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08SCS321

Third Semester M.Tech. Degree Examination, June/July 2011

Storage Area Networks

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions.***

1 a. With a neat block schematic, describe the server centric IT architecture and bring out its major limitations. **(06 Marks)**

b. With a neat block diagram, explain the storage centric IT architecture and its features. **(06 Marks)**

c. Describe with a neat block schematic, the architecture of intelligent disk subsystems. What is the major advantage of disk subsystems? Discuss. **(08 Marks)**

2 a. With neat block schematics, describe the four different I/O channel connections used in disk subsystems along with their relative merits and demerits if any. **(08 Marks)**

b. What are the important goals of RAID? Discuss with a neat block diagram, RAID level 10. **(08 Marks)**

c. Explain with an example, how the fault tolerance is ensured in RAID level 4 or 5. **(04 Marks)**

3 a. A certain manufacturing company has a storage requirement of 50 GB in the first year and a 20% higher storage requirement in all subsequent years as compared to its preceding year. Compute the total storage requirement for 10 years. If the capacity of each disk is 50 GB, price of each disk is 15000/- and budget is 135000/-, compute the number of disks required to store data. If the reliability of the data is most important, suggest a suitable RAID level that can be implemented within the budget constraints. Draw the diagram of the disk controlled with appropriate RAID level required for this application. **(10 Marks)**

b. Match the following : **(05 Marks)**

1) RAID 10	i) Striping
2) RAID 4	ii) Mirroring
3) RAID 0 + 1	iii) Stripped mirror
4) RAID 1	iv) XOR
5) RAID 0	v) Mirrored stripes

c. Explain with a neat block schematic, the instant copy feature of intelligent disk subsystems. **(05 Marks)**

4 a. With a neat diagram, explain the physical I/O paths from the CPU to storage systems. **(06 Marks)**

b. Give a detailed description of SCSI basics. **(06 Marks)**

c. With a neat diagram, explain the fibre channel portol stack with function of each layer. **(08 Marks)**

5 a. Discuss the following IP storage standards : **(07 Marks)**
i) iSCSI ii) iFCP iii) FCIP iv) MFCP

b. With a neat block diagram, describe the local file system with the functions of each layer clearly indicated. Also describe the journaling and snapshot features of a file system. **(07 Marks)**

c. What is NAS? Discuss in brief the performance bottlenecks of NAS. With a neat diagram, discuss how DAFs speedup data transportation. **(06 Marks)**

6 a. What is storage virtualization? Bring out its need in storage network. Discuss with a neat block schematic, how storage virtualization is implemented at storage network level and its relative merits and demerits. **(08 Marks)**

b. Compare and contrast symmetric and asymmetric storage virtualization and explain asymmetric storage virtualization, with a neat diagram. **(08 Marks)**

c. Explain the working and functions of HBA. **(04 Marks)**

7 a. Discuss two configurations for ensuring availability of data. **(08 Marks)**

b. Describe the functions of Switch's operating system and device drives. **(08 Marks)**

c. Discuss the configuration options for SAN. **(04 Marks)**

8 Write short notes on the following : **(20 Marks)**

a. Remote mirroring

b. Fibre channel topologies

c. Encoding techniques

d. Networks file system.