higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

DATA COMMUNICATION AND NETWORKING
NQF LEVEL 4

(10041014)

27 February 2018 (Y-Paper)
13:00–16:00

This question paper consists of 12 pages.

NCV

TIME: 3 HOURS
MARKS: 200

INSTRUCTIONS AND INFORMATION

1. Answer ALL the questions.
2. Read ALL the questions carefully.
3. Number the answers according to the numbering system used in this question paper.
4. Write neatly and legibly.

NCV

SECTION A

QUESTION 1

Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question number (1.1–1.20) in the ANSWER BOOK.

1.1 Successful communication means the message is …

A sent and received.
B received.
C sent and acknowledged by the receiver.
D sent and understood by the receiver.

1.2 A configuration where each computer can access the other computer on the network without having to ask permission is known as …

A LAN.
B WAN.
C peer to peer.
D client server.

1.3 … refers to the physical and logical layout of nodes in a network.

A Range
B Topology
C Node access
D Architecture

1.4 Large businesses and organistions have their own private telephone network which connects incoming and outgoing calls to and from their employees. This network is known as a(n) …

A modem.
B PSTN.
C ATM.
D PABX.

1.5 … transmission means data is transmitted across several channels divided by frequency.

A Channeling
B Baseband
C Broadband
D Infra-red

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1.6 Which ONE of the following is NOT a common network problem?

A Network congestion
B Server hardware problems
C Configuration errors
D Faulty drivers

1.7 Which cable is no longer used in modern LANs?

A Fibre optic
B Unshielded twisted pair (UTP)
C Coaxial
D Shielded twisted pair (STP)

1.8 A document containing all the user requirements is known as a/an …

A instruction manual.
B user specification.
C module.
D installation plan.

1.9 A copy of a program/application that has been slightly changed is referred to as a(n) …

A version.
B application.
C stand-alone application.
D software.

1.10. Which ONE of the following accounts is used for people who need temporary access to the network?

A User account
B Administrator account
C Network account
D Guest account

1.11 Data sharing enables groups of users to …

A exchange information.
B use one peripheral at a time.
C support electronic mail.
D restrict access to information.

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1.12 … is a protocol that enables two computers to establish a connection and exchange streams of data.

A SMTP
B ATM
C IEEE 802.11
D TCP/IP

1.13 A … computer can send and receive data over a wireless connection.

A networked
B WiFi enabled
C dial-up connection
D hardwired

1.14 Which ONE of the following is NOT a network topology?

A Star
B Bus
C Tree
D Ring

1.15 … is the technique in which enough of the frame is being read to guarantee that the frame is at least the minimum size for the network.

A Store and forward switching
B Fragment-free switching
C Cut-through switching
D Packet switching

1.16 … is Novell's protocol for packet routing and forwarding.

A TCP/IP
B IPX/SPX
C DHCP
D IPV6

1.17 You have been hired to install a network at a large government agency that wants to reduce electronic eavesdropping on its network.

What kind of cable will you use?

A UTP
B STP
C Coaxial
D Fibre optic

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1.18 A ... device does NOT need extra software to function as the operating system already contains its specifications.

A NIC
B printer
C plug-and-play
D switch

1.19 A/An … is a program a user can run to install an application.

A application software
B setup executable file
C read-only file
D control panel

1.20 Which WAN device is used as an interface between a router and a digital circuit?

A WAN switch
B Modem
C ISDN terminal adapter
D CSU/DSU

(20 × 1) **[20]**

QUESTION 2

Indicate whether the following statements are TRUE or FALSE. Choose the answer and write only 'true' or 'false' next to the question number (2.1–2.10) in the ANSWER BOOK.

