higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

NATIONAL CERTIFICATE (VOCATIONAL)

DATA COMMUNICATION AND NETWORKING
NQF LEVEL 4

(10041014)

10 November 2022 (X-paper)
09:00–12:00

This question paper consists of 9 pages.

215Q1N2210

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TIME: 3 HOURS
MARKS: 100

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. Start each section on a new page.
5. Use only a black or blue pen.
6. Write neatly and legibly.

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SECTION A

QUESTION 1

Various options are given as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question number (1.1–1.10) in the ANSWER BOOK.

1.1 Which material was used as the conducting medium in old telephone lines?

A Glass strands
B Copper
C Iron ore
D Magnesium

1.2 Which ONE of the following is a characteristic of assertive communication?

A Voice
B Pitch
C Control
D Volume

1.3 Wireless LAN standard 802.11b provides …

A 1 or 2 mbps transmission in the 2.4 GHz band.
B 20 to 54 mbps in the 2.4 GHz band.
C up to 54 mbps in the 5 GHz band.
D 11 mbps transmission in the 2.4 GHz band.

1.4 A … is a piece of electronic equipment that allows information from computer to be sent along telephone wires to another computer.

A switchboard
B bridge
C modem
D switch

1.5 FDM is a technique whereby the total bandwidth in a communication medium is divided into a series of none overlapping …

A time slots.
B analogue signals.
C digital signals.
D frequency bands.

1.6 What is a contingency plan as it relates to managing a LAN?

A A plan involving actions for responding to computer emergencies
B A plan for maintenance
C A plan for the rotation of computer assets
D A plan for hot-desk distribution

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1.7 Given the IP address 192.168.50.100.

Which ONE of the following subnet masks is the default subnet mask for this IP address?

A 255.255.255.240
B 255.255.0.0
C 255.255.255.0
D 255.0.0.0

1.8 A/An … test is conducted after system installation and commissioning, and verifies that the system is ready for operation.

A unit
B integration
C system acceptance
D periodic maintenance

1.9 A … can look at the destination IP address of a data packet and use a routing table to forward it to the appropriate destination.

A modem
B router
C access point
D switch

1.10 A … is a formal document that outlines the principles, procedures and guidelines to enforce, manage, monitor and maintain security on a computer network.

A user requirement
B backup policy
C network security policy
D network implementation plan

(10 × 1) **[10]**

QUESTION 2

Choose a term from COLUMN B that matches a description in COLUMN A. Write only the letter (A–L) next to the question number (2.1–2.10) in the ANSWER BOOK.

COLUMN A		COLUMN B	
2.1	Quality of being trustworthy and being very likely to do what people expect	A	integrity
2.2	Transmission method that allows copies of a single packet to be sent to a selected group of receivers	B	versatility
2.3	Dedicated path/circuit established between a sender and receiver providing a guaranteed data rate where data can be transmitted without any delays once the connection is established	C	VLAN
2.4	Type of encryption where the same key is used to encrypt and decrypt a message	D	dependability
2.5	Ability to adapt or be adapted to many different functions or activities	E	consumables
2.6	Set of rules or procedures for transmitting data between electronic devices such as computers	F	multicasting
2.7	Virtual local area network	G	packet switching
2.8	Agreement for the sale of goods from one party, the supplier, to another, the purchaser	H	asymmetric encryption
2.9	Living in accordance with your deepest values, being honest with everyone, and always keeping your word	I	protocol
2.10	Materials that are used up and need continuous replenishment, such as paper and toner	J	supply agreement
		K	circuit switching
		L	symmetric encryption

