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Question Paper Code: 42922

M.E. DEGREE EXAMINATION, MAY 2016

Elective

Computer Science and Engineering

14PCS506 – INFORMATION STORAGE MANAGEMENT

(Regulation 2014)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. Which is a repository for the storage, management, and dissemination of data in which the mechanical, lighting, electrical and computer systems are designed for maximum energy efficiency and minimum environmental impact?

   (a) Storage lab   (b) Data Center

   (c) Data warehouse   (d) Fabric

2. Which of the following is sequential access storage device?

   (a) Hard Disk   (b) CD-ROM

   (c) Tape Cartridge   (d) Main Memory

3. A NAS solution is most appropriate for what type of data environment

   (a) Secured Access   (b) Shared access

   (c) Remote access   (d) Parallel access

4. To decide on a backup strategy for your organization, which of the following should you consider?

   (a) RPO (Recovery Point Objective)   (b) RTO (Recovery Time Objective)

   (c) Both RPO and RTO   (d) None of these

5. Network level virtualization in a SAN fabric can be implemented by having virtualization engine running in

   (a) HBA   (b) FC switch

   (c) Raid array   (d) All the above

PART - B (5 x 3 = 15 Marks)

6. What is storage array? Explain modular Vs monolithic storage array classification with example.

7. An application has 500 heavy users at a peak of 2 IOPS each and 1000 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 20 percent for other workloads. Calculate the IOPs requirement for RAID 1, RAID 3, RAID 5 and RAID 6.

8. Differentiate between NAS and SAN.

9. List various industry standards for managing and monitoring Storage management activities.

10. What is Hybrid storage solution for Network storage? How virtualization is related with it?

PART - C (5 x 16 = 80 Marks)

11. (a) (i) What skills are required for storage management? What kinds of activities are performed in storage management?   (8)

      (ii) What is core element of Data Center? Explain how failure analysis is done at Data Center and how fault tolerance mechanism implemented.   (8)

Or

(b) (i) How is data categorized in an enterprise? Describe in brief.   (8)

     (ii) Illustrate the characteristics of ILM strategies. What are the activities associated with ILM? What are the benefits of using ILM?   (8)

12. (a) (i) Connectivity refers to the interconnection between hosts or between a host and any other peripheral devices. What are the physical and logical types of connectivity?   (8)

     (ii) Compare the RAID levels (0, 1, 3, 4, 5, and 6) in terms of storage efficiency, cost, read and write performance, write penalty and protection.   (8)

Or

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(b) (i) Which components constitute the disk service time? Which component contributes the largest percentage of a disk service time in a random I/O operation? (8)

   (ii) What are the components of intelligent storage system? (8)

13. (a) (i) Discuss the components of SAN environment and the FC connectivity and architecture. (8)

   (ii) What is NAS? Explain how the performance of NAS can be affected if the TCP window size at the sender and the receiver are not synchronized. (8)

Or

(b) (i) Explain how LUN Masking and Zoning is used as a SAN security mechanism. (8)

   (ii) What is CAS? Describe the CAS architecture. How to do object storage and retrieval in CAS? (8)

14. (a) (i) What is Disaster in terms of data and information storage? How it is related to Business continuity? List various disaster recovery principles and techniques. (8)

   (ii) Discuss the BC Planning Life Cycle and Failure Analysis. (8)

Or

(b) (i) Describe the remote replication technologies with neat diagrams. (8)

   (ii) Explain in brief about Industry Management Standards. (8)

15. (a) (i) What is the purpose of performing operation backup, disaster recovery and archiving? (8)

   (ii) Describe the benefits of using a virtual tape library over a physical tape library. (8)

Or

(b) (i) Analyze the common threats in each domain. (8)

   (ii) Explain storage migration using block-level storage visualization. Compare this migration. (8)

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