

**061005T4ICT**

**ICT TECHNICIAN LEVEL 5**

**IT/OS/ICT/CR/1/5**

**PERFORM COMPUTER NETWORKING**

**Mar./Apr. 2023**

**Time: 3 Hours**



**THE KENYA NATIONAL EXAMINATIONS COUNCIL**

**WRITTEN ASSESSMENT**

**3 Hours**

**INSTRUCTIONS TO CANDIDATES:**

*Maximum Marks for each question are indicated in the brackets.*

*The paper consists of **THREE** sections: **A**, **B** and **C**.*

*Answer questions as per instructions in each section.*

*You are provided with a separate answer booklet.*

*Candidate should answer the questions in English.*

*This paper consists of NINE (9) printed pages*

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

**Section A (20 marks)**

*Each question carries one mark.*

1. Which among the following is an IP address that can be used for testing the internal protocol stack on a computer? (1 Mark)
  - A. 192.168.100.1
  - B. 10.10.10.1
  - C. 127.0.0.1
  - D. 172.16.16.1
  
2. Most operating systems offers some means for a user to interact with the hardware parts and other resources. Which among these operating systems is usually deployed on networks to host applications that support multiple real-time access? (1 mark)
  - A. Windows 11
  - B. Windows 7 Ultimate Edition
  - C. Ubuntu Server Edition
  - D. Android 11
  
3. Kelvin wanted to install a new printer to be shared by ten computers in a room. Which other network device might Kelvin need in his set up in order for the printer to work properly? (1 Mark)
  - A. Device driver
  - B. Repeater
  - C. Switch
  - D. Firewall
  
4. The term IANA stands for? (1 Mark)
  - A. Internet Assigned Numbers Authority
  - B. Internal Assigned Numbers Authority
  - C. Internet Associative Numbers Authoritative
  - D. Internal Associative Numbers Authority

5. Which among the following devices is considered to be a layer 3 device in networking?  
(1 Mark)

- A. Switch
- B. Router
- C. Network Interface Card
- D. Extender

6. \_\_\_\_\_ is the name given to the type of data unit exchanged at the network layer in the OSI network model.  
(1 Mark)

- A. Packet
- B. Bit
- C. Frame
- D. Data

7. Which of the following commands in a windows computer is used to check the pathway that network data takes from source to destination?  
(1 Mark)

- A. PING
- B. TRACERT
- C. ARP -A
- D. PATH

8. The type of media used while setting up a network greatly affects its performance. Which among the following would be the most suitable medium to use in an environment which has got a lot of electric motors and damp conditions like a factory floor?  
(1 Mark)

- A. UTP Cables
- B. Coaxial cables
- C. Fibre Optic cables
- D. Wireless radio

9. Which of the following is an example of software that can be used for capturing network data for analysis during network testing?  
(1 Mark)

- A. Ping
- B. LAN Speed Test
- C. Telnet
- D. Wireshark

10. Identify the type of connector that is used to terminate a coaxial cable when networking. (1 Mark)

- A. RJ45
- B. BNC
- C. SFP
- D. RJ11

11. \_\_\_\_\_ is a type of cable termination that allows devices of different types, such as a computer and a printer, to interconnect and exchange communication. (1 Mark)

- A. Crossover
- B. Straight through
- C. Rollover
- D. Cross through

12. Which device from the list below, allows two different types of networks to interconnect and exchange communication? (1 Mark)

- A. Hub
- B. Switch
- C. Server
- D. Router

13. Which email application protocol allows one to retrieve copies of emails from the mail server without completely deleting them? (1 Mark)

