

**Code No: 156ER****JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech III Year II Semester Examinations, March - 2024****CLOUD COMPUTING AND VIRTUALIZATION****(Computer Science and Engineering - IOT)****Time: 3 Hours****Max. Marks: 75****Note:** i) Question paper consists of Part A, Part B.

ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.

iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

**PART – A****(25 Marks)**

- 1.a) What are some challenges associated with managing and maintaining computer clusters? [2]
- b) How does fault tolerance play a crucial role in the reliability of computer clusters? [3]
- c) List the strategies for ensuring data privacy and protection in the cloud. [2]
- d) What are the key considerations for organizations when choosing a cloud service provider? [3]
- e) What are the advantages of using Platform as a Service (PaaS) for application development? [2]
- f) How does Aneka contribute to cloud computing environments? [3]
- g) Compare and contrast emulation-based virtualization with hypervisor-based virtualization. [2]
- h) List best practices for designing and deploying virtualized data center architectures. [3]
- i) How does operating system virtualization differ from other forms? [2]
- j) How does application virtualization improve software deployment? [3]

**PART – B****(50 Marks)**

- 2.a) How does the virtualization of clusters enhance data center efficiency? Explain.
- b) Discuss the role of middleware in distributed systems. [5+5]

**OR**

- 3.a) How do distributed system models facilitate scalability and flexibility in computing? Explain.
- b) What are the different states of a virtual machine? Draw a transition diagram to show the dependency between different states. [5+5]

- 4.a) Discuss the key characteristics of cloud computing.
- b) Explain the concept of "Integration as a Service" in the context of cloud computing. [5+5]

**OR**

- 5.a) Describe the essential service models provided by cloud computing providers.
- b) Discuss the importance of security and compliance in enterprise cloud computing. [5+5]

6.a) What are the key considerations when migrating virtual machines to the cloud? Explain.

b) How do PaaS and SaaS models differ in management and customization? Explain. [5+5]

**OR**

7.a) Explain the role of management tools in overseeing virtual machines in cloud infrastructures.

b) Discuss the benefits of using a cluster as a Service (CaaS) to enhance cloud computing environments. [5+5]

8.a) Define hardware virtualization. Explain how it differs from other forms of virtualization.

b) What is a hypervisor, and how does it facilitate virtualization? Discuss the different types of hypervisors. [5+5]

**OR**

9.a) Explain para-virtualization and its role in optimizing virtualization performance.

b) Compare and contrast software-based virtualization with hardware-assisted virtualization. [5+5]

10.a) Describe the process of migrating virtual machines between physical hosts.

b) What is memory virtualization, and how does it help in optimizing memory utilization in virtualized environments? Explain. [5+5]

**OR**

11.a) Explain the benefits of operating system virtualization for server consolidation, resource optimization, and workload isolation.

b) Discuss Network Function Virtualization (NFV) and its significance in transforming traditional network architectures through software-based network functions. [5+5]

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