

**Code No: 156ER****JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B. Tech III Year II Semester Examinations, August/September - 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 the main objectives of virtualization in a distributed system? [2]
- b) Describe the architecture and components of a scalable computer cluster. [3]
- c) Explain the concept of cloud computing and its essential characteristics. [2]
- d) What are the advantages and disadvantages of cloud computing? [3]
- e) Describe the steps involved in provisioning a virtual machine in a cloud environment. [2]
- f) Discuss the challenges of managing virtual machines in cloud infrastructures. [3]
- g) Explain the concept of hardware-assisted virtualization and its benefits. [2]
- h) Differentiate between a hypervisor and an emulator. [3]
- i) Define operating system virtualization and provide examples of its use cases. [2]
- j) What are the benefits of network function virtualization in modern IT infrastructure? [3]

**PART – B****(50 Marks)**

- 2.a) Discuss the role of enabling technologies in the development of distributed systems.
- b) Explain how virtualization contributes to the efficiency of data centers. [5+5]

**OR**

- 3.a) Describe the different types of distributed system models with appropriate examples.
- b) How does virtualization enhance the scalability of computer clusters? [5+5]

- 4.a) What are the key considerations for enterprises when migrating to a cloud computing environment?
- b) Discuss the advantages of cloud computing for small and medium-sized businesses. [5+5]

**OR**

- 5.a) Describe the 'Enterprise Cloud Computing Paradigm' and its impact on business operations.
- b) Explain the concept of 'Integration as a Service' and its relevance in the cloud era. [5+5]

- 6.a) How does 'Cluster as a Service' (CaaS) improve cloud computing environments?  
b) Discuss the role and functionality of Aneka in cloud computing. [5+5]

**OR**

- 7.a) Compare and contrast Comet Cloud and T-Systems' Workflow Engine for Clouds.  
b) What are the methods to ensure secure distributed data storage in cloud computing? [5+5]

- 8.a) Define full virtualization and explain its significance in the context of virtualized environments.

- b) What are the differences between full virtualization and para-virtualization? [5+5]

**OR**

- 9.a) Discuss the various types of hypervisors and their use cases.  
b) How does para-virtualization enhance the performance of virtualized systems? [5+5]

- 10.a) Explain the concept and advantages of storage virtualization.

- b) Discuss the different approaches to network virtualization and their benefits. [5+5]

**OR**

- 11.a) What are the key benefits and challenges of memory virtualization?

- b) Describe the process and advantages of application virtualization in a cloud environment. [5+5]

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