- A. POP3
- B. IMAPv4
- C. SMTP
- D. HTTP

14. Agnes intends to configure her computer with a new IPv4 address. After assigning her computer with a new IP address, she proceeds to use the default subnet mask address **255.255.0.0**. To which class does her computer's IP address belong? (1 Mark)
- A. B.
  - B. A
  - C. D
  - D. A
15. You have just installed Windows 10 on your computer and now are attempting to access your favourite networking support website. When you load the website's address, you get an error that your computer is offline. What is your best next step? (1 Mark)
- A. Install a new copy of Windows 10.
  - B. Download network drivers.
  - C. Check the computer's connection to the ethernet cable or Wi-Fi.
  - D. Update the installed Windows 10.
16. What is the abbreviation given to the types of networks that are mostly found to operate within a town or city only? (1 Mark)
- A. PAN
  - B. MAN
  - C. WAN
  - D. LAN
17. What is the maximum number of valid network hosts or nodes that a class C IPv4 default subnet mask can support? (1 Mark)
- A. 128
  - B. 16
  - C. 256
  - D. 254

18. While configuring a small office network, Ogutu decided to set up access security for all the wireless devices that needed connection to the office's wireless router. Which type of wireless access authentication protocol would offer best security for the devices?

(1 Mark)

- A. Password
- B. WEP
- C. WPA2
- D. WPA

19. \_\_\_\_\_ is the protocol used by computers on a network to resolve IP addresses to hostnames on the internet.

(1 Mark)

- A. DNS
- B. HTTP
- C. SNMP
- D. TCP

20. In order to prepare a category 5e ethernet cable, Isaac had to use a certain tool. What is the name given to this tool that allowed him to properly terminate the cable in its connector?

(1 Mark)

- A. Cable slicer
- B. Crimping tool
- C. Cable tester
- D. Voltmeter

**Section B (40 marks)**

*Answer ALL questions in this section*

21. In reference to network topologies, what is the major difference between a *logical* and a *physical* topology? (2 Marks)
22. Explain each of the following terms as used in computer networking: (3 Marks)
- a. Bandwidth
  - b. Throughput
  - c. Network
23. Give **two** features or characteristics that are coherently unique to local area networks. (2 Marks)
24. Outline **three** factors that determine the performance of any network that has been set up and is operational. (3 Marks)
25. Outline any **three** advantages that one would derive from setting up a network using a star physical topology. (3 Marks)
26. Using a well labelled diagram, describe parts of a *fibre optic* cable? (4 Marks)
27. Give the **four** layers of the TCP/IP network reference model starting from the highest to the lowest layer. (2 Marks)
28. Kiliwi intends to connect his customer to internet using a microwave dish. Outline one characteristic of microwave signal propagation that may hamper its use. (1 Mark)
29. Outline three advantages of setting up a *wireless network* for a home office network as opposed to a *cabled or wired network*. (3 Marks)
30. Godhana was hired to set up a network for Ziggy Systems Ltd. After successfully deploying the network, he trained the network administrator on how to effectively monitor the network. Give **three** reasons justifying why networking monitoring is needed. (3 Marks)
31. List **two** types of network software. (2 Marks)
32. State any **two** functions that are performed by the session layer of the OSI model. (2 Marks)
33. Network devices can be linked together using **two** major ways when setting up a network. explain these two possible types of connections. (4 Marks)

34. Give **two** reasons as to why satellite communication is still in use despite major advances in networking technologies. (2 Marks)
35. Explain any **two** considerations that one has to make when choosing networking media to use in setting up a network. (4 Marks)

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**Section C (40 marks)**

*Attempt **any two** questions in this section.*

36. Hassan was hired by TMZ Ltd to set up a network in an office floor that previously had none. He was provided with new computers that had no software installed on them and in order to set up the network, he chose to install on one of the computers a Windows 2016 server operating system. Discuss the functions played by a network operating system and the justification for its installation on the new computer. (20 Marks)
37. Assume that you are a qualified technician working with a leading network design and implementation company in your local town or city. Given that your company has won a tender to implement a new network system with local business organisation, discuss the considerations you will advise your team to look into when acquiring the tools, materials and other resources to carry out the project. (20 Marks)
38. It is safe to say that almost no business can compete effectively without establishing and maintaining network in its operations;
- a) Explain at least **five** benefits that a business derives from having an efficient network. (10 Marks)
  - b) Explain at least **five** challenges or drawbacks that a business is likely to face from establishing and using a computer network. (10 Marks)

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