# Seventh Semester B.E. Degree Examination, June/July 2016
## Storage Area Networks

Time: 3 hrs.                                          Max. Marks:100

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

## PART – A

1   a.   What is a data center? Explain key characteristics of data center elements.    **(10 Marks)**
     b.   Explain the various components of disk drive.    **(06 Marks)**
     c.   Consider a disk I/O system in which an I/O request arrives at the rate of 80IOPS. The disk service time is 6 ms. Compute the following:
        i) Utilization                           ii) Response time
        iii) Average queue size             iv) Time spent by a request in a queue.    **(04 Marks)**

2   a.   Explain the various techniques on the basis of which RAID levels are defined.    **(09 Marks)**
     b.   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 10 percent for other workloads. Calculate the IOPS requirement for RAID1, RAID5 and RAID6.    **(06 Marks)**
     c.   With a neat diagram, differentiate between write through and write back cache.    **(05 Marks)**

3   a.   Explain fibre channel with respect to protocol stack, zoning and login types.    **(10 Marks)**
     b.   Write a note on SCSI-3 architecture.    **(10 Marks)**

4   a.   What is NAS? Explain the benefits of NAS.    **(10 Marks)**
     b.   Differentiate between Native and Bridged iSCSI connectivity.    **(06 Marks)**
     c.   Write a note on iSCSI PDU.    **(04 Marks)**

## PART – B

5   a.   With neat diagrams, explain the concept of object storage and retrieval in CAS systems.    **(10 Marks)**
     b.   What is storage virtualization? Differentiate between block level and file level virtualization with neat diagrams.    **(10 Marks)**

6   a.   What is business continuity? Explain BC planning life cycle with a neat diagram.    **(10 Marks)**
     b.   Explain the reasons for which backup is performed.    **(10 Marks)**

7   a.   Describe the various storage array based local replication technologies.    **(10 Marks)**
     b.   What is storage array based remote replication? Differentiate between synchronous and asynchronous replication mode in it.    **(10 Marks)**

8   a.   Explain the four security attributes which are under threat.    **(04 Marks)**
     b.   Write a note on risk triad.    **(06 Marks)**
     c.   Describe the categories on the basis of which storage management is classified.    **(05 Marks)**
     d.   Write a note on accessibility monitoring.    **(05 Marks)**

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