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## Eighth Semester B.E. Degree Examination, June/July 2024

### Storage Area Networks

Time: 3 hrs.

Max. Marks: 100

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

#### Module-1

- 1 a. Discuss the various factors that have contributed to the growth of digital data. (06 Marks)
- b. Illustrate with a figure, the evolution of storage architecture. (08 Marks)
- c. Explain the key characteristics of a data center. (06 Marks)

OR

- 2 a. Explain with a figure, the process of mapping user files to the disk storage subsystem with an LVM. (08 Marks)
- b. Discuss the most popular interface protocols used for host to storage communication. (08 Marks)
- c. Explain with a figure, the platter. (04 Marks)

#### Module-2

- 3 a. Discuss the limitations of software RAID. (04 Marks)
- b. Discuss the various RAID techniques. (10 Marks)
- c. Explain with a figure, the RAIDO configuration. (06 Marks)

OR

- 4 a. Discuss the various components of an intelligent storage system. (08 Marks)
- b. Discuss the various components of Fibre Channel (FC) SAN. (08 Marks)
- c. Explain with a figure, the active-passive configuration. (04 Marks)

#### Module-3

- 5 a. Explain with a figure, the FCIP protocol stack. (06 Marks)
- b. Discuss the various benefits offered by the Network Attached Storage (NAS). (08 Marks)
- c. Explain the process of handling I/Os in a network attached storage environment. (06 Marks)

OR

- 6 a. Explain with a figure, the iSCSI command sequencing. (06 Marks)
- b. Explain the various factors affecting Network Attached Storage (NAS) performance. (06 Marks)
- c. Explain with a figure, the various components of Network Attached Storage (NAS). (08 Marks)

#### Module-4

- 7 a. What is information availability? Discuss the causes of information availability. (06 Marks)
- b. Explain the various stages involved in the Business Continuity (BC) planning life cycle. (08 Marks)
- c. List the various tasks involved in business impact analysis. (06 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

**OR**

- 8 a. Explain with a figure, the backup and restore operation. (10 Marks)  
b. Explain with a figure, the two different types of backup topologies. (10 Marks)

**Module-5**

- 9 a. Explain the various terms which are used to represent entities and operations in a replication environment. (06 Marks)  
b. Explain with a figure, the storage array based local replication. (06 Marks)  
c. Illustrate with a figure, the synchronous and asynchronous replication. (08 Marks)

**OR**

- 10 a. Illustrate with a figure, the synchronous and asynchronous array based remote replication. (08 Marks)  
b. Discuss the four security goals which are achieved through information security framework. (06 Marks)  
c. Explain with a figure, the storage security domains. (06 Marks)

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