

061005T4ICT

ICT TECHNICIAN LEVEL 5

IT/OS/ICT/CR/1/5

Perform Computer Networking

November/ December 2025



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

WRITTEN ASSESSMENT

TIME: 3 HOURS

INSTRUCTIONS TO CANDIDATE

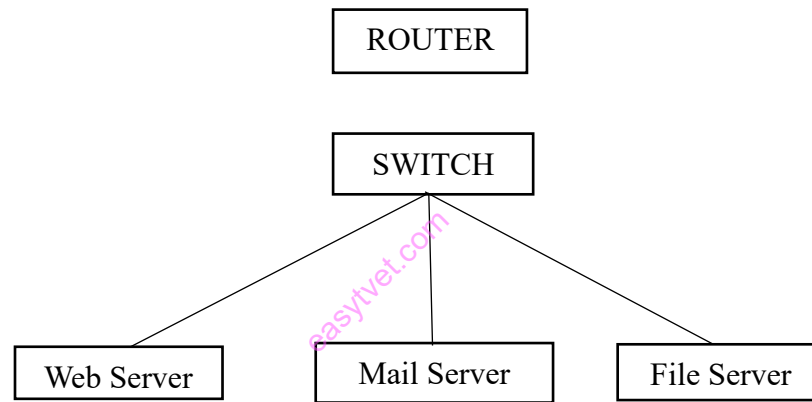
1. This paper consists of **TWO** sections: **A** and **B**.
2. Answer **ALL** questions in section A and **ANY THREE** (3) questions in section B.
3. Marks for each question are indicated in the brackets.
4. Candidates are provided with a separate answer booklet
5. Do not write on the question paper.

This paper consists of FIVE (5) printed pages

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

SECTION A (40 MARKS)*Answer ALL the questions in this section.*

1. Outline ONE key difference between a Straight-Through cable termination and a Crossover cable termination. (2 marks)
2. A candidate has been asked to connect 20 computers in a college laboratory using a star topology. Prepare a list of THREE network devices that could be central in this setup. (3 marks)
3. A bank has installed fiber optic cabling to improve data transfer. Identify TWO advantages of using fiber optic cables over copper cables. (2 marks)
4. Provided is a servers diagram which need to be configured. Outline FOUR steps that a networking learner should follow to configure static IPs on the servers. (4 marks)



5. A technician is troubleshooting a computer, and the diagnosis appears as shown below. State THREE command-line tools that he might have used to diagnose the issue. (3 marks)

C:\Users\Technician>

Ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:

Request timed out.

Request timed out.

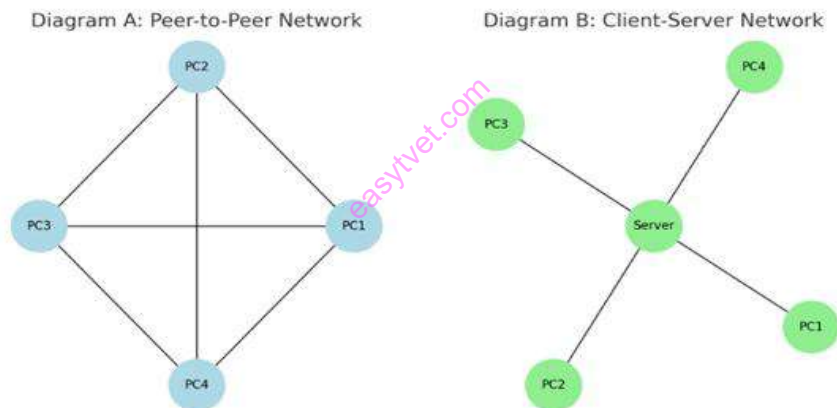
Request timed out.

Request timed out.

Ping statistic for 192.168.1.1:

Packets: Sent = 4, Received = 0, Lost = 4 (100% lost),

6. When designing the physical layout for network signals in a newly constructed building, technicians must choose appropriate transmission media to ensure reliable communication. Name THREE types of transmission media that could be utilized. (3 Marks)
7. A network administrator wants to prevent unauthorized users from accessing Wi-Fi in an organization. State FOUR security measures that could be applied. (4 marks)
8. Your institution has bought a new router that is currently configured with a static IP address. Outline FOUR steps that you should follow to change the router from static IP configuration to dynamic IP addressing. (3 marks)
9. A university ICT officer is tasked with segmenting the network into smaller sections to reduce congestion. Name TWO networking devices that can be used for segmentation. (2 marks)
10. Distinguish between the two network models by giving TWO characteristics of each. (4 marks)



11. During routine maintenance in a small office network, a technician discovers that two computers cannot access the internet. After running basic diagnostics, it is suspected that the devices are experiencing an IP address conflict. List FOUR possible causes of an IP address conflict in this network. (4 marks)
12. A company ICT officer wants to ensure only authorized users gain access to the server room. Identify TWO physical security measures that can be used. (2 marks)
13. In a networking lab, you are provided with Ethernet cables to terminate both crossover and straight through. Outline TWO practical scenarios where each cable type would be used in a network. (4 marks)

SECTION B: 60 MARKS

Attempt any *THREE* questions in this section

14. A secondary school is upgrading its ICT laboratory to improve learning efficiency through networking.
 - a) Outline TWO reasons for subnetting the ICT laboratory network. (4 marks)
 - b) Explain TWO functions of a subnet mask in the computer network (4 marks)
 - c) Given the IP address 192.168.10.25/24 for use in the ICT laboratory network. Analyze the subnet step by step by completing the following tasks.
 - i. Interpret the Classless Inter-Domain Routing (CIDR) /24 notation into a subnet mask. (2 marks)
 - ii. Calculate the network address for this subnet. (2 marks)
 - iii. Calculate the broadcast address for this subnet. (2 marks)
 - iv. Determine the valid host IP address range within this subnet. (2 marks)
 - v. State the number of usable hosts in the subnet. (2 marks)
 - vi. Find the total number of addresses in the subnet. (2 marks)
15. A new government office requires a secure Local Area Network (LAN) to manage sensitive information.
 - a) Explain THREE ways network security can be enhanced in this LAN. (6 marks)
 - b) Outline FOUR advantages of using a managed switch in this LAN instead of an unmanaged switch. (8 marks)
 - c) Describe THREE steps a technician should follow to configure firewall rules on the LAN router. (6 marks)
16. A college is upgrading its network to allow students access to e-learning resources.
 - a) Propose TWO advantages of using wireless access points in addition to wired LAN. (4 marks)
 - b) Explain FOUR challenges the ICT team may face when implementing the wireless network. (8 marks)
 - c) Describe FOUR troubleshooting steps if students report slow internet speeds on the Wi-Fi. (8 marks)

17. Two computers in the computer lab need to be connected in a peer-to-peer network so that students can share a document between them.

- a) Propose THREE tools required to physically connect the two computers in a peer-to-peer network. (6 marks)
- b) Explain FOUR configuration steps needed on the computers to enable file sharing between them. (8 marks)
- c) Describe THREE procedures a learner should follow to access and share a given file between the two computers. (6 marks)

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