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**Eighth Semester B.E. Degree Examination, May/June 2010**  
**Storage Area Networks**

Time: 3 hrs.

Max. Marks:100

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

**PART – A**

- 1 a. Explain the basic requirements of storage systems. (10 Marks)  
b. Differentiate storage-centric IT architecture from server-centric IT architecture. (10 Marks)
- 2 a. With a neat diagram, explain the architecture of intelligent disk storage system [DSS] (07 Marks)  
b. Describe the I/O techniques used in disk storage system in order to increase fault-tolerance of systems. (08 Marks)  
c. How are disk storage systems classified based on its complexity? Explain just a bunch of disks [JBOD]. (05 Marks)
- 3 a. What are the two major goals of RAID system? Explain the three major techniques used in RAID configurations. (08 Marks)  
b. An application generates 7650 IOPS with 50% being READ operation with disk handling capacity of 180 IOPS. Determine the disk load and number of disks required in RAID 5 configuration. {Given write penalty of RAID 5 is 4}. (04 Marks)  
c. How RAID 1 +  $\phi$  and RAID  $\phi$  + 1 are different? Explain. Why RAID  $\phi$  not an option for data protection and high availability? Justify. (08 Marks)
- 4 a. Explain fiber channel(FC), with reference to protocol stack, addressing modes and login techniques. (10 Marks)  
b. Write short notes on SCSI. (06 Marks)  
c. Why class three service is most preferred for FC communication? (04 Marks)

**PART – B**

- 5 a. Compare NAS and fiber channel SAN. (06 Marks)  
b. Write an explanatory note on shared disk file system. (06 Marks)  
c. With a neat sketch, explain the components of network attached storage. [NAS] (08 Marks)
- 6 a. What is virtualization? Discuss the four forms of virtualization. Describe the implementation considerations for virtualization. (12 Marks)  
b. Explain storage virtualization at block-level, with a necessary diagram. (08 Marks)
- 7 a. Write short notes on FC switches. (06 Marks)  
b. What is HBA? Discuss the benefits of using multiple HBAs on a host. (04 Marks)  
c. Differentiate storage virtualization in server and network level. (10 Marks)
- 8 a. Describe the components of switch operating system, in detail. (10 Marks)  
b. What is business continuity [BC]? Discuss the role of storage network in business continuity. (10 Marks)

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