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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.