

USN

10CS/IS765

**Seventh Semester B.E. Degree Examination, July/August 2022**  
**Storage Area Networks**

Time: 3 hrs.

Max. Marks: 100

**Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.**

**PART – A**

- 1 a. Explain the key characteristics of a data center with a neat diagram. (07 Marks)  
b. Discuss the functions of a logical volume manager, with a neat diagram. (06 Marks)  
c. Consider a disk I/O system in which an I/O request arrives at the rate of 80 IOPS. The disk service time is 6 ms. Compute : i) Utilization of I/O controller ii) Total response time. (07 Marks)
- 2 a. An application has 1000 heavy users at a peak of 2 IOPS each and 2000 typical users at a peak of 1 IOPS each, with a read/write ratio of 2:1. It is estimated that the application also experiences an overhead of 20% for other workloads. Calculate the IOPS required for RAID 1, RAID 3, RAID 5 and RAID 6. Also compute the number of drives required to support the application in different RAID environments if 10K rpm drives with a rating of 130 IOPS per drive were used. (10 Marks)  
b. Categories and explain intelligent storage systems with diagram. (10 Marks)
- 3 a. Explain connectivity options of FC architecture with relevant diagram. (10 Marks)  
b. Explain the components of ISS with reference to LUN and LUN masking with diagram (06 Marks)  
c. Explain FC frame. (04 Marks)
- 4 a. Explain the components of NAS with a neat diagram. What are the benefits of NAS? (08 Marks)  
b. Describe the NAS gateway connectivity, with a neat diagram. (08 Marks)  
c. Write a short note on CIFS. (04 Marks)

**PART - B**

- 5 a. Explain the data object storage process and process of data retrieval from CAS system with diagram. (10 Marks)  
b. Illustrate a NAS environment before and after the implementation of file level virtualization. (10 Marks)
- 6 a. What is information availability? Explain how information availability is defined and measured. (08 Marks)  
b. Describe the failure analysis in BC. Mention some important BC technology solutions. (12 Marks)
- 7 a. Explain LVM based local replication, with a neat diagram. Discuss the advantages and disadvantages. (10 Marks)  
b. Explain synchronous and asynchronous modes of remote replication with a neat diagram. (10 Marks)
- 8 a. What are monitoring parameters and components monitored for storage infrastructure? Explain in details. (10 Marks)  
b. Explain storage infrastructure management activities in detail. (10 Marks)