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**GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN****(Autonomous)**

(Affiliated to Andhra University, Visakhapatnam)

M.Tech. - II Semester Regular Examinations, August – 2026**[Computer Science & Engineering (Data Science)]****DATA STORAGE TECHNOLOGIES AND NETWORKS**

1. All questions carry equal marks
2. Must answer all parts of the question at one place

Time: 3Hrs.**Max Marks: 70****UNIT-I**

1. a. Explain the role of storage in Information Technology (IT). Discuss the importance of storage in modern computing environments. [7M]
b. Describe the construction and working principle of a Mechanical Disk Drive (HDD). Mention its advantages and disadvantages. [7M]
OR
2. a. Explain Solid State Drive (SSD). Compare SSD and HDD. [7M]
b. What are Storage Arrays? Explain their architecture and applications in enterprise storage systems. [7M]

UNIT-II

3. a. Define RAID. Explain the advantages of implementing RAID in storage systems. [7M]
b. Differentiate between Hardware RAID and Software RAID with suitable examples. [7M]
OR
4. a. Explain the RAID concepts of Striping, Mirroring, Parity, Redundancy, and Fault Tolerance. [7M]
b. Explain RAID Levels RAID 0, RAID 1, RAID 5, RAID 6, and RAID 10 with neat diagrams and suitable applications. [7M]

UNIT-III

5. a. Define Storage Area Network (SAN). Explain the architecture and advantages of Fibre Channel SAN. [7M]
b. Describe the various Fibre Channel SAN components such as HBA, FC Switch, Storage Array, and Fibre Channel Cables. [7M]
OR
6. a. Explain the uses of physical networking hardware. [7M]
b. Discuss common Fibre Channel SAN troubleshooting techniques for resolving connectivity and performance issues. [7M]

UNIT-IV

7. a. Explain the basic concepts and importance of data security. [7M]
b. Describe the techniques used for monitoring and optimizing storage utilization in an organization. [7M]
OR
8. a. Explain how latency and throughput impact storage performance. [7M]
b. Discuss Backup to Disk, Backup to Cloud, and Archiving. Differentiate between Backup and Archiving. [7M]

UNIT-V

9. a. What is Storage Management? Explain its objectives and importance in enterprise environment. [7M]
b. Explain Capacity Management in storage systems. Discuss the various activities involved in capacity planning. [7M]

OR

10. a. Describe the techniques used for monitoring and optimizing storage utilization in an organization. [7M]
b. Explain the benefits, challenges, and best practices of Capacity Management in modern data centers. [7M]