

061306T4CSC

COMPUTER SCIENCE LEVEL 6

ICT/OS/CS/CR/07/6

Understand Networking and Distributed Systems

November/December 2025



**TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION
COUNCIL (TVET CDACC)**

WRITTEN ASSESSMENT

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INSTRUCTIONS TO CANDIDATE

1. The paper consists of **TWO** sections: **A** and **B**.
2. Answer **ALL** questions in section A and any **THREE** (3) questions in section B.
3. Marks for each question are indicated in the brackets.
4. Candidates are provided with a separate answer booklet.
5. **DO NOT** write on this question paper.

This paper consists of THREE (3) printed pages.

Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

Answer ALL the

Answer ALL the questions in this section

1. Networks enable digital devices to communicate and share resources such as files, printers, and internet access. Explain the concept of a computer network with an example from daily life. (2 marks)
2. Before implementing a network, it is important to identify the needs and conditions it must meet. State TWO requirements of the network to be deployed. (2 marks)
3. Processing in a distributed system can occur across multiple machines to improve efficiency and speed. List TWO types of distributed processing. (2 marks)
4. Computer networks can be classified based on size, range, and purpose. Mention four types of networks. (4 marks)
5. The layout or design of a network is referred to as its topology, which affects performance and reliability. Illustrate using a diagram two network topologies. (4 marks)
6. Transmission media are the physical pathways that carry network signals. Name four transmission media used in computer n (4 marks)
7. Computers in a network environment a etwork attacks, classify the following as either active or passive network attack opping, (ii) Denial of Service, (iii) Man-in-the-middle. (3 marks)
8. Models in distributed systems define how components interact and handle failures. State two models used in distributed systems. (2 marks)
9. Distributed system architectures follow different styles to manage how components communicate and process data. Name three architecture styles used in distributed systems. (3 marks)
10. Understanding architectural approaches helps in choosing how responsibilities and data are managed across systems. State the difference between centralized and decentralized distributed system architectures. (4 marks)
11. A file system determines how data is stored and accessed on storage devices within a network. List THREE types of file systems. (3 marks)
12. File sharing is essential in collaborative environments and can be done through various methods. State FOUR file sharing methods. (4 marks)

13. To set up a network, specific tools are required for both physical and software configurations. Name THREE tools used in setting up a network. (3 marks)

SECTION B (60 marks)

Answer any THREE Questions in this section

14. Networking is the foundation of digital communication, enabling devices to share data and resources efficiently. Different types of networks serve varying scopes and purposes, from local to global connectivity.

- a. Discuss the fundamentals of networking. (10 marks)
- b. Explain FOUR types of networks, providing examples of where each is used. (10 marks)

15. A hospital network experiences a ransomware attack that encrypts medical records and demands payment.

- a) Describe the typical stages of a ransomware attack in a distributed system. (6 marks)
- b) Analyze the consequences of such an attack on patient care and operations. (6 marks)
- c) Propose a detailed recovery plan, including immediate response and long-term prevention. (8 marks)

16. Network topologies define the structural layout of a network and significantly influence its performance, fault tolerance, and scalability. In distributed environments, the choice of topology affects how efficiently resources are shared and accessed.

- a. Describe the various network topologies (10 marks)
- b. Explain FIVE advantages in a distributed environment. (10 marks)

17. A government institution experiences slow response when users access shared files from different departments.

- a) Identify THREE OSI layers that may contribute to the problem. (6 marks)
- b) Explain the role of each identified layer in file sharing. (6 marks)
- c) Suggest THREE troubleshooting steps the network administrator could apply. (8 marks)

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