VISVESVARAYA TECHNOLOGICAL UNIVERSITY
BELGAVI

STORAGE ARE NETWORKS
(17CS754)

(As per Visvesvaraya Technological University Syllabus)

Complied By:

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2020-21

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Edition: 2020 - 21

Document Owner

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Module-1

Storage Systems

1. Explain with neat diagram the Evolution of storage Architecture. (Jan-20, 6M)
2. Discuss core Elements of Data center and key characteristics of Data center. (Jan-20, 10M) (Jul-19, 8M)(Jan-19, 8M)
3. Describe with neat block diagram the components of Intelligent storage system. (Jan-20, 8M)
4. With diagram explain different RAID Techniques. (Jan-20, 8M)
5. Discuss volume manager and compute virtualization in detail. (Jul-19, 8M)
6. Differentiate between software and hardware RAID. Illustrate how parity method is used for RAID levels. (Jul-19, 8M)
7. With a neat diagram explain ISS. Explain in detail the cache component of ISS. (Jul-19, 8M)
8. What is a file system? Explain the process of mapping user files to the disk storage. (Jan-19, 8M)
9. What is RAID? Explain the RAID levels with reference to nested RAID, RAID3, RAID5 with neat diagram. (Jan-19, 8M)
10. With neat diagram, explain the structure of read and write operations with cache. (Jan-19, 8M)
11. Explain the concept of computer virtualization along with its advantages with neat diagram.
12. Explain the features of RAID 6 with a diagram.
13. Discuss the features of high end storage system with neat diagram

Module-2

Storage Networking Technologies and Virtualization

1. Explain with neat diagram the components of Fiber Channels (FC) storage Area Networks. (Jan-20, 8M)
2. What is zoning? Explain its types. (Jan-20, 8M)
3. Discuss different iSCSI Topologies with neat diagrams. (Jan-20, 8M)
4. Write short notes on Fiber Channel Over Ethernet (FCOE). (Jan-20, 8M)(Jan-19, 8M)
5. List and explain different FC connectivity options with a neat diagram. (Jul-19, 8M)
6. With diagram explain iSCSI implementation. (Jul-19, 8M)
7. What is NAS? Explain NAS implementation in detail. (Jul-19, 8M)
8. List the key features of Content Addressed Storage (CAS). Illustrate with a neat block diagram the unified storage for CAS system. (Jul-19, 8M)
9. Explain FC connectivity options with relevant diagram. (Jan-19, 8M)

10. Explain block-level storage virtualization with neat diagram. Explain VSAN in brief. (Jan-19, 8M)
11. What is NAS? Explain the benefits of NAS. (Jan-19, 8M)
12. Discuss different layers of Fiber Channel protocol stack with neat diagram.
13. Discuss the different types of FC ports with neat diagram

Module-3

Backup, Archive, Replication

1. Discuss different backup Topologies. (Jan-20, 8M)
2. What is data deduplication? Explain its implementation methods. (Jan-20, 8M)(Jan-19, 8M)
3. Explain local Replication technology using Host based methods. (Jan-20, 6M)
4. Write a short notes on the following : (Jan-20, 10M)
   i. Three site Replications
   ii. Network based Remote Replication.
5. Explain with a neat diagram BC planning lifecycle. (Jul-19, 8M)
6. Mention backup topologies. List various backup forget solution and explain any one with a neat diagram. (Jul-19, 8M)
7. List various uses of local replication. Explain storage array based local replication with a neat diagram. (Jul-19, 8M)
8. Differentiate between Synchronous and Asynchronous based remote replication model. (Jul-19, 8M)
9. What is business continuity? Explain the BC Terminology in detail. (Jan-19, 8M)
10. Explain Backup and Restore operations with neat diagram. (Jan-19, 8M)
11. Explain Synchronous + Asynchronous and Synchronous + Disk Buffered methods of three-site replication with neat diagram. (Jan-19, 8M)
12. Explain the concept of:
    i. LVM based replication
    ii. Full Volume mirroring
    iii. Uses of local replicas.
13. Discuss the effects of a bunker failure in a three-site replication for the following implementation:
    i. Multihop—synchronous + disk buffered
    ii. Multihop—synchronous + asynchronous
    iii. Multi-target

Module-4

Cloud Computing

1. What is cloud computing? Explain the characteristics and benefits of cloud computing. (Jan-20, 4M)(Jan-19, 8M)
2. Discuss cloud Deployment models. (Jan-20, 6M) (Jul-19, 8M)
3. Explain Cloud computing Infrastructure. (Jan-20, 6M)(Jan-19, 8M)
4. Discuss the steps involved in transitioning from classic data center to cloud computing Environment service. (Jan-20, 8M)
5. Write a short notes on the following : (Jan-20, 8M)
   i. Business drives for cloud computing
   ii. Cloud migration considerations.
6. List various cloud computing characteristics. Explain the cloud computing infrastructure components with a neat diagram. (Jul-19, 8M)
7. Explain in detail in band and out of band virtualization appliances with a neat diagram. (Jul-19, 16M)
8. Explain the various cloud service models available. (Jan-19, 8M)
9. Explain the public cloud and private cloud deployment models in cloud computing. (Jan-19, 8M)

Module-5

Securing and Managing Storage Infrastructure

1. Explain the different types of security threats. (Jan-20, 6M)
2. Discuss security solutions for FC — SAN and IP-SAN. (Jan-20, 10M)
3. Explain the various information infrastructure components in classic and virtual Environments. (Jan-20, 8M)
4. Write a short notes on the following : (Jan-20, 8M)
   i. Information Life Cycle Management (ILM)
   ii. Storage Tiering.
5. What are the different rules tried for information security? Explain in detail FCSAN based security implementation. (Jul-19, 8M)
6. List and explain different storage infrastructure management activities in detail. (Jul-19, 8M)
7. Explain different storage management activities. (Jul-19, 8M)(Jan-19,8M)
8. What is ILM? List and explain various benefits of ILM. (Jul-19, 8M)
9. Explain FC SAN security architecture with neat diagram. (Jan-19, 8M)
10. Explain the concept of Kerberos with neat diagram. (Jan-19, 8M)
11. Explain Information Lifecycle Management (ILM) in detail with challenges. (Jan-19, 8M)
12. With neat diagram explain network layer firewalls?