

**061005T4ICT**

**ICT TECHNICIAN LEVEL 5**

**IT/OS/ICT/CR/01/5/A**

**PERFORM COMPUTER NETWORKING**

**July/Aug 2023.**



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

**Time: 3 Hours**

**WRITTEN ASSESSMENT**

**INSTRUCTION TO CANDIDATE.**

1. This paper consists of **THREE** sections: A, B and C.
2. Answer questions as per instructions in each section.
3. You are provided with a separate answer booklet.

*This paper consists of SEVEN (7) printed pages  
Candidates should check the question paper to ascertain that all  
pages are printed as indicated and that no questions are missing*

**SECTION A (20 MARKS)**

Answer *all* questions in this section.

1. \_\_\_\_\_ is the maximum header size of an IP packet. (1 Mark)
  - A. 32 bytes
  - B. 64 bytes
  - C. 30 bytes
  - D. 60 bytes
2. Bridge works in \_\_\_\_\_ layer of the OSI model (1 Mark)
  - A. Application layer
  - B. Transport layer
  - C. Network layer
  - D. Datalink layer
3. How many layers are in the TCP/IP model (1 Mark)
  - A. 4 layers
  - B. 5 layers
  - C. 6 layers
  - D. 7 layers
4. The Internet is an example of \_\_\_\_\_. (1 Mark)
  - A. Cell switched network
  - B. Circuit switched network
  - C. Packet switched network
  - D. Operating system resource
5. \_\_\_\_\_ is defined as sub-netting. (1 Mark)
  - A. Dividing one large network into several smaller ones
  - B. Dividing network into network classes
  - C. Speeding up the speed of network
  - D. Controlling network.
6. Repeater operates in \_\_\_\_\_ of the OSI model (1 Mark)
  - A. Physical layer
  - B. Data link layer
  - C. Network layer
  - D. Transport layer

7. Highlight the tool that is used to capture and analyze network traffic (1 Mark)
- A. Ping
  - B. Traceroute
  - C. Netstat
  - D. Wireshark
8. MAC Address is comprised of \_\_\_\_\_ bits. (1 Mark)
- A. 16
  - B. 32
  - C. 48
  - D. 64
9. Which type of testing helps to identify vulnerabilities in network security (1 Mark)
- A. Penetration testing
  - B. Bandwidth testing
  - C. Packet analysis
  - D. Port scanning
10. The network service that allows multiple devices in a LAN network to share a single public IP address is referred to (1 Mark)
- A. NAT (Network Address Translation)
  - B. VLAN (Virtual Local Area Network)
  - C. DNS (Domain Name System)
  - D. DHCP (Dynamic Host Configuration Protocol)
11. What is the method used to broadcast two packets on a medium at a time. (1 Mark)
- A. Collision
  - B. Synchronous
  - C. Asynchronous
  - D. Multicast
12. State the medium that is used to carry data in a computer network that is exposed to electrical interferences (1 Mark)
- A. Unshielded twisted pair
  - B. Optical fiber
  - C. Coaxial cable

D. Microwaves

13. Which network topology requires more cabling as the number of devices increases?

(1 Mark)

A. Bus topology

B. Ring topology

C. Star topology

D. Mesh topology

14. The loopback IP address for IPv4 is \_\_\_\_\_.

(1 Mark)

A. 127.0.0.1

B. 192.168.1.1

C. 10.0.0.1

D. 172.16.0.1

15. The outer layer of a coaxial cable is typically made of \_\_\_\_\_.

(1 Mark)

A. Copper

B. Aluminum

C. Plastic

D. Glass

16. How many pins does RJ-45 contain?

(1 Mark)

A. Two

B. Four

C. Eight

D. Ten

17. Given an IP address of 192.168.1.10 and a subnet mask of 255.255.255.240, \_\_\_\_\_ is the broadcast address for the subnet.

(1 Mark)

A. 192.168.1.255

B. 192.168.1.128

C. 192.168.1.100

D. 192.168.1.0

18. \_\_\_\_\_ topology requires a central controller in the network.

(1 Mark)

A. Star

B. Mesh

C. Ring

D. Bus

19. DNS is the abbreviation of\_\_\_\_\_. (1 Mark)
- A. Dynamic Name System
  - B. Dynamic Network System
  - C. Domain Name System
  - D. Domain Network Service
20. The tool used for security testing and identifying vulnerabilities in web applications is called (1 Mark)
- A. Burp Suite
  - B. TestNG
  - C. LoadRunner
  - D. JIRA

**SECTION B (40 MARKS)**

Answer *All* questions in this section.

21. Outline FOUR factors that affect the performance of a computer network. (4 Marks)
22. A firewall plays an important role in network security. Highlight FOUR types of firewalls. (4 Marks)
23. State THREE factors that are required to consider when designing a transmission medium. (3 Marks)
24. Enumerate at least THREE elements of a computer network. (3 Marks)
25. Distinguish between *bandwidth* and *latency* as applied in computer networking. (4 Marks)
26. State FOUR benefits of a networked environment. (4 Marks)
27. Highlight FOUR types of Virtual Private Network (VPN). (4 Marks)
28. Identify FOUR properties that a secure network should possess. (4 Marks)
29. Define the following terms as used in networking:
  - a) Bit error rate. (2 Marks)
  - b) Attenuation. (2 Marks)
  - c) Unicast address. (2 Marks)
30. Outline FOUR tools used during a network installation. (4 Marks)

**SECTION C (40 MARKS)**

Answer *two* questions in this section.

31.

- a) OSI model is used to standardize the communication functions of a networked environment, Describe the SEVEN layers of the OSI model (14 Marks)
- b) Isaac a trainer of perform computer networking was teaching his class on protocols. In the course of the class, he talked about Transfer Control Protocol (TCP) and User Datagram Protocol (UDP). Outline THREE characteristics of the two protocols. (6 Marks)

32.

- a) Ken was employed to install a computer network for company ABC, After the installation, he was required to carry out user training. Explain FIVE reasons for carrying out training after network installation. (10 Marks)
- b) Mr. James was employed as a network administrator in KPLC company, that was upgrading their network systems. Describe FIVE ways he could use to prevent network intrusion in the company. (10 Marks)

33.

- a) The county government of Busia is intending to install a computer network to the newly constructed Governor's office. Explain FIVE network devices they could use to have the office networked. (10 Marks)
- b) List FOUR characteristics of a Wide Area Network (WAN). (4 Marks)
- c) With the aid of a diagram, illustrate each of the following physical computer network topologies.
  - i. Mesh. (3 Marks)
  - ii. Ring. (3 Marks)

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