Blockchain and Cryptocurrencies

Question Bank

1. **What do you know about Blockchain? What is the difference between Bitcoin blockchain and Ethereum blockchain?**
2. **Why is Blockchain a trusted approach?**
3. **Blockchain is a distributed database. How does it differ from traditional databases?**
4. **What is encryption? What is its role in Blockchain?**
5. **What do you mean by blocks in blockchain technology? Why blocks are used rather than individual transactions? Is it possible to create chain of individual transaction? Explore.**
6. **What are Merkle trees? How important are Merkle trees in Blockchains?**
7. **What is a ledger? Is Blockchain an incorruptible ledger?**
8. **Describe the common type of ledgers that can be considered by users in Blockchain?**
9. **What is Double Spending? Is it possible to double spend in a Blockchain system?**
10. **Discuss the benefits and limitations of Blockchain technology.**
11. **How will you handle the risk management when it comes to securing the transactions records?**
12. Write down the RSA algorithm and explain with the suitable example and generate public and private key pair.
13. **Lets choose two primes: p=11 and q=3. Compute public and private keys.** Also, encrypt message M=5 with receiver's public key at sender side and decrypt the encrypted message at receiver side using receiver's private key.
14. What is public key cryptography? How is it more secure than symmetric key cryptography? Provide 3-3 examples of public and private key cryptography techniques.
15. What do you mean by hash function and hash value? How many Bytes of code generated using SHA-256 algorithm? Describe SHA-256 algorithm and explain with the suitable example.

Question Bank

1 Is it possible to modify the data once it is written in a block?
2 Is it possible in Blockchain to remove one or more block from the networks?
3 What are Block Identifiers?
4 Define Block Flooding?
5 What is consensus mechanism?
6 What are the types of consensus mechanism?
7 Name the scenarios where the consensus can be diffeicult?
8 What is Proof-of-Work?
9 What problems do Bitcoin miners solve?
10 Define permissionless Blockchain/
11 what are the pros and cons of mining pool?
12 What are Smart Contracts?
13 Do we really need to execute contracts at each node in a network?
14 What is State machine replication?
15 Can Smart Contracts Be Trusted? Justify your answer.
16 Where is raft consensus used?
17 Why do Bitcoin miners have to solve problems?
18 Why is proof of work needed for Blockchain and Bitcoin?
19 What is 51% attack?
20 What is crowdfunding in Blockchain?
21 Give the possible reasons why we need consensus mechanism more than "proof-of-work".
22 What is the role of miner in Blockchain?
23 What is distributed system consensus?
24 Do we need a miner in a Permissioned Blockchain?
25 Is Hyperledger a Permissioned Blockchain?
27 Which Blockchains support smart contracts?
28 Is Smart Contract safe?
29 How smart contracts are executed?
30 What is Proof of Elapsed Time Consensus?
31 How will you handle the risk management when it comes to securing the transactions records?
32 Exaplin Block Propoagation with an appropriate example.
33 How does Blockchain consensus work?
34 What is Double Spending? Is it possible to double spend in a Blockchain system?
35 How to solve double spending problem?
36 Examplain Distributed State Machine Replication?
37 How does raft algorithm work?
38 Explain lamport shostak pease algorithm with example.
39 Can you list some of the popular consensus algorithms? Why we need different consensus mechanisms?
40 Explain three phase commit protocol in blockchain technology

41 What is Bitcoin transaction? Explain how transactions are processed in bitcoin network
42 How does distributed consensus work? Why do we require consensus in Bitcoin Network? Exaplian with an
43 Demonstrate Proof of Work vs Proof of Stake with appropriate examples.
44 Explain various mining pool methods.

45 Explain PAXOS Consensus Algorithm?
46 Exaplain Practical Byzantine fault tolerance Model with an appropriate example.