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MANIPAL UNIVERSITY
SCHOOL OF INFORMATION SCIENCES

FOURTH SEMESTER M Sc Tech / SECOND SEMESTER ME (COMPUTING
TECHNOLOGIES AND VIRTUALIZATION) DEGREE EXAMINATION –
APRIL / MAY 2016

SUBJECT: VIR 614 / VIR 610.1 (ELECTIVE 2) – STORAGE AREA NETWORKS

Wednesday, April 27, 2016

Time: 10.00 – 13.00 Hrs.

Max. Marks: 100

1. List and explain the components of storage system Environment
(10 marks)
2. Describe storage options
(3 + 3 + 4 = 10 marks)
 - i. Tape
 - ii. Optical
 - iii. Disk drives
3. What is the difference between a read cache hit and a read cache miss? What is the difference between Least Recently Used and Most Recently Used algorithms?
(10 marks)
4. Describe the following :
(2.5 x 4 = 10 marks)
 - a. Internal Direct Attached Storage (DAS) connectivity.
 - b. External Direct Attached Storage (DAS) connectivity.
 - c. Storage Area Network (SAN) and its benefits.
 - d. Components of Storage Area Network (SAN)

5. Define the purpose of zoning? What is a Core-Edge Fabric?

(4 + 6=10 marks)

6. Describe basic architecture of

- i. Internet Small Computer System Interface (iSCSI)
- ii. Fibre Channel over IP (FCIP)
- iii. Fibre Channel over Ethernet (FCoE)

(3 + 3 + 4=10 marks)

7. Explain the benefits and drawbacks of using: Network Interface Card (NIC), TCP Offload Engine (TOE) and Internet Small Computer System Interface Host Bus Adapter (iSCSI HBA)

(4 + 3 + 3 =10 marks)

8. Describe Block-Level Virtualization technologies and implementation.

(10 marks)

9. Provide examples of planned and unplanned downtime in the context of storage infrastructure operations. What are the three levels of granularity found in Backups?

(10 marks)

10. Discuss Storage Networking Industry Association (SNIA) virtualization taxonomy

(10 marks)
