where blockchain can be used. b) Explain the role of smart contracts in the above-mentioned applications. Design smart contracts for any one application for various stakeholders.		**10+10**	**CO3**