

Sample

0005

THE OPEN UNIVERSITY OF SRI LANKA
DEPARTMENT OF COMPUTER SCIENCE
BSc in IT DEGREE PROGRAMME 2024/2025
FINAL EXAMINATION
ITU5309: VIRTUAL SYSTEMS & SERVICES
DURATION: TWO HOURS ONLY (2 HOURS)



Date: 12 November 2025

Time: 9.30 am – 11.30 am

1. Answer any 04 questions only.

Question 01

- I. Define the concept of “Virtualization” in your own words. (Marks 05)
- II. List and describe the major categories of virtualization. (Marks 05)
- III. Explain the function and importance of a hypervisor in a virtualized environment. (Marks 07)
- IV. Discuss the main advantages or benefits that virtualization provides to organizations. (Marks 08)

Question 02

- I. Define and describe the concept of “Desktop Virtualization”. (Marks 05)
- II. What is the concept behind the BYOD (Bring Your Own Device)? Explain how it benefits organizations. (Marks 10)
- III. Server virtualization provides many advantages. Explain the significance of Live Migration and Disaster Recovery in this context. (Marks 10)

Question 03

- I. List four (04) advantages of using logical networks compared to traditional network architectures. (Marks 05)
- II. Define the term “Network Segmentation” and briefly explain its purpose. (Marks 05)
- III. Identify four (04) key differences between traditional network models and virtual network models. (Marks 05)
- IV. “Network Isolation” technique is used to improve the security of a logical network. Briefly describe how it works. (Marks 10)

Question 04

- I. Explain why *high availability* is an essential requirement in a virtualized environment. (Marks 05)
- II. Identify three (03) major areas where redundancy is commonly implemented to ensure system reliability. (Marks 05)
- III. What are the four (04) main types of clustered applications? (Marks 05)
- IV. "Load balancing" plays a critical role in ensuring optimal performance in a cluster environment. Name three (03) load balancing techniques and briefly describe them. (Marks 10)

Question 05

- I. A financial organization hosts its critical applications on a virtual server cluster. Recently, users have complained about frequent service interruptions and delayed application responses during peak hours. Explain how you would identify and resolve the issue by applying troubleshooting steps. (Marks 15)
- II. The organization "ABC Pvt Ltd" is experiencing delays in deploying new servers and network services because their current manual provisioning process is slow and prone to errors. Recommend a modern, automated solution that can help the company scale its data center efficiently, and briefly explain how it would address these issues. (Marks 10)

Question 06

- I. What is "Data Deduplication"? (Marks 05)
- II. Explain three (03) challenges of backing up virtual environments. (Marks 05)
- III. Name and explain four (04) main backup solutions for virtual environment. (Marks 07)
- IV. Discuss the advantages and disadvantages of Network Attached Storage. (NAS) (Marks 08)