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KIRIRI WOMEN'S UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2024/2025 ACADEMIC YEAR
FIRST YEAR, SECOND SEMESTER EXAMINATION
FOR THE BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY
KIT 2106 – SYSTEM ADMINISTRATION

Date: 05TH December 2024

Time: 2:30PM – 4:30PM

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)

- a) Define system administration. As a system administrator in an institution – Kiriri Women's University of Science & Technology, discuss your main core responsibilities. (3 Marks)
- b) Assume you are the project manager in the implementation of an ERP in a business organization in Kenya. The ERP was developed in Europe and was selected through a competitive bidding process. You are well aware of the reasons for the high failure rate of ERP implementations in many business organizations in Kenya. Describe THREE strategies you would take to avoid the known common pitfalls and ensure successful implementation of your project. Explain why you would believe these strategies will work. State any assumptions that you make. (7 Marks)
- c) There are available technologies that can extend LANs beyond their normal size to span across large distances even with the help of satellites. How would you consider such technologies and indicate its attributes that facilitates its specifications in any given network. (5 Marks)
- d) As a System Administrator in an organization, explain the steps involved in securing a Windows Server environment, including password policies, account lockout policies, and enabling firewall rules. (5 Marks)
- e) In the diagnosis of faults in network systems, there are tools that must be used. What kind of tools would you use to troubleshoot network connectivity issues? Provide examples for both Windows and Linux. (6 Marks)
- f) What are the key components of the organization's system architecture, and how are they maintained? (4 Marks)

QUESTION TWO (20 MARKS)

- a) You work for a large organization that has developed a large-scale ICT infrastructure. It's primarily used for its newly launched electronic business applications. The organization has realized they did not pay adequate attention to the security of its information resources. Management would like to get a solution.
 - i) Identify THREE major network threats to the information resources in your organization. Explain how they will affect your company. (3 Marks)
 - ii) Compare & contrast TWO frameworks/tools, that can be used in IS audit. (4 Marks)
- b) It is nowadays treated as a rule & policy to have performance contracting for employees in all organizations. Discuss the main metrics and KPIs (Key Performance Indicators) are used to assess team and individual performance? (6 Marks)
- c) A user opens a file /DirA/DirB/DirC/client.c in a system with a distributed file system implemented and designed according to the two features describe above. Explain how the system retrieves the file, including the low-level naming details required. (7 Marks)

QUESTION THREE (20 MARKS)

- a) What is backup on a Linux/Windows system? Name & discuss the main types of backups. (4 Marks)
- b) Your area of specialization is cyber-security (security systems), what kind of security practices, requirements and policies will you put in place to protect the organization's systems from external threats? State and explain each in detail. (8 Marks)
- c) One of the essential roles of the System Administrator is to train the end users on matters of the systems. Discuss in detail THREE importance of conducting end -user training for an organization in safeguarding their systems. (3 Marks)
- d) Explain the process of setting up a network file system (NFS) on Linux or a Shared Folder on Windows. (5 Marks)

QUESTION FOUR (20 MARKS)

- a) Discuss the importance of disaster recovery plans and list the essential steps to ensure business continuity in case of a system failure. (8 Marks)
- b) Kiriri Women's University of Science & Technology has employed you as the system administrator. Your first appointment is to give specifications on the overall infrastructure on what are the key components of the institution's system architecture, and how are they maintained? (4 Marks)
- c) What measures are in place to protect the organization from cyberattacks, data breaches, or unauthorized access? (4 Marks)
- d) Explain how you would configure and use Ansible or Puppet to automate the deployment of software across multiple servers. (4 Marks)

QUESTION FIVE (20 MARKS)

- a) Imagine you are designing a distributed LAN system for an organization. This system allows users to be on all social handles and educational lectures a granting session. The system needs to deliver high quality internet speeds to all users with varying internet connection speeds.
Challenge:
One of the critical challenges in such a system is capacity planning and resource allocation, particularly concerning bandwidth, security an infrastructure while maintaining consistent latency.
Action:
Advice the management on how to overcome the above challenges. (7 Marks)
- b) What role does virtualization or cloud infrastructure play in the organization's system administration processes? (3 Marks)
- c) How does the organization handle access control, and what methods (e.g., two-factor authentication, role-based access) are implemented to manage user permissions securely? (6 Marks)
- d) How is technical support structured (e.g., help desk, on-site support, remote support), and how does the organization ensure quick response times for critical issues? (4 Marks)