10CS/IS765

Seventh Semester B.E. Degree Examination, Aug./Sept. 2020
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 key characteristics of a data center with neat diagram.   **(07 Marks)**
    b.   Consider a disk I/O system in which an I/O request arrives at the rate of 80 IOPS.
         Disk service time is 6ms. Compute
         i)   Utilization of I/O controller
         ii)   Total response time
         iii) Average queue size
         iv)   Total time spent by a request in a queue
         If the controller power is doubled, what is utilization?   **(05 Marks)**
    c.   Discuss the functions of a logical volume manager with a neat diagram.   **(04 Marks)**
    d.   Explain how the process maps user files to disk storage.   **(04 Marks)**

2   a.   Describe RAID levels with reference to nested RAID, RAID3 and RAID5 with neat
         diagram.   **(10 Marks)**
    b.   Explain the structure, read and write operations in cache with neat diagram.   **(10 Marks)**

3   a.   Describe SCSI3-architecture in detail.   **(05 Marks)**
    b.   What is the significance of various layers of SCSI communication model?   **(05 Marks)**
    c.   Explain the connectivity options of FC [Fiber Channel] architecture and data transmission in
         FC – AL, FC – SW topology with relevant diagrams.   **(10 Marks)**

4   a.   What is NAS? What are its benefits?   **(10 Marks)**
    b.   Explain ISCSI connecting topologies with a suitable diagram.   **(05 Marks)**
    c.   Describe FCIP topology with neat diagram.   **(05 Marks)**

PART – B

5   a.   Explain the architecture of CAS with a neat diagram. List out the features of CAS. **(10 Marks)**
    b.   Describe Storage virtualization types in detail and discuss its challenges.   **(10 Marks)**

6   a.   Explain the Backup and restore Operations in detail with neat diagram.   **(10 Marks)**
    b.   Describe the failure analysis in BC. Mention some important BC – technology solutions.
                                                                                                (10 Marks)

7   a.   Explain :
         i)   LVM – based local replication
         ii)   Pointer based full volume replication with respect to write to source.   **(10 Marks)**
    b.   Explain the various remote replication modes with neat diagram.   **(06 Marks)**
    c.   Write a note on DWDM.   **(04 Marks)**

8   a.   Describe SAN security architecture with neat diagram.   **(06 Marks)**
    b.   What are primary security attributes?   **(04 Marks)**
    c.   Describe storage management activities in detail with example.   **(10 Marks)**

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