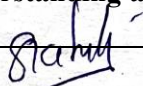


<b>STORAGE AREA NETWORKS</b> <b>(Effective from the academic year 2018 -2019) SEMESTER</b> <b>– VII</b>			
<b>Course Code</b>	<b>18CS822</b>	<b>CIE Marks</b>	40
<b>Number of Contact Hours/Week</b>	3:0:0	<b>SEE Marks</b>	60
<b>Total Number of Contact Hours</b>	40	<b>Exam Hours</b>	03
<b>CREDITS –3</b>			
<b>Course Learning Objectives:</b> This course (18CS822) will enable students to:			
<ul style="list-style-type: none"> <li>• Evaluate storage architectures,</li> <li>• Define backup, recovery, disaster recovery, business continuity, and replication</li> <li>• Examine emerging technologies including IP-SAN</li> <li>• Understand logical and physical components of a storage infrastructure</li> <li>• Identify components of managing and monitoring the data center</li> <li>• Define information security and identify different storage virtualization technologies</li> </ul>			
<b>Module 1</b>			<b>Contact Hours</b>
<b>Storage System: Introduction to Information Storage:</b> Information Storage, Evolution of Storage Architecture, Data Center Infrastructure, Virtualization and Cloud Computing. <b>Data Center Environment:</b> Application Database Management System (DBMS), Host (Compute), Connectivity, Storage, Disk Drive Components, Disk Drive Performance, Host Access to Data, Direct-Attached Storage, Storage Design Based on Application <b>Textbook1 : Ch.1.1 to 1.4, Ch.2.1 to 2.10 RBT: L1, L2</b>			08
<b>Module 2</b>			
<b>Data Protection - RAID :</b> RAID Implementation Methods, RAID Array Components, RAID Techniques, RAID Levels, RAID Impact on Disk Performance, RAID Comparison. <b>Intelligent Storage Systems :</b> Components of an Intelligent Storage System, Types of Intelligent Storage Systems. <b>Fibre Channel Storage Area Networks - Fibre Channel:</b> Overview, The SAN and Its Evolution, Components of FC SAN. <b>Textbook1 : Ch.3.1 to 3.6, Ch. 4.1, 4.3, Ch. 5.1 to 5.3 RBT: L1, L2</b>			08
<b>Module 3</b>			
<b>IP SAN and FCoE:</b> iSCSI, FCIP, <b>Network-Attached Storage:</b> General-Purpose Servers versus NAS Devices, Benefits of NAS, File Systems and Network File Sharing, Components of NAS, NAS I/O Operation, NAS Implementations, NAS File-Sharing Protocols, Factors Affecting NAS Performance <b>Textbook1 : Ch.6.1, 6.2, Ch. 7.1 to 7.8 RBT: L1, L2</b>			08
<b>Module 4</b>			

<b>Introduction to Business Continuity:</b> Information Availability, BC Terminology, BC Planning Life Cycle, Failure Analysis, Business Impact Analysis, BC Technology Solutions, <b>Backup and Archive:</b> Backup Purpose, Backup Considerations, Backup Granularity, Recovery Considerations, Backup Methods, Backup Architecture, Backup and Restore Operations, Backup Topologies, Backup in NAS Environments <b>Textbook1 : Ch.9.1 to 9.6, Ch. 10.1 to 10.9 RBT:</b> <b>L1, L2</b>	08
<b>Module 5</b>	
<b>Local Replication:</b> Replication Terminology, Uses of Local Replicas, Replica Consistency , Local Replication Technologies, Tracking Changes to Source and Replica, Restore and Restart Considerations, Creating Multiple Replicas. <b>Remote Replication:</b> Modes of Remote Replication, Remote Replication Technologies. <b>Securing the Storage Infrastructure:</b> Information Security Framework, Risk Triad, Storage Security Domains. Security Implementations in Storage Networking <b>Textbook1 : Ch.11.1 to 11.7, Ch. 12.1, 12.2, Ch. 14.1 to 14.4</b> <b>RBT: L1, L2</b>	08
<b>Course Outcomes:</b> The student will be able to : <ul style="list-style-type: none"> <li>Identify key challenges in managing information and analyze different storage networking technologies and virtualization</li> <li>Explain components and the implementation of NAS</li> <li>Describe CAS architecture and types of archives and forms of virtualization</li> <li>Illustrate the storage infrastructure and management activities</li> </ul>	
<b>Question Paper Pattern:</b> <ul style="list-style-type: none"> <li>The question paper will have ten questions.</li> <li>Each full Question consisting of 20 marks</li> <li>There will be 2 full questions (with a maximum of four sub questions) from each module.</li> <li>Each full question will have sub questions covering all the topics under a module.</li> <li>The students will have to answer 5 full questions, selecting one full question from each module.</li> </ul>	
<b>Textbooks:</b>	
1. EMC Education Services, “ <b>Information Storage and Management</b> ”,Wiley India Publications, 2009. ISBN: 9781118094839	
<b>Reference Books:</b>	
1. Paul Massiglia, Richard Barker, " <b>Storage Area Network Essentials: A Complete Guide to Understanding and Implementating SANs Paperback</b> ", 1st Edition, Wiley India Publications, 2008	

  
 HOD's Signature  
**H.O.D.**  
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