



**Eighth Semester B.E. Degree Examination, Dec.2023/Jan.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. What is Big Data? Explain the big data ecosystem with a neat diagram. (06 Marks)
- b. Describe the Server-Centric storage architecture and information centric storage architecture with a neat diagram. (08 Marks)
- c. Explain the key characteristics of a data center. (06 Marks)

**OR**

- 2 a. Define file. Explain the process of mapping the user files to the disk storage with a neat diagram. (08 Marks)
- b. Explain the key components of a hard disk with a neat diagram. (06 Marks)
- c. Describe with a neat diagram, the Block-level access and file level access to data. (06 Marks)

**Module-2**

- 3 a. Differentiate between Hardware RAID and Software RAID. (08 Marks)
- b. Explain the RAID techniques-striping, mirroring and parity with neat diagrams. (12 Marks)

**OR**

- 4 a. Explain the components of a Intelligent storage system with a neat diagram. (06 Marks)
- b. Illustrate the types of flushing with a neat diagram. (06 Marks)
- c. Explain the components of FC SAN with neat diagrams. (08 Marks)

**Module-3**

- 5 a. Explain the three iSCSI topologies with a neat diagrams. (12 Marks)
- b. Describe the iSCSI protocol stack with a neat diagram. (08 Marks)

**OR**

- 6 a. Explain the components of NAS with neat diagram. (06 Marks)
- b. Describe the unified NAS connectivity and Gateway NAS connectivity with neat diagram. (08 Marks)
- c. Discuss the factors affecting the NAS performance. (06 Marks)

**Module-4**

- 7 a. What is Information Availability? Explain the causes of Information unavailability. (04 Marks)
- b. Explain BC planning life cycle with a neat diagram. (12 Marks)
- c. Describe the single point of failure with a neat diagram. (04 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. Describe the process of restoring data from an incremental backup with neat diagram. (06 Marks)
- b. Explain the backup architecture with a neat diagram. (06 Marks)
- c. Explain Server-based and Serverless Backup with neat diagrams. (08 Marks)

Module-5

- 9 a. Discuss the uses of local replicas. (05 Marks)
- b. Explain the Storage Array Based local replication with a neat diagram. (05 Marks)
- c. Explain the Pointer-based virtual replication-write to source with neat diagrams. (10 Marks)

OR

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- 10 a. Explain the LVM-based remote replication and Array-based synchronous remote replication with neat diagrams. (10 Marks)
- b. Describe the Kerberos authentication process with a neat diagram. (10 Marks)

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