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| **P.V.P SIDDHARTHA INSTITUTE OF TECHNOLOGY** |
| **BRANCH : Computer Science & Engineering** | **REGULATION : PVP20** |
| **Course: B.Tech** | **SUBJECT : Blockchain Technology** |
| **SubjectCode:20CS4601C** | **Year and Semester: III -II** |
| **QUESTION BANK**  |

**UNIT I**

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| **Q. NO.** | **QUESTION** | **CO** | **LEVEL** |
| 1 | Outline the Generic Elements of a blockchain | CO1 | L2 |
| 2(a) | Explain about tiers of blockchain technology | CO1 | L2 |
| (b) | Explain various components of a blockchain architecture | CO1 | L2 |
| 3(a) | Outline the benefits and limitations of blockchain technology | CO1 | L2 |
| (b) | Compare blockchain 1.0 and blockchain 2.0 | CO1 | L2 |
| 4(a) | Classify the types of consensus used in blockchain | CO1 | L2 |
| (b) | Compare and Contrast permissioned or private distributed ledger technology with permissionless or open blockchain applications? | CO1 | L2 |
| 5 | Differentiate between permissioned versus permission less blockchain for a voting application | CO2 | L3 |
| 6 | Model structure of blockchain with a neat labelled diagram. And identify whether blockchain is an incorruptible ledger? | CO2 | L3 |
| 7(a) | Construct a Merkle tree and explain how it is used for efficiently summarizing and verifying the integrity of large sets of data | CO2 | L3 |
| (b) | Explain The birth of blockchain along with the history of blockchains? | CO1 | L2 |
| 8(a) | Build a figure to visualise the process of block generation | CO2 | L3 |
| (b) | Explain the basic design primitives necessary for a blockchain | CO1 | L2 |
| 9 | Identify the differences between various types of blockchain | CO2 | L3 |
| 10(a) | Explain the structure of a blockchain network with a diagram | CO1 | L2 |
| (b) | Illustrate the purpose of distributed ledger with an example | CO1 | L2 |

**UNIT II**

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| **Q. NO.** | **QUESTION** | **CO** | **LEVEL** |
| 1 | Explain the concept of Decentralization using blockchain | CO1 | L2 |
| 2 | Identify the methods required to achieve decentralisation | CO2 | L3 |
| 3(a) | Analyse in which circumstances blockchain is preferred over traditional databases for data storage | CO4 | L4 |
| (b) | Identify the steps needed for blockchain applications to be effective. | CO2 | L3 |
| 4 | Outline the routes to decentralization | CO1 | L2 |
| 5(a) | List the requirements required to Decentralise a voting Application | CO4 | L4 |
| (b) | Analyse possible trade-offs of decentralization, scalability and security? | CO4 | L4 |
| 6 | Build a block diagram to visualize the blockchain decentralised ecosystem | CO2 | L3 |
| 7 | Explain the term smart contracts and Decentralised autonomous organisations | CO1 | L2 |
| 8(a) | Examine the need of blockchain and when is a blockchain required in agriculture | CO4 | L4 |
| (b) | Identify the requirements of blockchain | CO2 | L3 |
| 9(a) | Explain how data is stored in a blockchain | CO1 | L2 |
| (b) | Identify the measures to ensure security in blockchain | CO2 | L3 |
| 10 | Model a diagram to show varying levels of decentralization | CO2 | L3 |

