SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
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QUESTION BANK (DESCRIPTIVE)

Subject with Code: VIRTUALIZATION TECHNIQUES (20CS1205) **Course & Branch**: B.Tech CCC

Year & Sem: III-B.Tech & II-Sem   **Regulation:** R20

UNIT –I
INTRODUCTION TO VIRTUALIZATION

1	a)	Discuss the key components of system architectures relevant to virtualization	[L2][CO1]	[6M]
	b)	How different system architectures influence virtualization techniques	[L1][CO1]	[6M]
2		Explain the role of system architectures in virtualization and its impact.	[L2][CO1]	[12M]
3		Define what a virtual machine is and explain how it differs from physical machines.	[L1][CO1]	[12M]
4		Describe the fundamentals of Virtual Machine Basics.	[L1][CO1]	[12M]
5	a)	Discuss the advantages and limitations of process virtual machines compared to other virtualization techniques.	[L3][CO1]	[6M]
	b)	Explore the Taxonomy of Virtual Machines within the realm of virtualization	[L4][CO1]	[6M]
6		Outline the classification of virtual machines into various categories	[L2][CO1]	[12M]
7		Define emulation and explain how Basic Interpretation serves.	[L2][CO1]	[12M]
8		Describe the fundamental technique in emulating hardware platforms and software environments.	[L3][CO1]	[12M]
9		Evaluate the strengths and limitations of Basic Interpretation	[L2][CO1]	[12M]
10	a)	Compare and contrast Threaded Interpretation with other emulation techniques	[L2][CO1]	[6M]
	b)	How Pre-Coded and Direct Interpretation methods.	[L1][CO1]	[6M]

UNIT –II
VIRTUALIZATION INFRASTRUCTURE

1	a)	What is a resource pool in virtualization infrastructure	**[L1][CO2]**	**[6M]**
	b)	Discuss the importance of a testing environment in the context of virtualization.	**[L3][CO2]**	**[6M]**
2	a)	Explain the concept of server virtualization and its benefits in modern IT environments.	**[L2][CO2]**	**[6M]**
	b)	How are virtual workloads managed and optimized within a virtualized infrastructure?	**[L2][CO2]**	**[6M]**
3	a)	What steps are involved in provisioning virtual machines, and what factors influence VM performance?	**[L1][CO2]**	**[6M]**
	b)	How does scalability play a role in virtualized environments, and what strategies can be employed to achieve scalability?	**[L2][CO2]**	**[6M]**
4	a)	Describe desktop virtualization and its advantages for organizations.	**[L2][CO2]**	**[6M]**
	b)	What is application virtualization, and how does it streamline software deployment and management?	**[L1][CO2]**	**[6M]**
5	a)	Compare and contrast the different implementation levels of virtualization, such as full virtualization, para-virtualization, and hardware-assisted virtualization.	**[L2][CO2]**	**[6M]**
	b)	Discuss the typical structure of a virtualized environment and the key components involved.	**[L3][CO2]**	**[6M]**
6	a)	How is CPU virtualization achieved, and what challenges may arise in this process?	**[L1][CO2]**	**[6M]**
	b)	Discuss the impact of virtualization on overall IT infrastructure management practices and organizational efficiency.	**[L3][CO2]**	**[6M]**
7		Explain the concept of memory virtualization and its role in optimizing resource utilization.	**[L2][CO2]**	**[12M]**
8	a)	What are I/O devices in the context of virtualization, and how are they virtualized to improve system performance?	**[L1][CO2]**	**[6M]**
	b)	Describe the process of resource allocation in a virtualized environment and the techniques used to ensure fair distribution among virtual machines.	**[L2][CO2]**	**[6M]**
9		What security considerations should be taken into account when implementing virtualization technologies?	**[L1][CO2]**	**[12M]**
10		Explain the concept of hypervisor and its role in managing virtualized resources.	**[L2][CO2]**	**[12M]**

