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**PRESIDENCY UNIVERSITY
BENGALURU**

**SCHOOL OF ENGINEERING
MID TERM EXAMINATION - APR 2023**

Semester : Semester VI - B.Tech CSE - 2020

Course Code : CSE2054

Course Name : Sem VI - CSE2054 - Storage Area Networks

Program : IST

Date : 15-APR-2023

Time : 9.30 AM - 11.00 AM

Max Marks : 60

Weightage : 30%

Instructions:

- (i) Read all questions carefully and answer accordingly.*
 - (ii) Question paper consists of 3 parts.*
 - (iii) Scientific and non-programmable calculator are permitted.*
 - (iv) Do not write any information on the question paper other than Roll Number.*
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PART A

ANSWER ALL THE QUESTIONS

(5 X 2 = 10M)

1. Define Data and Information. List different types of data with an example. (CO1) [Knowledge]
2. Define the Core Elements of Data Center. (CO1) [Knowledge]
3. Define Seek Time and its specifications. (CO1) [Knowledge]
4. Define RAID and Name the two methods of RAID Implementation (CO2) [Knowledge]
5. What is Traditional Storage Provisioning and Virtual Provisioning? (CO2) [Knowledge]

PART B

ANSWER ALL THE QUESTIONS

(4 X 5 = 20M)

6. An Organization is planning to provide centralized data- processing capabilities across the enterprise. Help the organization to Identify the concept to build the same and Explain them about the concept and its components with an example of online transaction system to establish the same in detail. (CO1) [Comprehension]

7. Ms. Sita, an employee of an organization is given the responsibility to govern the overall performance of the storage system environment. She knows that the Disk drive device is actually responsible for the overall performance of the storage system environment but she doesn't know about the factors that are affecting the performance of disk drives. Explain the same with Zoned bit recording with a neat diagram.

(CO1) [Comprehension]

8. Rapid adoption of computers for business processes stimulated the growth of new applications and databases, significantly increasing the demand for storage capacity and performance. At that time Single Large Expensive Drive (SLED) was used but could not meet the required performance levels. Outline the concept to replace SLED for better performance and explain the two methods to implement the same.

(CO2) [Comprehension]

9. Cache is a finite and expensive resource that needs proper management. Even though modern ISS come with a large amount of cache, when all cache pages are filled, some pages have to be freed up to accommodate new data and avoid performance degradation. Explain the most commonly used algorithms to free up cache pages and explain flushing and three different modes of flushing.

(CO2) [Comprehension]

PART C

ANSWER ALL THE QUESTIONS

(3 X 10 = 30M)

10. In the past, tapes were the most popular storage option for backups because of their low cost. However, tapes had various limitation in terms of performance and management. List the limitations of tapes and Identify the better backup destination for enterprise-class data centers and explain its physical structure and Components in detail with the help of a neat diagram.

(CO1) [Application]

11. Today's data centers house hundreds of disk drives in their storage infrastructure but disk drivers are inherently susceptible to failures due to mechanical wear and tear and other environmental factors, which could result in data loss. Identify the concept and three maintain techniques of the concept that enables leveraging multiple drives as part of a set that provide data protection against drive failures.

(CO2) [Application]

12. It is identified that slowest component of an intelligent storage system is rotating disks. Data access on rotating disks usually takes several millisecond due to its seek time and rotational latency. Identify component which can improve the storage system performance by isolating hosts from mechanical delays associated with rotating disks and justify the same with the help of its read and write operation and data protection on the same.

(CO2) [Application]