Reg. No. : | E | N | G | G | T | R | E | E | . | C | O | M |

Question Paper Code : 40473

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2024.

Fifth/Sixth Semester

For More Visit our Website
EnggTree.com

Computer Science and Engineering

CCS 372 — VIRTUALIZATION

(Common to : Computer Science and Design/Computer Science and Engineering
(Artificial Intelligence and Machine Learning)/ Computer Science and Engineering
(Cyber Security)/Computer and Communication Engineering/Artificial Intelligence
and Data Science/Computer Science and Business Systems/Information Technology)

(Regulations 2021)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define virtualization and state its need in the context of cost reduction.

2. Write the working of hardware virtualization and challenges posed.

3. What is the use of virtual machine and its significance in server virtualization concept?

4. Interpret various types of desktop virtualization.

5. Summarize the advantages of network virtualization with example.

6. Mention the use of VLANs in network virtualization.

7. Define storage virtualization and name two types of virtualization.

8. State the risks associated with storage virtualization.

9. Name two virtualization tools and brief their main features.

10. Tabulate the differences between VMWare-Amazon AWS with Microsoft HyperV in terms of virtualization capabilities, scalability, management tools, security features and pricing models.

PART B — (5 × 13 = 65 marks)

11. (a) Analyze a case study where a company implemented virtualization to reduce infrastructure costs. Evaluate the benefits and limitations of virtualization in this scenario. (7+6)

Or

(b) Apply the concepts of full virtualization, partial virtualization and paravirtualization to a real-world example of virtualization deployment. Analyze the suitability of each type of virtualization for different use cases. (5+8)

12. (a) Explore a scenario where a company implemented server virtualization to consolidate its server infrastructure. Analyze the business cases and benefits of server virtualization in this context. (7+6)

Or

(b) Analyze a case study where desktop virtualization was deployed to improve workforce mobility and flexibility. Evaluate the challenges and benefits of desktop virtualization in enhancing productivity and security. (7+6)

13. (a) Evaluate a case study where a company implemented network virtualization to improve network scalability and efficiency. Analyze the impact of network virtualization on network management and performance. (7+6)

Or

(b) Apply the concepts of WAN architecture and WAN virtualization to a real-world scenario involving the optimization of wide-area network resources. Analyze the benefits and challenges of WAN virtualization in this context. (8+5)

14. (a) Demonstrate a real-world case study where a company implemented storage virtualization to address scalability and data management challenges. Discuss how storage virtualization improved storage resource utilization, simplified data management, and enhanced disaster recovery capabilities. Provide recommendations for optimizing storage virtualization solutions to meet evolving business needs. (6+4+3)

Or

(b) Discuss the risks associated with storage virtualization technologies as block and file virtualization, address space remapping, and RAID. Compare and contrast Storage Area Networks (SAN) and Network Attached Storage (NAS) in terms of their suitability for virtualized storage environments analyzing the risks and benefits of each solution. (6+7)

15. (a) Examine the AWS virtualization procedure, detailing the specific AWS virtualization services employed by the organization, such Amazon as EC2 (Elastic Compute Cloud), Amazon EBS (Elastic Block Store) and Amazon VPC (Virtual Private Cloud). Additionally, evaluate the effectiveness of these AWS services in meeting the organization's virtualization requirements and addressing scalability, performance, and security concerns.   (7+6)

Or

(b) Assess the GCP virtualization services deployed by the organization, such as Google Compute Engine, Google Cloud Storage, and Google Virtual Private Cloud (VPC).

PART C — (1 × 15 = 15 marks)

16. (a) Compare and analyze different virtualization platforms such as VMware, Amazon AWS, Microsoft Hyper-V, Oracle VM VirtualBox, IBM PowerVM, and Google Virtualization. Assess the features, performance, scalability, cost-effectiveness of each platform. Consider factors such as ease of deployment, management capabilities, integration with existing infrastructure and support for hybrid cloud environments. Provide recommendations for selecting the most suitable virtualization platform based on organizational requirements and use cases.

Or

(b) Conduct a risk assessment of storage virtualization technologies in enterprise environments. Identify potential risks such as data loss, data integrity issues, and performance bottlenecks associated with storage virtualization. Analyze strategies and best practices for mitigating these risks, including data encryption, redundancy, performance monitoring, and disaster recovery planning. Evaluate the effectiveness of these mitigation strategies in ensuring the reliability and security of storage virtualization deployments.

40473