

Department of Computer Science and Engineering -SVNIT, Surat
Mid Semester Examinations, September 2022
B Tech IV(CSE) - Semester VII
Course: Blockchain Technology (CS467)

[U19CS012]

Date : 27-Sep-2022

Time :2:00 PM - 3:30 PM

Marks: 30

Instructions: 1. Answer all questions. 2. Figures to the right indicate max. marks.

Q.1	<p>a) List and discuss role of Cryptographic Security primitives used in Blockchain?</p> <p>b) Answer the following (Any three)</p> <ol style="list-style-type: none"> 1. Explain Bitcoin difficulty adjustment. 2. How crypto-currencies are different than Fiat currencies? 3. Give your comments on Bitcoin energy usage. 4. Discuss Forks in blockchain. 5. List design properties of Blockchain and their technology implications. 	<p>[4]</p> <p>[6]</p>
Q.2	<p>a) Answer the following (Choose only one correct answer out of A,B,C,D)</p> <ol style="list-style-type: none"> 1. What is genesis block? <ul style="list-style-type: none"> A. The first transaction of a blockchain B. The first block of a blockchain C. The last block of a blockchain D. A block created by Founder 2. What is the coinbase block reward for miners currently in Bitcoin blockchain. <ul style="list-style-type: none"> A. 6.25 BTC B. 12.5 BTC C. 25.00 BTC D. 50.00 BTC 3. Which of these fields is present in Bitcoin Blockchain summary? <ul style="list-style-type: none"> A. Gas limit B. Difficulty C. Private key of Sender D. None of the above 4. What is the smallest denomination of crypto-currency ether? <ul style="list-style-type: none"> A. Satoshi B. Wei C. Uni D. Luna <p>b) Answer in detail - <u>any two</u>.</p> <ol style="list-style-type: none"> 1. Discuss DeFi and NFT. 2. Compare Bitcoin and Ethereum – as currency, as blockchain, and transaction components. 3. What is Mining and what is Validation? Discuss Proof of Work and Proof of Stake. 	<p>[2]</p> <p>[8]</p>
Q.3	<p>a) Answer <u>any one</u> of the following</p> <ol style="list-style-type: none"> 1. For an elliptic curve $y^2 = x^3 + ax + b$, prove that Sum of the roots have to be equal to negative coefficient of x^2. 2. For an elliptic curve $E : y^2 = x^3 - 25x$ perform following operations <ul style="list-style-type: none"> i. For points $P = (x_1, y_1) = (0,0)$ and $Q = (x_2, y_2) = (-5,0)$, find $P + Q = (x_3, y_3)$ ii. For point $P = (x_1, y_1) = (-4,6)$, find $2P = (x_2, y_2)$ <p>b) Answer <u>any two</u>.</p> <ol style="list-style-type: none"> 1. Explain Merkle tree and its advantages in context of the Blockchain technology. 2. Explain properties of hash function. 3. Discuss smart contracts and their advantages. 	<p>[5]</p> <p>[5]</p>