(10 × 1) **[10]**

TOTAL SECTION A: 20

SECTION B

QUESTION 3

3.1 The diagram below shows different components of a network.

 **Switch**	 **Firewall**
 **Wireless Router**	 **Server**

3.1.1 Name ONE function for each component. (4 × 1) (4)

3.1.2 Differentiate between a firewall and a switch. (2)

3.2 Briefly explain the THREE types of data-transmission modes used in computer networks. (3 × 2) (6)

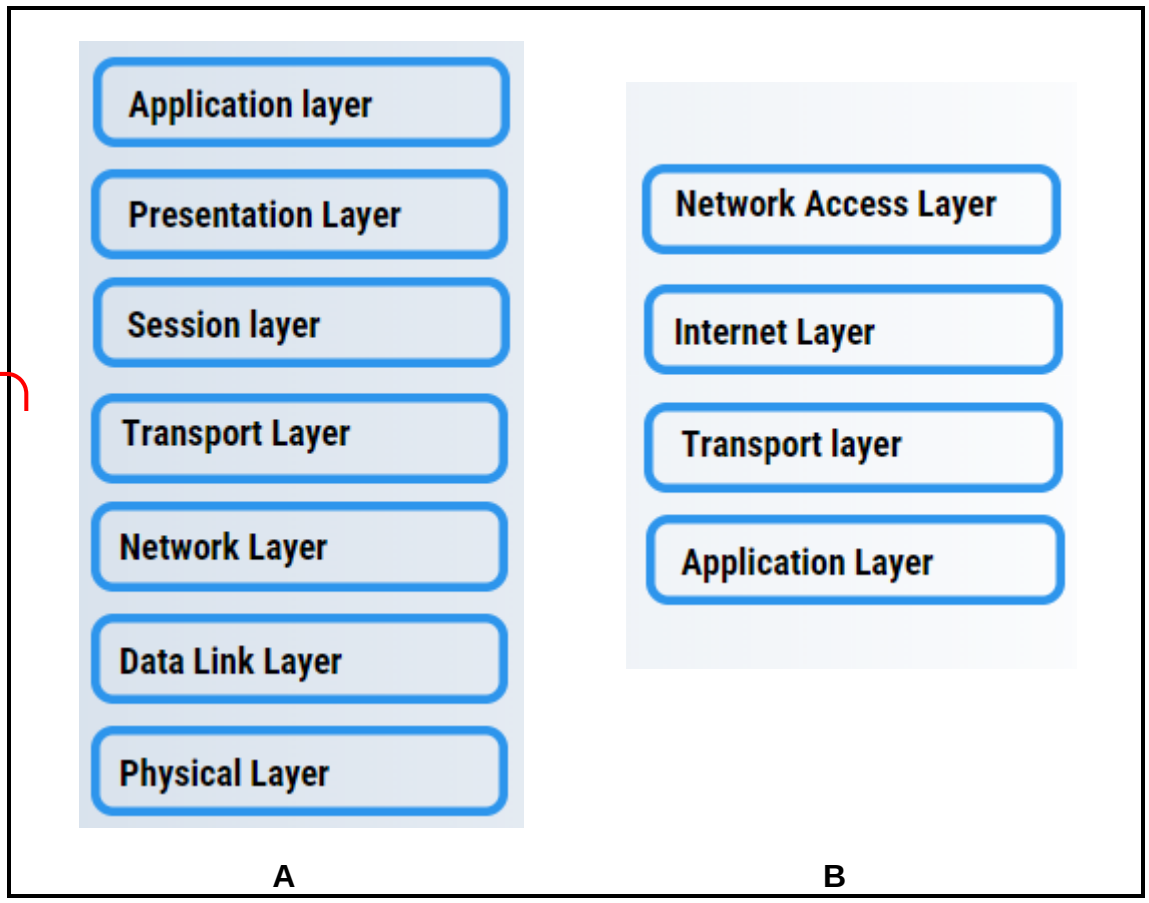
[12]

QUESTION 4

4.1 Explain the basic operation of a VLAN. (4)

4.2 Explain the concept of *user-acceptance testing*. (2)

4.3

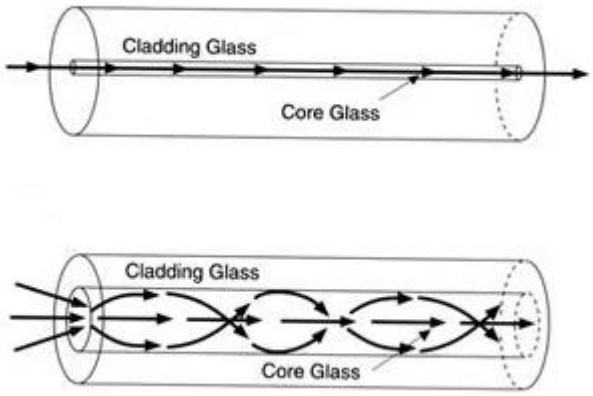


4.3.1 Label the diagrams A and B. (2)

4.3.2 Compare model A with model B. Clearly stating the similarities and differences. (8)
[16]

QUESTION 5

CABLE A



CABLE B

5.1 Identify Cable A and Cable B by analysing the beam of light that passes through the cables. (2 × 2) (4)

5.2 Name FOUR characteristics of Cable B. (4)

5.3 Explain the structure of a network security system. (6)

[14]

QUESTION 6

6.1 Explain THREE user profiles that can be set up for a user on a network. (3 × 2) (6)

6.2 Define the term *access control* as it relates to a network. (4)

6.3 Define the term *utility program*. (2)

6.4 Give TWO basic requirements for a network. (2)

6.5 Explain the concept of a *print queue*. (4)

[18]

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QUESTION 7

7.1 Explain the importance of network capacity planning. (4)

7.2 List the THREE most common baselines for a computer network.

(3 × 2) (6)

7.3 Explain *packet switching*. (2)

7.4 Recommend the action to take for each of the following security violations:

7.4.1 Unauthorised attempts to access systems or data

7.4.2 Insider threat

7.4.3 Phishing attack

(3 × 2) (6)

7.5 What does the acronym *WAN* stand for? (2)

[20]

TOTAL SECTION B: 80
GRAND TOTAL: 100

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