


<b>Name:</b> <b>Enrolment No:</b>			
<b>UPES</b> <b>End Semester Examination, May 2024</b>			
<b>Course: Emerging Areas in Blockchain</b> <b>Program: BT-CSE-BT-H/NH</b> <b>Course Code: CSBL3011</b>		<b>Semester : VI</b> <b>Time : 03 hrs.</b> <b>Max. Marks: 100</b>	
<b>Instructions:</b> Please provide succinct responses and include a clearly labeled diagram where necessary.			
<b>SECTION A</b> <b>(5Qx4M=20Marks)</b>			
S. No.		Marks	CO
Q1	Optimistic rollups does not request for a proof. Then why they are secure.	4	CO1
Q2	<b>Which of the following statements about consensus mechanisms in blockchains is CORRECT?</b> (a) PoW and PoS are both suitable for high-throughput public blockchains, but BFT is ideal for private blockchains with limited participants. (b) BFT offers the strongest security guarantees but requires significant computational resources from validators. (c) PoS consumes less energy than PoW, but requires users to lock up a significant amount of cryptocurrency. (d) All of the above statements are true.	2+2	CO5
	<b>Which of the following statements is MOST ACCURATE about rollup systems in blockchains?</b> (a) Rollups always offer complete anonymity for transactions processed off-chain. (b) Rollups are a completely separate blockchain technology and don't interact with existing blockchains. (c) Rollups can significantly increase transaction fees on the main blockchain. (d) Rollups process transactions off-chain but leverage the security of the main blockchain for final settlement.		
Q3	(a) Rollups are a potential alternative to existing consensus mechanisms like Proof of Work (PoW) and Proof of Stake (PoS). <b>True/False</b>	2+2	CO5

	(b) BFT consensus mechanisms can guarantee complete fault tolerance in a blockchain network, meaning no errors or inconsistencies will ever occur. <b>True/False</b>		
Q4	Name 4 areas where blockchain can help in Govt. Sectors.	<b>4</b>	<b>CO6</b>
Q5	Describe 4 ways how blockchain can help farmers and prevent farmer protest in India.	<b>4</b>	<b>CO6</b>
<b>SECTION B</b> <b>(4Qx10M= 40 Marks)</b>			
Q6	Discuss PoW class of algorithms are used in permission less blockchain where as BFT protocol used in permissioned setting in lights of scalability and transaction throughput.	<b>5+5</b>	<b>CO3</b>
Q7	Describe how blockchain can help IoT devices of autonomous systems to provide a secure and scalable solution.	<b>10</b>	<b>CO3</b>
Q8	Describe how blockchain can be used in managing Tax Payments and Land Registry Records.	<b>10</b>	<b>CO4</b>
Q9	Describe blockchain technology in Insurance Industry. OR Describe how blockchain technology could help in COVID-19 situation.	<b>10</b>	<b>CO2</b>
<b>SECTION-C</b> <b>(2Qx20M=40 Marks)</b>			
Q10	Describe blockchain scaling solution using Rollup systems using an example of DiFi. i. Wallet management. ii. Rollup's connects to the main main chain. iii. Role of SNARK proofs. iv. Types: Optimistic and ZK rollups. v. Communication of different rollups.	<b>20</b>	<b>CO1</b>
Q11	Describe two use cases of blockchain in supply chain. OR Write a short note on Decentralized Identity. Describe how Hyperledger Indy can be used to manage digital identity.	<b>10+10</b> <b>OR</b> <b>5+15</b>	<b>CO2</b>