

BE12-R4 : INFORMATION STORAGE AND MANAGEMENT

NOTE :

1. Answer question 1 and any FOUR from questions 2 to 7.
2. Parts of the same question should be answered together and in the same sequence.

Time: 3 Hours

Total Marks: 100

1.
 - (a) Explain data centre requirement for establishing a information system.
 - (b) What is Storage Network ? List various Block Storage Protocols.
 - (c) Compare Port, WWN and Mixed Zoning.
 - (d) Seventeen switches, with 16 ports each, are connected in a mesh topology. How many ports are available for host and storage connectivity if you create a high-availability solution ?
 - (e) Differentiate between internal and external Direct Attached Storage (DAS).
 - (f) Define tiered storage. Classify the tiered storage on price and security basis.
 - (g) Distinguish between buffering and caching **(7×4)**

2.
 - (a) What is a Fibre Channel (FC) ? List and explain the flow control mechanisms used in Fibre Channel.
 - (b) What is a hot spare in a disk array ? What methods of data recovery are performed in hot spare analysis ? Are these methods automatic or user initiated ? Explain briefly.
 - (c) Explain global data access needs. How these are specified ? **(7+7+4)**

3.
 - (a) What is Intelligent Storage Array ? Compare and contrast high-end storage systems array and midrange storage systems array.
 - (b) Differentiate between VTLU set up and FTP set up. **(9+9)**

4.
 - (a) What is Content-addressable Storage (CAS) ? Draw a neat diagram to explain CAS Architecture. Also, list and explain important features and benefits of CAS.
 - (b) List and explain the considerations for capacity design for both CPU and storage in a NAS (N/W attached storage) environment.
 - (c) Explain metric analysis methodologies. Differentiate between reactive and pro-active information management practices. **(6+6+6)**

5. (a) Why an administrator need services to assist the daily tasks involved in integrated management system for storage networks over central management console ? Explain the features of each service in this management. What is Storage Management Initiative Specification (SMI-S) ? How does SMI-S help to central management console in achieving its goal ?
- (b) SAN (Storage Area N/W) is configured for backup to a disk environment, and the storage configuration has additional capacity available. Can a NAS gateway be configured for this SAN ? Discuss the implications of sharing the backup-to-disk SAN environment with NAS.
- (c) List and explain the important features of Redundant Array of Independent Disks. **(6+6+6)**
6. (a) Consider an application that generates 8000 I/Os per second, with 60 percent of them being reads. Also, the write penalty for RAID-5 is 3 and every write manifests as four writes to the disks in RAID-1. If an HDD with a specification of maximum 200 I/Os per second for the applications need to be used, then calculate the number of disks required to meet the workload for the RAID-1 and RAID- 5 configurations.
- (b) How does information lifecycle change the value of information over time ? Give example. List and explain the characteristics of information lifecycle management.
- (c) List and compare the Fibre Channel Standards. **(6+6+6)**
7. (a) A large organization is looking for scalable and high availability solution using storage infrastructure. More importantly, the company also needs performance for its mission-critical applications. Among SAN, NAS and IP SAN, which topology is recommended and why ?
- (b) Is there any need of Hierarchical Storage Management (HSM) ? Explain with its benefits.
- (c) Why front end provides the interface, using front-end ports and front-end controllers, between the storage system and the host ? Discuss the roles of front-end command queuing algorithms in this scenario. **(6+6+6)**
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