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Question Paper Code	12300
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M.E. / M.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2023

First Semester

M.E. - Computer Science and Engineering (With Specialization in Networks)

20PCNPC102 - VIRTUALIZATION TECHNOLOGIES

(Regulations 2020)

Duration: 3 Hours

Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

- | | <i>Marks,
K-Level, CO</i> |
|--|-------------------------------|
| 1. Define Hypervisor. | <i>2,K1,CO1</i> |
| 2. Discuss the challenges associated with CPU scheduling in virtualization. | <i>2,K2,CO1</i> |
| 3. How does memory ballooning work? | <i>2,K1,CO2</i> |
| 4. Outline the pros and cons of memory reclamation in virtual memory management. | <i>2,K2,CO2</i> |
| 5. Define granularity in the context of virtual storage. | <i>2,K1,CO3</i> |
| 6. Explain how do overlay networks function in virtualization. | <i>2,K2,CO3</i> |
| 7. Define elasticity in the context of cloud computing. | <i>2,K1,CO4</i> |
| 8. Compare the different types of clustering configurations. | <i>2,K2,CO4</i> |
| 9. What is the monolithic model in I/O virtualization? | <i>2,K1,CO5</i> |
| 10. Identify a popular cloud service provider that employs tunneling for virtual networking. | <i>2,K2,CO5</i> |

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

- | | |
|---|------------------|
| 11. a) Compare and Contrast the features of Full virtualization with Para virtualization. | <i>13,K2,CO1</i> |
| OR | |
| b) Compare and contrast the features and functionalities of classic virtual machines, including VMware, V Sphere, KVM, and Xen. | <i>13,K2,CO1</i> |
| 12. a) Explain how virtual storage is utilized and managed in a virtualized environment. | <i>13,K2,CO2</i> |
| OR | |
| b) Discuss how VMware handles memory allocation and optimization. | <i>13,K2,CO2</i> |
| 13. a) Explain the monolithic model of I/O virtualization and its advantages and disadvantages. | <i>13,K2,CO3</i> |

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

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OR

- b) Compare and contrast centralized and distributed file systems in the context of virtual storage. *13,K2,CO3*

14. a) Describe hot migration and its significance in maintaining continuous operation in virtualized environments. *13,K2,CO4*

OR

- b) Explain the concept of virtual machine-based distributed computing and its applications. *13,K2,CO4*

15. a) Explain virtual machine provisioning. How does virtual machine provisioning contribute to resource optimization? *13,K2,CO5*

OR

- b) Discuss the importance of network security in virtualized infrastructures. *13,K2,CO5*

PART - C (1 × 15 = 15 Marks)

16. a) ABC Corporation is exploring dynamic memory ballooning as a memory management technique. Explain the principle behind dynamic memory ballooning and how it allows for the efficient allocation and deallocation of memory resources in a virtualized environment. Discuss the considerations and scenarios where dynamic memory ballooning is most effective. *15,K3,CO2*

OR

- b) XYZ Corporation is concerned about potential memory redundancy across its virtualized infrastructure. Describe how transparent page sharing (TPS) addresses this concern by identifying and eliminating redundant memory pages. Discuss the benefits and potential drawbacks of implementing TPS in a large-scale virtualized environment. *15,K3,CO2*