



*Faculty Name: IT*  
*Qualification Name:*  
*Programming Foundation*  
*Module Name: Ethics and*  
*Network Architecture*  
*Module Code: ENA412*

***Formative Assessment***  
***3 Paper***

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# Formative Assessment 3 Paper

Faculty Name:	Information Technology
Qualification Name:	IT Certificate in Programming Foundation
Module Name:	Cloud Fundamentals Semester 2
Module Code:	ENA412
Hand Out:	16 – 09 – 2024
Hand In:	04 – 10– 2024
Total Marks:	100
Examiner:	Thabang Mashile
Resources Required:	None

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Section A: Knowledge-based Question(s)	60 Marks
Section B: Scenario-based Question(s)	40 Marks

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## Instruction(s) to Students

1. Read all instructions carefully before beginning the assessment.
2. Use only the materials provided to you, including supporting materials if necessary.
3. Read each question carefully and make sure you understand what is being asked.
4. Manage your time carefully and pace yourself throughout the hand-in and hand-out dates.
5. Show all your work and clearly label your answers.
6. All Formatives are due by 23:30 p.m.
7. Use correct terminology, grammar, spelling, and punctuation.
8. When you have finished the assessment, check your work to make sure you have answered all questions to the best of your ability.
9. This assessment is a group activity, list all group members on the answer sheet.
10. All members of this group activity must submit on campus online.
11. Providing "Yes" or "No" answers without motivation will amount to zero (0) marks being awarded.
12. Little or no references will be recognized as plagiarism, and disciplinary actions will proceed.

# Section A

## Knowledge-based Question(s)

**60 Marks**

### Question 1: Working with Networking Services

- 1.1 Is it ethical to use default configurations when setting up common networking services, knowing they often have security vulnerabilities? (3 Marks)
- 1.2 What ethical considerations are there when defining more networking services beyond the basic ones? (2 Marks)
- 1.3 When is it considered unethical to perform name resolution techniques such as DNS spoofing? (3 Marks)
- 1.4 Is it ethical for network administrators to monitor user activity without explicit consent? (3 Marks)
- 1.5 What ethical guidelines should be followed when setting up common networking services for minors or vulnerable populations? (4 Marks)
- 1.6 When adding new networking services, how can one ethically balance the need for functionality against potential risks like data breaches? (3 Marks)
- 1.7 Is it ethical to use third-party networking services without thoroughly understanding their security protocols and data practices? (2 Marks)

[Total = 20 Marks]

### Question 2: Understanding Wide Area Networks

- 2.1 Is it ethical for an ISP to throttle certain types of traffic while prioritizing others without notifying users? Identify an ethical principle that is being violated. (4 Marks)
- 2.2 What ethical considerations come into play when routing traffic through countries with strict data surveillance laws? (3 Marks)
- 2.3 In the context of Quality of Service (QoS), is it ethical to provide a significantly lower service level to free users compared to premium users? (3 Marks)
- 2.4 Is it ethical for a network administrator to compromise on security features to improve Quality of Service (QoS)? (2 Marks)
- 2.5 When defining common WAN technologies and connections, is it ethical to lock customers into proprietary technologies? (3 Marks)
- 2.6 Is it ethical to oversell WAN services by promising speeds or reliability that the network can't consistently deliver? (2 Marks)
- 2.7 What are the ethical considerations in using public WAN technologies, like the internet, for transmitting sensitive or regulated information? (3 Marks)

[Total = 20 Marks]

### Question 3: Defining Network Infrastructure and Network Security

- 3.1 Is it ethical to set up network infrastructure outside the LAN without implementing proper security measures? (2 Marks)
- 3.2 Should organizations disclose the extent to which they monitor VPN connections and for what purposes? (4 Marks)
- 3.3 When configuring VPN connections, is it ethical to use weaker encryption methods to save costs? (3 Marks)
- 3.4 In the context of network security, is it ethical for a company to implement security zones that restrict employees from accessing certain online resources without proper justification? (3 Marks)

- 3.5 What are the ethical considerations when deciding to deploy third-party security devices within the network?  
(4 Marks)
- 3.6 Is it ethical for organizations to block VPN connections, thereby preventing anonymous browsing within their networks?  
(2 Marks)
- 3.7 Is it ethical to enforce strict authentication measures that may create barriers for users with disabilities?  
(2 Marks)
- [Total = 20 Marks]

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End of Section A

# Section B

## Scenario-based Question(s)

40 Marks

### Question 4

Study the scenario and complete the question(s) that follow:

#### Tailoring a solution

You work as a network engineer at a mid-sized company that has recently adopted a remote work policy. Your first task is to set up secure networking services that allow employees to access internal resources from their homes. You establish a VPN, configure DNS services, and add several new networking services to enable seamless collaboration tools. Soon after, the company plans to open a new branch office in another city and connect it via a WAN. You have to work on routing configurations, setting up QoS policies, and choosing the appropriate WAN technologies. After that, the company becomes the target of a cyber-attack, which you successfully mitigate. This incident triggers a full review of the network security infrastructure, prompting you to re-evaluate external networks, VPN configurations, and even security zones within the LAN.

Source: Mashile., T (2023).

- 4.1 What common networking services are essential for remote work? List at least four (4) services. (8 Marks)
  - 4.2 What are the primary considerations for routing when connecting a new branch office? List at least four (4) considerations (8 Marks)
  - 4.3 How do you plan to enhance the security of networks outside the LAN following the cyber-attack? List at least three (3) items in your action plan. (6 Marks)
  - 4.4 What steps should be taken to secure the DNS service? List at least three (3) steps (6 Marks)
  - 4.5 What are some of the WAN technologies suitable for connecting a new branch office? List at least three (3) technologies (6 Marks)
  - 4.6 What is your approach to monitoring networks outside the LAN for potential security incidents? List at least three (3) tools used to monitor. (6 Marks)
- [Total = 40 Marks]

End of Section B