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**Presidency University**

**Bengaluru**

**School Of Computer Science and Engineering & Information Science**

**Summer Term End-Term Examinations, August 2024**

**Odd Semester**: 2023-24

**Course Code**: CSE2054

**Course Name**: Storage Area Networks

**Department:** CCS, CIT, COM, CCE, CSD, CST

**Date**: 05-08-2024

**Time**: 09:30AM-12:30PM

**Max Marks**: 100

**Weightage**:50%

**Instructions:**

1. *Read the all questions carefully and answer accordingly.*
2. *Do not write any matter on the question paper other than roll number.*

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| **Q. No** | **Questions** | **Marks** | **CO** | **RBT** |
| 1 | 1. Define Data and Information. List different types of data with an example. | 4 | CO1 | L1 |
| 1. Explain the Core Elements of Data Center | 6 | CO1 | L2 |
| 1. An Organization is planning to provide centralized data- processing capabilities across the enterprise. But before building the same, help the organization to describe the key characteristics of data center and tasks involved in managing the data center | 10 | CO1 | L3 |
| OR | | | | |
| 2 | 1. What is Digital data? List the factors for Digital Data growth. | 4 | CO1 | L1 |
| 1. Explain the physical structure of Hard Disk Drive. | 6 | CO1 | L2 |
| 1. Mr. Manav, who is a new employee of an organization, has been assigned a task to organize its data in a structured hierarchical manner via directories. Help Mr. Manav to accomplish his task by outlining the concept and illustrate the process of mapping user files to the disk storage subsystem with an LVM with a neat diagram. | 10 | CO1 | L3 |

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| 3 | 1. Define Cache Mirroring and Cache Vaulting. | 4 | CO2 | L1 |
| 1. Explain the following Terms related to RAID a. Fault Tolerance b. Redundancy c. Throughput | 6 | CO2 | L2 |
| 1. Illustrate Cache Read Operation and Cache Write operation in detail. | 10 | CO2 | L3 |

OR

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| 4 | 1. Define Cache Read Hit and Cache Miss. | 4 | CO2 | L1 |
| 1. Explain the Nested RAID 1+0 With a simple Diagram | 6 | CO2 | L2 |
| 1. An intelligent storage system is an integral part of every data center supporting large capacity with high performance which makes it necessary to share it among multiple hosts. Identify the concept which can assign storage resources to hosts based on capacity, availability and performance requirements of applications running on the hosts. Analyze the two ways of storage provisioning with a neat diagram. | 10 | CO2 | L3 |

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| 5 | 1. Define the structure of Object. | 4 | CO3 | L1 |
| 1. Illustrate the Challenges of Storing Fixed Content | 6 | CO3 | L2 |
| 1. Demonstrate the three basic topologies used in backup environment with the help of neat diagram. | 10 | CO3 | L3 |

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| 6 | 1. Briefly explain Hierarchical file System & flat Address Space | 4 | CO3 | L1 |
| 1. Explain the Benefits of Object-Based Storage | 6 | CO3 | L2 |
| 1. Illustrate the process of storing Data Object using OSD | 10 | CO3 | L3 |

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| 7 | 1. What is Data Backup? Write the three purposes of Data Backup. | 4 | CO4 | L1 |
| 1. Explain Source based data de-duplication and Target based data de-duplication. | 6 | CO4 | L2 |
| 1. Illustrate backup and restore operations in incremental backup approach with neat diagram. | 10 | CO4 | L3 |

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| 8 | 1. Define a. Hot Backup b. Cold Backup | 4 | CO4 | L1 |
| 1. Explain the common terms used to represent various entities and operations in a replication environment. | 6 | CO4 | L2 |
| 1. Outline the local replication with its uses and consistency of replicated file system and replicated databases. | 10 | CO4 | L3 |

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| 9 | 1. What is Head Disk Assembly? When does head crash occur? | 4 | CO1 | L1 |
| 1. Illustrate Online Transaction Processing System to determine the components of data center. | 6 | CO1 | L2 |
| 1. Outline Host access to data. Explain direct attached storage in detail. | 10 | CO1 | L3 |

OR

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| 10 | 1. Describe Storage Provisioning? List the two types of Storage Provisioning. | 4 | CO2 | L1 |
| 1. Explain the Nested RAID 1+0 With a simple Diagram | 6 | CO2 | L2 |
| 1. Considering an example discuss Traditional Vs Virtual storage Provisioning | 10 | CO2 | L3 |