2.1 A username is a unique name that is given to a network user.

2.2 A stand-alone application is specially designed for working with networks.

2.3 The RJ connector shape is used to connect twisted pair cables to a network device.

2.4 Data that is not prepared for transmission is called raw data.

2.5 Radio waves have a data transfer rate of about 4 Mbps.

2.6 One of the functions of a network administrator is the management of security.

2.7 IEEE 802.11 and IEEE 802.16 are WAN protocols used to transmit data at various rates in a range of bands.

2.8 Baseband is the amount of data that a cable can carry.

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2.9 The change management plan helps you to manage the network.

2.10 Packet switching establishes a point-to-point circuit before data transmission.

(10 × 1) **[10]**

QUESTION 3

Choose an item from COLUMN B that matches the description in COLUMN A. Write only the letter (A–M) next to the question number (3.1–3.10) in the ANSWER BOOK.

COLUMN A		COLUMN B	
3.1	Areas in which wireless access to a network/internet is possible	A	access control
3.2	Hybrid network topology in which all computers connect to one another	B	attenuation
3.3	Two or more drives on a network server that provide fault tolerance	C	cable modem
3.4	Handles error-free delivery and controls the flow of frames between sender and receiver	D	diagnostic software
3.5	Rules determining whether a packet should be permitted to reach the intended destination	E	domain controller
3.6	The decrypting and encrypting of data communication to facilitate delivery	F	hotspots
3.7	Specialised programmes probing and monitoring a system	G	logic link control
3.8	Special purpose network device that permits a computer to send and receive network signals	H	mesh
3.9	Weakening of a signal as it travels the length of a medium	I	presentation layer
3.10	A directory server that also provides access controls over users, accounts, groups and other networks	J	RAID
		K	routing table
		L	signal bounce
		M	ring

(10 × 1) **[10]**

QUESTION 4

Complete the following sentences by filling in the missing word or words. Write only the word or words next to the question number (4.1–4.10) in the ANSWER BOOK.

4.1 A … is a unit of information that can be transmitted over a computer network.

4.2 Fibre optic cables have a … or plastic inner core which carries data signals.

4.3 Each NIC has a unique identifier called a … address.

4.4 An … is a network layer protocol that provides source and destination addressing and routing for the TCP/IP suite.

4.5 The token ring network architecture has the ability to isolate faults automatically by using a process called …

4.6 A … is a process that involves finding out if it is possible to meet the user's requirements, taking into account budget and time.

4.7 Programmes that help users configure, customise and work with their computer and network environment is called …

4.8 You can draw conclusions about server activities by observing details of …

4.9 A … is a document that describes the rules governing access to a company's information resources.

4.10 Active hubs have an … that can monitor network activity and store monitoring information.

(10 × 1) **[10]**

TOTAL SECTION A: 50

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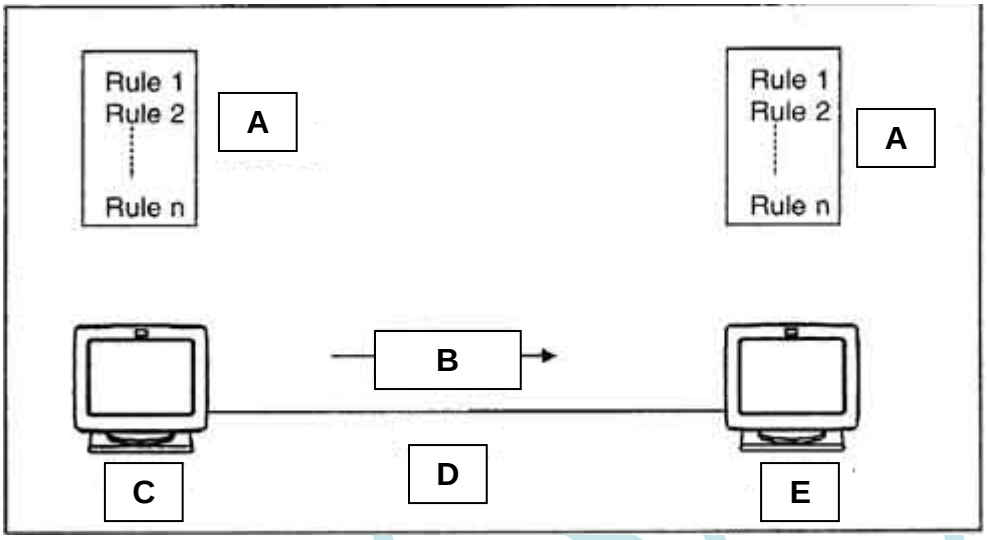
SECTION B