**UNIT III**

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| **Q. NO.** | **QUESTION** | **CO** | **LEVEL** |
| 1(a) | Explain the cryptographic primitives used in blockchain technology | CO1 | L2 |
| (b) | Explain the properties of Hash algorithm required for encrypting a block | CO1 | L2 |
| 2(a) | Model a public key cryptography signature scheme for digital currency transactions | CO2 | L3 |
| (b) | Identify how cryptographic hash functions, asymmetric cryptography and digital signatures are utilized to make blockchain technology verifiable and immutable? | CO2 | L3 |
| 3 | Explain Elliptic curve cryptography algorithm | CO1 | L2 |
| 4(a) | Construct a flowchart to visualize the process of mining a bitcoin | CO2 | L3 |
| (b) | Identify how double spending problem is addressed by blockchain technology | CO2 | L3 |
| 5 | Analyse the real life uses of digital money and how they are made possible by the various technologies that are part of Bitcoin? | CO4 | L4 |
| 6(a) | Identify the measures need for Bicoin Improvement | CO3 | L3 |
| (b) | Analyse how does proof-of-work and mining in Bitcoin address the Byzantine Generals problem | CO4 | L4 |
| 7 | List the shortcomings of current transaction system of banking | CO4 | L4 |
| 8 | Classify the types of transactions in bitcoin | CO4 | L4 |
| 9 | Model a diagram to visualize blockchain,block,blockheader,transaction and scripts of bitcoin | CO3 | L3 |
| 10 | Categorize the bitcoin addresses | CO4 | L4 |

**UNIT IV**

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| **Q. NO.** | **QUESTION** | **CO** | **LEVEL** |
| 1 | Develop a smart contract to help Shinchan, His teacher gave him homework to check whether a number is Incrementing or Decrementing. Help Shinchan to solve the problem. | CO3 | L3 |
| 2 | Develop a smart contract to insert value into the ethereum blockchain using metamask. | CO3 | L3 |
| 3(a) | Explain the ethereum Virtual Machine Architecture with a neat sketch | CO1 | L2 |
| (b) | Compare Smart Contract Platforms and bitcoin | CO1 | L2 |
| 4(a) | Illustrate Ethereum’s four stage of development | CO1 | L2 |
| (b) | Compare traditional contracts and smart contracts | CO1 | L2 |
| 5(a) | Analyse the costs incurred in the lifecycle of a smart contract | CO4 | L4 |
| (b) | Identify potential issues that companies face with smart contracts in the supply chain. | CO3 | L3 |
| 6 | Identify why an attacker could try creating contracts including lots of computationally expensive operation to slow down the network  | CO3 | L3 |
| 7 | Identify the benefits and limitations of creating Dapps | CO3 | L3 |
| 8 | Develop a program to store the values to the blockchain and then to retrieve the same from the blockchain.  | CO3 | L3 |
| 9 | Demonstrate the Components of an Ethereum ecosystem | CO1 | L2 |
| 10(a) | Explain the different operations of DaPPs | CO1 | L2 |
| (b) | Explain decentralized applications (DApps)? What has been the usage and why haven’t anyDApps yet received wide consumer adoption? | CO1 | L2 |

**UNIT V**

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| **Q. NO.** | **QUESTION** | **CO** | **LEVEL** |
| 1 | Explain any two major applications using blockchain technology | CO1 | L2 |
| 2(a) | Analyse the current problems in voting and how blockchain may improve the process. | CO4 | L4 |
| (b) | Analyse the common uses for blockchain within financial services. | CO4 | L4 |
| 3 | Inspect whether blockchain is good for banks or not? | CO4 | L4 |
| 4 | Explain about Ripple, Storj, Quorum and Multichain. | CO1 | L2 |
| 5 | Construct flowchart to demonstrate workflow of Hyperledger Fabric | CO3 | L2 |
| 6(a) | Analyse how security concerns in aviation can be handled by blockchain | CO4 | L4 |
| (b) | Analyse the trade-offs of using blockchain technology for identity and access management (IAM)? | CO4 | L4 |
| 7 | Identify the Benefits of IoT on convergence with blockchain | CO3 | L3 |
| 8(a) | Infer your blockchain based solution for the issue of blacklisting or revoking a suspicious passport immediately and broadcast it to the border control ports worldwide. | CO4 | L4 |
| (b) | Examine the trade-offs of using blockchain technology for identity and access management (IAM)? | CO4 | L4 |
| 9(a) | Analyse which type of blockchain is suitable for voting | CO4 | L4 |
| (b) | Analyse how might blockchain technology fit within the world of money and finance? | CO4 | L4 |
| 10 | Explain the working of Hyperledger reference architecture with a diagram | CO1 | L2 |

Course Coordinator

(Signature of HOD)