UNIT –III
NETWORK VIRTUALIZATION

1	a)	How does network virtualization aid in designing scalable enterprise networks?	**[L1][CO3]**	**[6M]**
	b)	What are the benefits of virtualizing campus networks for large organizations?	**[L1][CO3]**	**[6M]**
2	a)	Explain WAN design principles for enterprise networks.	**[L2][CO3]**	**[6M]**
	b)	How does WAN virtualization enhance scalability and flexibility?	**[L1][CO3]**	**[6M]**
3	a)	What is WAN virtualization, and how does it optimize network resources?	**[L1][CO3]**	**[6M]**
	b)	Discuss the role of VLANs in network scalability and segmentation.	**[L3][CO3]**	**[6M]**
4	a)	What is Layer 2 network device virtualization?	**[L1][CO3]**	**[6M]**
	b)	How do Layer 3 VRF instances enhance network security?	**[L1][CO3]**	**[6M]**
5	a)	Compare Layer 2 and Layer 3 virtualization approaches.	**[L3][CO3]**	**[6M]**
	b)	What challenges do VLANs address in network segmentation?	**[L1][CO3]**	**[6M]**
6		How does network virtualization improve Layer 2 network manageability?	**[L1][CO3]**	**[12M]**
7	a)	What are the advantages of VLANs in enterprise networks?	**[L3][CO3]**	**[6M]**
	b)	How do VLANs impact network scalability?	**[L2][CO3]**	**[6M]**
8	a)	Describe the role of Layer 3 VRF instances in network security.	**[L3][CO3]**	**[6M]**
	b)	How does network virtualization impact network service deployment?	**[L2][CO3]**	**[6M]**
9		How are virtualization technologies integrated into traditional network architectures?	**[L3][CO3]**	**[12M]**
10		Explain the dynamic allocation of network resources in virtualized environments.	**[L2][CO3]**	**[12M]**

UNIT –IV
NETWORK FIREWALLS AND ROUTING

1	a)	How do VFIs contribute to network firewall contexts?	**[L2][CO4]**	**[6M]**
	b)	What is datapath virtualization in network devices?	**[L3][CO4]**	**[6M]**
2	a)	Explain the significance of Layer 2 technologies like 802.1q and trunking.	**[L2][CO4]**	**[6M]**
	b)	Describe the purpose of Generic Routing Encapsulation (GRE).	**[L3][CO4]**	**[6M]**
3		Discuss the concept of Label Switched Paths (LSPs) in network routing.	**[L2][CO4]**	**[12M]**
4	a)	How does control-plane virtualization enhance network management?	**[L3][CO4]**	**[6M]**
	b)	Explain the role of routing protocols in network communication.	**[L2][CO4]**	**[6M]**
5		Describe multi-topology routing and its advantages.	**[L3][CO4]**	**[12M]**
6	a)	How do virtual firewall contexts enhance network security?	**[L2][CO4]**	**[6M]**
	b)	What is the primary function of datapath virtualization?	**[L3][CO4]**	**[6M]**
7	a)	Discuss the implementation and benefits of 802.1q VLAN tagging.	**[L2][CO4]**	**[6M]**
	b)	How does trunking facilitate communication between VLANs?	**[L3][CO4]**	**[6M]**
8	a)	Explain the purpose of GRE in network communication.	**[L2][CO4]**	**[6M]**
	b)	What are the security features provided by IPSec and L2TPv3?	**[L3][CO4]**	**[6M]**
9	a)	Describe the operation of Label Switched Paths in routing.	**[L2][CO4]**	**[6M]**
	b)	How does control-plane virtualization streamline network management tasks?	**[L3][CO4]**	**[6M]**
10		Discuss the role of routing protocols in determining optimal network paths.	**[L2][CO4]**	**[12M]**

UNIT –V
APPLYING VIRTUALIZATION

1		What are the main differences between Guest OS, Host OS, Hypervisor, Emulation, and Kernel Level virtualization?	**[L3][CO5]**	**[12M]**
2	a)	Explain the concept of Shared Kernel virtualization.	**[L2][CO5]**	**[6M]**
	b)	How do server virtualization solutions streamline IT infrastructure management?	**[L3][CO5]**	**[6M]**
3	a)	Discuss the advantages of VMware Server in enterprise virtualization environments.	**[L2][CO5]**	**[6M]**
	b)	What are the key features of ESXi hypervisor in server virtualization?	**[L3][CO5]**	**[6M]**
4	a)	Explain the role of Citrix Xen Server in enterprise virtualization deployments.	**[L2][CO5]**	**[6M]**
	b)	How does Microsoft Virtual PC differ from other enterprise virtualization solutions?	**[L3][CO5]**	**[6M]**
5		Describe the functionalities offered by VirtualBox in enterprise virtualization setups.	**[L2][CO5]**	**[12M]**
6	a)	Compare the performance and scalability of VMware Server and ESXi.	**[L3][CO5]**	**[6M]**
	b)	How does Citrix Xen Server enhance virtualization management and deployment?	**[L2][CO5]**	**[6M]**
7		What are the security features provided by Microsoft Hyper-V in virtualized environments?	**[L3][CO5]**	**[12M]**
8		Explain the flexibility and customization options available in VirtualBox for virtual machine configurations.	**[L2][CO5]**	**[12M]**
9	a)	How does virtualization improve resource utilization in server environments?	**[L3][CO5]**	**[6M]**
	b)	Discuss the role of hypervisors in managing virtualized server resources.	**[L2][CO5]**	**[6M]**
10		What are the potential challenges of implementing server virtualization in enterprise IT infrastructures?	**[L3][CO5]**	**[12M]**

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