QUESTION 5

5.1



Identify the elements in the above diagram. Write the answer next to the letter (A–E) in the ANSWER BOOK. (5)

5.2 Explain by means of an example how bandwidth is measured and expressed. (4)

5.3 Briefly explain THREE LAN protocols. (6)

5.4 Name and briefly explain THREE types of telephone network services. (6)

5.5 Explain the difference between synchronous and asynchronous data communication with the aid of a diagram. (9)
[30]

QUESTION 6

6.1 Explain how the *bus* and *ring* network topology sends data on a network with the use of a diagram. (10)

6.2 Explain the differences between *baseband* and *broadband* transmission. (5)

6.3 Identify FIVE common network problems. (5)

6.4 Describe the features of a network layer protocol. (10)
[30]

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QUESTION 7

7.1 List THREE types of network cable that is available in the industry. (3)

7.2 Explain how *cable termination* is attached and achieved on a network. (3)

7.3 UTP cabling has 6 categories.

List the speed and use of category 1 and category 4. (4)

7.4 Describe *fibre optic cable*. (5)

7.5 Read the scenario below and answer the questions.

> Dube Mchunu is the owner of Firestone Technologies. The company specialises in installing new and maintaining existing networks and maintenance and repairs of PC's for various companies. They currently run all business tasks on one computer. There are two computers that handle all sales and enquiries on customer accounts. All computers work as stand-alone workstations. All account updates must be done via telephone through the Firestone head office. Customers have been complaining that this process is too long. Mr Dube realises that in order to cope with the demands of the business he must network his company.
>
> He hires Lungile as a network administrator for his company. Lungile must do what is necessary in order to have Mr Dube's company on a network which will be able to handle all customer queries, account payments and updates. Lungile advises Mr Dube that before a network is set up a feasibility study must be performed.

7.5.1 Explain why Lungile must complete a feasibility study before implementing and installing a network. (4)

7.5.2 List SIX task that Lungile will complete in order to install a switch. (6)

7.5.3 Lungile has installed AVG and Microsoft Office 2007.

Draw up an installation record document that he can use to record this information. (5)

[30]

QUESTION 8

8.1 List FIVE tasks that need to be completed in order to finalise the installation of an application on the LAN. (5)

8.2 What FIVE aspects must be recorded in order to ensure that network application software operates according to the manufacturer's specifications after installation? (5)

