

- (viii) How does blockchain improve supply chains?
 - (a) By automatically creating trade agreements between two parties
 - (b) By creating safe centralized marketplaces to trade goods on
 - (c) By stabilizing the national currencies of the countries involved
 - (d) By transferring tokenized ownership through a software system.
- (ix) How does blockchain technology benefit the insurance industry?
 - (a) By avoiding compliance requirements of national authorities, which reduces overhead
 - (b) By ensuring accuracy of data and automating micro insurances, which reduces costs
 - (c) By introducing flexible premiums to be paid by customers, which increases profits
 - (d) By setting up a digital mode of payment, which simplifies claims settlement.
- (x) What is an ICO in blockchain?
 - (a) An Initial Coin Offering, where new cryptocurrencies are sold to investors
 - (b) An International Cryptocurrency Organization, promoting blockchain adoption worldwide
 - (c) An Intercontinental Cryptocurrency Operation, facilitating cross-border payments using cryptocurrencies
 - (d) None of the above.

Fill in the blanks with the correct word

- (xi) The primary benefit of immutability is _____.
- (xii) _____ was the famous Bitcoin exchange from Japan.
- (xiii) The process of creating new bitcoins is known as _____.
- (xiv) IPFS stand for _____.
- (xv) _____ characteristic makes blockchain tamper-proof.

Group - B

- 2. (a) List the properties of a cryptographic hash function. [[CO1](List/LOCQ)]
 - (b) Explain how a node in a Blockchain network decides on which block to relay. [[CO2](Explain/LOCQ)]
 - (c) Describe the utility of the different components of a block hash. [[CO2](Describe/LOCQ)]
- 4 + 4 + 4 = 12**
- 3. (a) Reproduce the signature generation and signature verification steps of digital signature. [[CO1](Reproduce/LOCQ)]
 - (b) Describe the significance of Nonce in the following statement: $H_k = \text{Hash}(H_{k-1} || T || \text{Nonce})$. [[CO2](Describe/LOCQ)]
- 7 + 5 = 12**

Group - C

4. (a) Interpret the FLP impossibility theorem for asynchronous deterministic consensus. *[[CO3](Interpret/IOCQ)]*
(b) Examine the utility of proof of elapsed time as a consensus protocol? *[[CO3](Interpret/IOCQ)]*
(c) Demonstrate the Lamport Shostak Pease Algorithm with an example. *[[CO2](Demonstrate/IOCQ)]*
3 + 3 + 6 = 12
5. (a) Distinguish between proof of work and proof of stake. *[[CO3](Distinguish/IOCQ)]*
(b) Recall the different types of faults that may be encountered in distributed consensus. *[[CO3](Recall/LOCQ)]*
(c) Elucidate view change in Practical Byzantine Fault Tolerance. *[[CO3](Sketch/IOCQ)]*
6 + 3 + 3 = 12

Group - D

6. (a) What is an uncle block in an Ethereum block? How are rewards for uncle blocks calculated? *[[CO4](Examine/IOCQ)]*
(b) Distinguish between external account and contract account in an Ethereum blockchain. *[[CO4](Distinguish/IOCQ)]*
(c) Distinguish between the following Bitcoin scripts – provably unspendable output and anyone can spend. *[[CO4](Distinguish/IOCQ)]*
4 + 4 + 4 = 12
7. (a) Examine the transaction flooding mechanism in a Bitcoin network. *[[CO4](Examine/IOCQ)]*
(b) Illustrate the development workflow of smart contract programming. *[[CO4](Illustrate/IOCQ)]*
(c) Examine the double spending problem in a Bitcoin network and how it can be handled using Blockchain. *[[CO4](Examine/IOCQ)]*
5 + 5 + 2 = 12

Group - E

8. (a) Evaluate whether it would make sense to extend the scope of the Funds Transfer Regulation and/or the Cash Control Regulation as to include cryptocurrency transactions. *[[CO5](Evaluate/HOCQ)]*
(b) Compare the different types of wallet providers in a Bitcoin network. *[[CO5](Compare/IOCQ)]*
6 + 6 = 12
9. Design a blockchain leveraged post disaster relief allocation system over smartphone-based delay tolerant network, elaborating the network architecture, system architecture and flow of activities. *[[CO6](Design/HOCQ)]*
12

Cognition Level	LOCQ	IOCQ	HOCQ
Percentage distribution	28.13	53.12	18.75