

Instructions: All questions are compulsory. Use of non-programmable scientific calculator is allowed.

- Q.1**
- (a) What is Blockchain? How it differs from the Database technology. Discuss the role of SHA256 algorithm in Blockchain technology. (07)
- (b) Discuss different fields of Block in Blockchain technology in brief. (07)
- OR**
- (a) What is Mining in Blockchain? Explain the various steps involved in the mining process. (07)
- (b) List and explain different properties of hashing algorithms. (07)
- Q.2**
- (a) What is PoS? How does it differ from the PoW algorithm? Also, explain why the PoS algorithm is better than the PoW algorithm? (07)
- (b) What is Bitcoin? Discuss the monetary policy of Bitcoin. (07)
- OR**
- (a) Discuss the role of the TimeStamp field in the mining process of Blockchain technology. (07)
- (b) Explain the term Mempool in the context of Blockchain technology. (07)
- Q.3**
- (a) Discuss the Ethereum Blockchain and compare it with the Bitcoin blockchain. (07)
- (b) List and explain different types of nodes available in Ethereum. (07)
- OR**
- (a) List the problems that might occur if we allow programming in the Blockchain. How are all those problems solved in Ethereum? (07)
- (b) What is Forking in Blockchain? Explain the reason why a hard-fork occurs in the Blockchain of Bitcoin. (07)
- Q.4**
- (a) Discuss the program structure of a smart contract written in the Solidity language. Explain it by writing a small program. (07)
- (b) What is a constructor? Explain it with an example. (07)
- OR**
- (a) Discuss the compilation process of a Solidity program. (07)
- (b) Discuss setter and getter functions in the Solidity programming language. (07)
- Q.5 Define the following Terms (Any SEVEN):** (14)
- (1) HD Wallet
 - (2) SEGWIT
 - (3) Genesis block
 - (4) Immutable
 - (5) View
 - (6) Cold wallet
 - (7) Previous Hash
 - (8) EVM
 - (9) Smart Contract
 - (10) ABI
 - (11) Remix
 - (12) State variables