CBCS SCHEME

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15CS754

Seventh Semester B.E. Degree Examination, June/July 2019
Storage Area Networks

Time: 3 hrs.

Max. Marks: 80

Note: *Answer any FIVE full questions, choosing*
ONE full question from each module.

Module-1

1 a. What is a data center? List the core components of data center. Explain the characteristics of data center. **(08 Marks)**
   b. Discuss volume manager and compute virtualization in detail. **(08 Marks)**

OR

2 a. Differentiate between software and hardware RAID. Illustrate how parity method is used for RAID levels. **(08 Marks)**
   b. With a neat diagram explain ISS. Explain in detail the cache component of ISS. **(08 Marks)**

Module-2

3 a. List and explain different FC connectivity options with a neat diagram. **(08 Marks)**
   b. With diagram explain ISCSI implementation. **(08 Marks)**

OR

4 a. What is NAS? Explain NAS implementation in detail. **(08 Marks)**
   b. List the key features of Content Addressed Storage (CAS). Illustrate with a neat block diagram the unified storage for CAS system. **(08 Marks)**

Module-3

5 a. Explain with a neat diagram BC planning lifecycle. **(08 Marks)**
   b. Mention backup topologies. List various backup forget solution and explain any one with a neat diagram. **(08 Marks)**

OR

6 a. List various uses of local replication. Explain storage array based local replication with a neat diagram. **(08 Marks)**
   b. Differentiate between Synchronous and Asynchronous based remote replication model. **(08 Marks)**

Module-4

7 a. List various cloud computing characteristics. Explain the cloud computing infrastructure components with a neat diagram. **(08 Marks)**
   b. With diagram explain different cloud deployment models. **(08 Marks)**

OR

8 Explain in detail in band and out of band virtualization appliances with a neat diagram. **(16 Marks)**

Module-5

9 a. What are the different rules tried for information security? Explain in detail FCSAN based security implementation. **(08 Marks)**
   b. List and explain different storage infrastructure management activities in detail. **(08 Marks)**

OR

10 a. Explain different storage management activities. **(08 Marks)**
    b. What is ILM? List and explain various benefits of ILM. **(08 Marks)**

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Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019
Storage Area Networks

Time: 3 hrs.   Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1   a. What is a data center? Explain key characteristics of data center elements with diagram.   **(08 Marks)**

    b. What is a file system? Explain the process of mapping user files to the disk storage.   **(08 Marks)**

OR

2   a. What is RAID? Explain the RAID levels with reference to nested RAID, RAID3, RAID5 with neat diagram.   **(08 Marks)**

    b. With neat diagram, explain the structure of read and write operations with cache.   **(08 Marks)**

Module-2

3   a. Explain FC connectivity options with relevant diagram.   **(08 Marks)**

    b. Explain block-level storage virtualization with neat diagram. Explain VSAN in brief.   **(08 Marks)**

OR

4   a. What is FCoE? Explain the components of FCoE with neat diagram.   **(08 Marks)**

    b. What is NAS? Explain the benefits of NAS.   **(08 Marks)**

Module-3

5   a. What is business continuity? Explain the BC Terminology in detail.   **(08 Marks)**

    b. Explain Backup and Restore operations with neat diagram.   **(08 Marks)**

OR

6   a. What is data deduplication? Explain the implementation of data deduplication.   **(08 Marks)**

    b. Explain Synchronous + Asynchronous and Synchronous + Disk Buffered methods of three-site replication with neat diagram.   **(08 Marks)**

Module-4

7   a. What is cloud computing? Explain the characteristics and benefits of cloud computing?   **(08 Marks)**

    b. Explain the various cloud service models available.   **(08 Marks)**

OR

8   a. Explain the public cloud and private cloud deployment models in cloud computing.   **(08 Marks)**

    b. Explain the cloud computing infrastructure in detail.   **(08 Marks)**
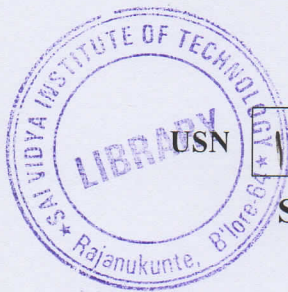
Module-5

9   a. Explain FC SAN security architecture with neat diagram.   **(08 Marks)**

    b. Explain the concept of Kerberos with neat diagram.   **(08 Marks)**

OR

10   a. Explain the storage management activities in detail.   **(08 Marks)**

     b. Explain Information Lifecycle Management (ILM) in detail with challenges.   **(08 Marks)**

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15CS754

Seventh Semester B.E. Degree Examination, Dec.2019/Jan.2020
Storage Area Networks

Time: 3 hrs.   Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1   a. Explain with neat diagram the Evolution of storage Architecture.   (06 Marks)
    b. Discuss core Elements of Data center and key characteristics of Data center.   (10 Marks)

OR

2   a. Describe with neat block diagram the components of Intelligent storage system.   (08 Marks)
    b. With diagram explain different RAID Techniques.   (08 Marks)

Module-2

3   a. Explain with neat diagram the components of Fiber Channels (FC) storage Area Networks.
                                                                                  (08 Marks)
    b. What is zoning? Explain its types.   (08 Marks)

OR

4   a. Discuss different iSCSI Topologies with neat diagrams.   (08 Marks)
    b. Write short notes on Fiber Channel Over Ethernet (FCOE).   (08 Marks)

Module-3

5   a. Discuss different back up Topologies.   (08 Marks)
    b. What is data deduplication ? Explain its implementation methods.   (08 Marks)

