



SCHOOL OF COMPUTING & ENGINEERING SCIENCES
BACHELOR OF SCIENCE IN COMPUTER NETWORKS AND CYBER SECURITY
FINAL EXAMINATION
CNS 3205: SERVER ADMINISTRATION

DATE: 3rd December 2024

Time: 10:30-12:30 Hours

Instructions

1. This examination consists of **FIVE** questions.
2. Answer **Question 1 (COMPULSORY)** and any other **TWO** questions.

Question 1 (30 Marks)

- a) It has been observed that virtualization is heavily relied upon by Cloud service providers and web hosting companies. Describe any three reasons why that is the case. **(6 Marks)**
- b) The 34th edition of the Communications Authority of Kenya Cybersecurity Report states that "Over the period April - June 2024, the National KECIRT/CC detected over 1.1 billion cyber threat events.". Assuming that you have been appointed as an expert to establish whether one of the critical servers has been affected by an attack. Describe any three aspects that you would examine in relation to server logs? **(6 Marks)**
- c) In your own understanding, what are the two likely benefits of Type1 virtualization over Type 2 virtualization? **(4 Marks)**
- d) New data from NexuSGuard's DDoS Statistical Trends Report 2024 reveals bad actors are shifting DDoS tactics. Application attacks have shifted starkly towards Windows OS devices, comprising 87% of all DDoS targets in 2023 compared to just 15% the prior year. In your own assessment, what two reasons make Linux less attacked? **(4 Marks)**
- e) Using an example, describe the general syntax of a Linux command? **(3 Marks)**
- f) Describe any two reasons why the GUI/Windows System is often not installed on servers. **(4 Marks)**
- g) Write a command to list the smallest file in a directory. **(3 Marks)**

Question 2 (15 Marks)

- a) List and briefly describe four important linux directories. **(4 Marks)**
- b) Explain the effect of the following instructions: **(6 Marks)**
 - i. `chmod u+x test.txt`
 - ii. `chmod o-w test.txt`
 - iii. `chmod o+rw test.txt`
- c) Assuming that you are currently serving as a Systems Administrator for a company. You have just been called and informed that the server has failed. Explain how you would handle a server failure. **(3 Marks)**
- d) Describe any two best Practices for Disaster Recovery Planning. **(2 Marks)**

Question 3 (15 Marks)

- a) Describe how you will go about **downloading** and **installing** each of the following packages from <https://cmake.org/download/>.
 - i. `cmake.rpm` **(3 Marks)**
 - ii. `cmake.tar` **(6 Marks)**
- b) How often should a systems Administrator back up files? Why? **(3 Marks)**
- c) Describe the primary function of the domain controller. **(2 Marks)**
- d) What is LDAP? **(1 Mark)**

Question 4 (15 Marks)

- a) Describe what RAID is in server administration including its benefits. **(3 Marks)**
- b) In your own understanding, describe any four main responsibilities performed by a system administrator. **(4 Marks)**
- c) You have been asked to install Webmin. The software is available for download at <https://www.webmin.com/webmin.tar.gz> Describe the set of steps that you will perform in order to ensure that it is installed on your server. **(6 Marks)**
- d) In a typical server, there is only one root account. How can we share the capabilities/privileges of root user without sharing the root password? **(2 Marks)**

Question 5 (15 Marks)

- a) What do Forests, Trees, and Domains mean? **(6 Marks)**
- b) Describe any two advantages of flash as a storage medium **(2 Marks)**
- c) Describe two factors that you need to consider before copying files. **(4 Marks)**
- d) Write a command to ping a host and send the results to ping.txt. **(3 Marks)**