

JK Lakshmipat University Jaipur
INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination, December 2024

B. Tech. (CSE), Semester V

Roll No.....

CS1203: Blockchain Technology and Applications

Time: 2.5 hours

Max. Marks: 30

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Mention all the assumptions for your answers clearly.

Q. 1.1	Consider the broad area of budgets and expense management in organizations small and large: governmental and nongovernmental agencies (NGOs), charities and disaster-relief agencies, and more. A significant issue is accountability. Is the allocated amount being spent on the designated item or service? Were the expected outcomes realized? Was the spending wasteful? Did the right people authorize it? Can you show the money trail in a disaster-relief effort? Is the process transparent? Are you able to collect the correct data for demonstrating the effectiveness of the effort? From your learnings on the course Blockchain can you explore some of these concerns and how they can be addressed by using smart contracts on an infrastructure enabled by the blockchain protocol.	3.0 (LO1)
Q. 1.2	What is double spending ? Is it possible to double spend in Blockchain systems?	2.0 (LO1,2)
Q. 1.3	DeFi and DApps are some of the important applications of Blockchain platform. Highlight the purpose and tools used to implement these applications. What do you infer from "Digital Rupee of India"?	3.0 (LO1,5)
Q. 1.4	What is the concept of nonce in mining ? Discuss different ways how miners may be rewarded in Blockchain. How proof of work (PoW) needs more computational power as compared to proof of stake (PoS)?	2.0 (LO1,3)
Q. 2.1	Questions based on Presentations:- a) How Initial Coin Offering (ICO) is different from Initial Public Offering (IPO)? b) With suitable example explain Multiparty Computation in Blockchain? c) How scalability is a big challenge in Blockchain and what are the ways to overcome those challenges? d) Differentiate between Fungible and Non-Fungible token? Is stable coin and token being same or different?	6.0 (LO4,5)
Q. 2.2	Demonstrate with the help of suitable example how public key, private key and hashing are used in Blockchain.	2.0 (LO1,2,3)
Q. 2.3	Compare between Bitcoin, Ethereum and Hyperledger.	2.0 (LO1,2,3)

Q. 3.1	Write a smart contract in Solidity -Consider an online ballot application. People vote to choose a proposal from a set of proposals. A chairperson registers the people who can vote, and only registered voters can vote (only once) on a proposal of their choice. The chairperson's vote is weighted twice (x2) as heavily as regular people's votes. The ballot process goes through four states (Init, Regs, Vote, Done), and the respective operations (initialize, register, vote, count votes) can be performed only in the corresponding states. A part of the code is mentioned below for you to work upon:- <pre> pragma solidity >=0.4.2 =<0.6.0; contract BallotV1 { struct Voter { uint weight; bool voted; uint vote; } struct Proposal { uint voteCount; } address chairperson; mapping(address => Voter) voters; Proposal[] proposals; enum Phase {Init, Regs, Vote, Done} Phase public state = Phase.Init; }</pre>	6.0 (LO2)
Q. 3.2	What are function modifiers in Solidity? Mention the most widely used modifiers.	2.0 (LO2)
Q 3.3	Elaborate different alternatives to test and deploy smart contracts.	2.0 (LO2,4)

all the best!