8.3 Briefly explain the relationship depicted in FIGURE 1. (5)

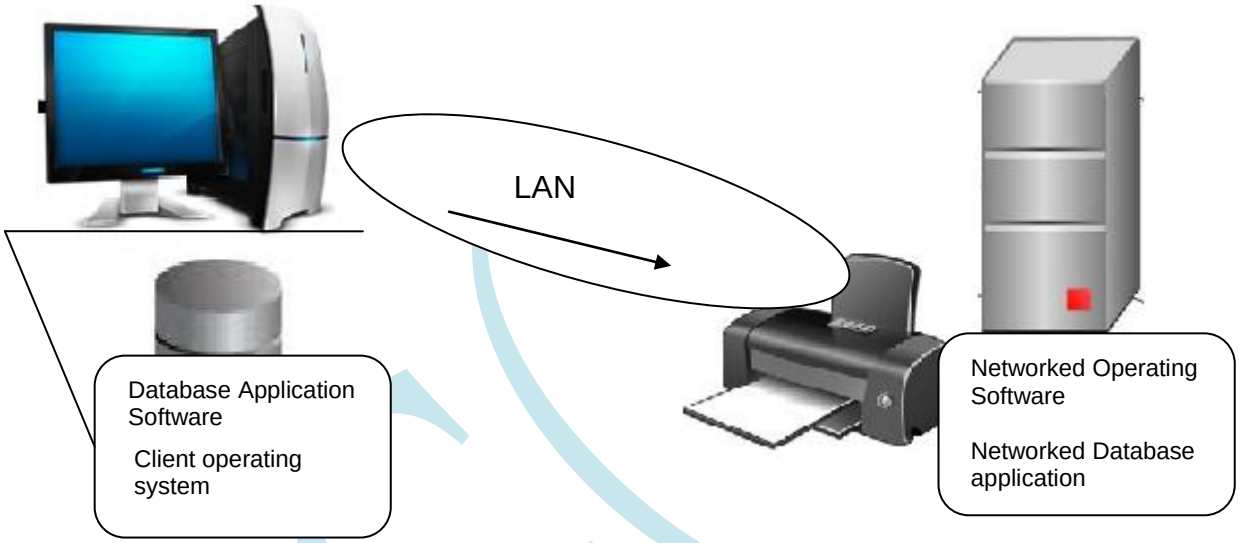

FIGURE 1

8.4 Briefly explain any FIVE permissions listed in Figure 2. (5 × 2) (10)

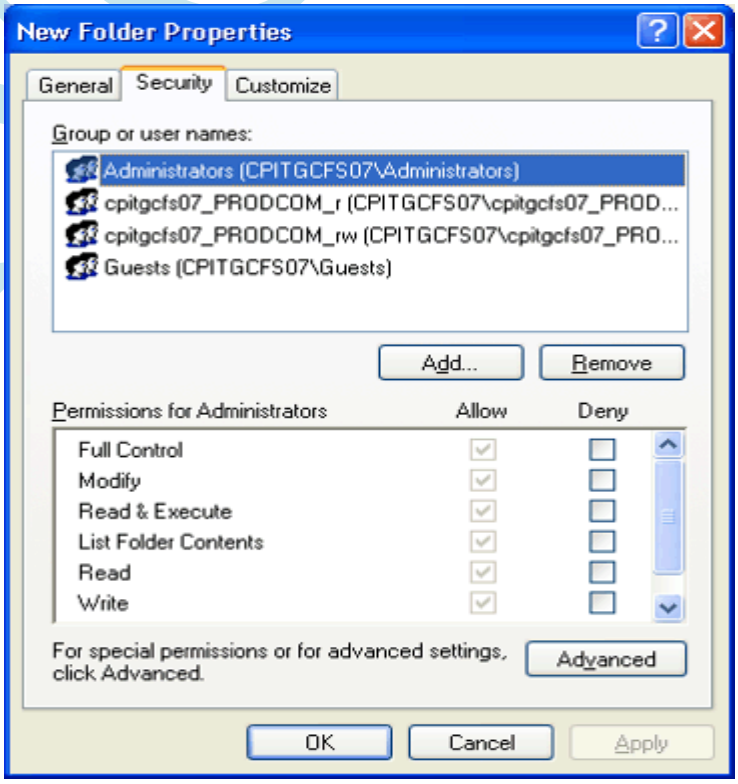

FIGURE 2

8.5 State THREE uses of built-in system software utilities for users. (3)

8.6 Identify TWO ways to achieve remote access to a network. (2)
[30]

QUESTION 9

9.1 List NINE steps that you will follow to shut down a network correctly. (9)

9.2 List THREE possible reasons why a user may not be able to access a network which is available. (3)

9.3 Which THREE types of documents will you use for a security policy? (3)

9.4 Identify THREE tasks that are involved in network administration. (3)

9.5 Name TWO devices that you will use when implementing a WAN. (2)

9.6 Explain how a packet switching network handles data. (5)

9.7 Distinguish between a *switched virtual circuit* and a *permanent virtual circuit*. (5)
[30]

TOTAL SECTION B: 150
GRAND TOTAL: 200

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