OR

6   a. Explain local Replication technology using Host based methods.   (06 Marks)
    b. Write a short notes on the following ;
        i) Three site Replications ii) Network based Remote Replication.   (10 Marks)

Module-4

7   a. Explain the characteristics of clouds computing.   (04 Marks)
    b. Discuss cloud Deployment models.   (06 Marks)
    c. Explain Cloud computing Infrastructure.   (06 Marks)

OR

8   a. Discuss the steps involved in transitioning from classic data center to cloud computing
        Environment service.   (08 Marks)
    b. Write a short notes on the following :
        i) Business drives for cloud computing
        ii) Cloud migration considerations.   (08 Marks)

Module-5

9   a. Explain the different types of security threats.   (06 Marks)
    b. Discuss security solutions for FC – SAN and IP-SAN.   (10 Marks)

OR

10 a. Explain the various information infrastructure components in classic and virtual
        Environments.   (08 Marks)
    b. Write a short notes on the following :
        i) Information Life Cycle Management (ILM).   ii) Storage Tiering.   (08 Marks)

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Seventh Semester B.E. Degree Examination, Jan./Feb.2021
Storage Area Networks

Time: 3 hrs.   Max. Marks: 80

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. Explain evolution of storage architecture with neat diagram.   (08 Marks)
   b. Discuss the key characteristics of a data centre, with neat diagram.   (08 Marks)

OR

2 a. What is protocol? Explain the popular interface protocols used for host to storage
      communications.   (08 Marks)
   b. Explain two different types of intelligent storage systems.   (08 Marks)

Module-2

3 a. Explain Fibre channel protocol stack with neat diagram.   (08 Marks)
   b. What is zoning? Explain its types.   (08 Marks)

OR

4 a. What is FCIP? Explain FCIP protocol stack.   (08 Marks)
   b. What is NAS? Explain its components with neat sketch.   (08 Marks)

Module-3

5 a. Explain any two backup topologies with neat diagram.   (08 Marks)
   b. Discuss Data Deduplication implementations.   (08 Marks)

OR

6 a. Give different uses of local replicas.   (08 Marks)
   b. Explain remote replication technologies.   (08 Marks)

Module-4

7 a. What is cloud computing? Give its characteristics.   (08 Marks)
   b. Explain different cloud service models.   (08 Marks)

OR

8 a. Explain various cloud deployment models.   (08 Marks)
   b. Discuss cloud challenges.   (08 Marks)

Module-5
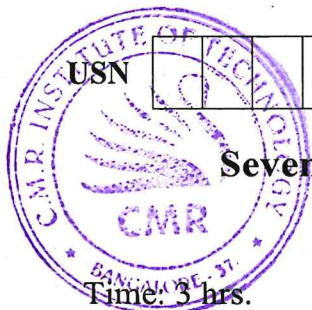
9 a. Explain storage security domains.   (08 Marks)
   b. Explain various security measures of cloud environment.   (08 Marks)

OR

10 a. Explain various storage infrastructure management activities.   (08 Marks)
    b. Explain information lifecycle management.   (08 Marks)

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Seventh Semester B.E. Degree Examination, Jan./Feb. 2021
Storage Area Networks

Time: 3 hrs.

Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1 a. Explain the key characteristics of Data centre with neat diagram. **(08 Marks)**
   b. Explain the core elements of Data center. **(04 Marks)**
   c. Discuss the process of mapping user files to disk storage with neat diagram. **(08 Marks)**

OR

2 a. Describe the concept of Mirroring and Parity. **(04 Marks)**
   b. What is RAID? Explain the RAID levels with reference to nested RAID, RAID 3 and RAID 5 with neat diagram. **(08 Marks)**
   c. Discuss the components of an intelligent storage system with neat diagram. **(08 Marks)**

Module-2

3 a. List and explain different Fibre channel connectivity options with neat diagram. **(08 Marks)**
   b. Define FCOE. Explain components of an FCOE network. **(08 Marks)**
   c. Define Zoning. Explain types of Zoning. **(04 Marks)**

OR

4 a. Discuss components of NAS with neat diagram. **(06 Marks)**
   b. List and explain benefits of NAS. **(06 Marks)**
   c. Explain object storage and Retrival in OSD with diagram. **(08 Marks)**

Module-3

5 a. Define Business Continuity. Explain BC terminology in detail. **(06 Marks)**
   b. Discuss different Backup Topologies. **(08 Marks)**
   c. Explain the concept of Backup in virtualized Environments. **(06 Marks)**

OR

6 a. Explain local Replication technology using Host based methods. **(08 Marks)**
   b. Discuss synchronous + Asynchronous and Synchronous + Disk Buffered of three site replication. **(06 Marks)**
   c. Explain the concept of Remote replication and migration in a Virtualized Environment. **(06 Marks)**

Module-4

7 a. Define Cloud Computing. List and explain the essential characteristics of cloud computing. **(08 Marks)**
   b. List the cloud service models and discuss any two of them. **(08 Marks)**
   c. List and explain benefits of cloud computing. **(04 Marks)**

<div align="center">OR</div>

8 a. Explain Cloud Deployment models in detail. (10 Marks)

b. Explain Cloud Computing infrastructure in detail. (10 Marks)

<div align="center"><u>Module-5</u></div>

9 a. List and explain the different types of security threats. (06 Marks)

b. Discus IPSAN CHAP protocol with neat diagram. (06 Marks)

c. Discuss security solutions for FC-SAN and NAS. (08 Marks)

<div align="center">OR</div>

10 a. List and describe storage infrastructure management activities. (04 Marks)

b. Explain Information lifecycle management with proper example. (08 Marks)

Discuss two methods of storage tiering. (08 Marks)

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