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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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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

