Province of the
EASTERN CAPE
EDUCATION

**NATIONAL
SENIOR CERTIFICATE**

GRADE 11

NOVEMBER 2016

INFORMATION TECHNOLOGY P2

MARKS: 150

TIME: 3 hours

IINFTE

This question paper consists of 10 pages.

INSTRUCTIONS AND INFORMATION

1.   This paper consists of SIX sections:

SECTION A: Short questions	(15)
SECTION B: System Technologies	(20)
SECTION C: Communication and Network Technologies	(26)
SECTION D: Data and Information Management	(26)
SECTION E: Solution Development	(26)
SECTION F: Integrated Scenario	(37)

2.   Read all the questions carefully.

3.   Answer ALL the questions.

4.   The mark allocation generally gives an indication of the number of facts/reasons required.

5.   Number the answers correctly according to the numbering system used in this question paper.

6.   Write neatly and legibly.

SECTION A: MULTIPLE CHOICE QUESTIONS

QUESTION 1

1.1   Various options are provided as possible answers to the following questions. Choose the correct answer and write only the letter (A to D) next to the question number (1.1.1 to 1.1.10) in your ANSWER BOOK, for example 1.1.11 D.

      1.1.1   ZIF stands for …

          A   Zero In-house Firewall.
          B   Zero Insertion Force.
          C   Zero Integer File.
          D   Zero Inter Fire.   (1)

      1.1.2   This processing technique allows programs to split themselves into multiple tasks:

          A   Pipelining
          B   Multitasking
          C   Multithreading
          D   Multiprocessing   (1)

      1.1.3   ... involves writing code that the CPU will understand.

          A   Low-level programming
          B   High-level programming
          C   Compiling techniques
          D   Virtualisation techniques   (1)

      1.1.4   A collection of programs designed to infiltrate a computer and gain the highest level of privileges:

          A   Rootkit
          B   Trojan Horse
          C   Worm
          D   Virus   (1)

      1.1.5   The following types of network in ascending order with regards to their size:

          A   LAN, PAN, WAN, HAN
          B   PAN, HAN, LAN, WAN
          C   WAN, PAN, HAN, LAN
          D   HAN, PAN, WAN, LAN   (1)

1.1.6   A device that converts the data or signal from a computer to format that can be transmitted over a communication channel:

A   Router
B   Modem
C   Switch
D   Mouse   (1)

1.1.7   Performance of physical and often repetitive or dangerous tasks by computer controlled machines is …

A   programming.
B   robotics.
C   outsourcing.
D   artificial intelligence.   (1)

1.1.8   Which one is NOT a characteristic of quality data in a database?

A   Accuracy
B   Currency
C   Punctuality
D   Relevance   (1)

1.1.9   Which one is NOT an advantage or characteristic of static website?

A   Relatively simple to design
B   Don't need much Server power
C   Designed for client side only
D   Can adapt to user needs and preferences   (1)

1.1.10   Which of the following operating systems can be installed on tablets that use ARM instead of Intel processors?

A   Windows RT
B   Android
C   iOS
D   Blackberry OD 10   (1)

1.2   Give ONE word/term for each of the following descriptions. Write only the word/term next to the question number (1.2.1 to 1.2.5) in the ANSWER BOOK.

     1.2.1   A set of electrical paths etched on the motherboard, used to transfer data between different paths   (1)

     1.2.2   Security based on measurement and identification of unique physical characteristics of a person   (1)

     1.2.3   A set of rules for encoding and decoding data for transmission across a network   (1)

     1.2.4   A system where parts of a database are spread across servers in separate locations   (1)

     1.2.5   Problems or errors that occur when you try to insert data, delete data, or update data   (1)

TOTAL SECTION A: 15

SECTION B: SYSTEMS TECHNOLOGIES

QUESTION 2

2.1   Your uncle has retired and has started a household tiles marketing business which he will run from home. He is planning to use two rooms in the main house and the garage, which is detached approximately 10 m away from the house, as a showroom to be fitted with multimedia display equipment. He has been reading a bit about computer hardware and software and needs clarification from you.

Most of his literature refer to the modular design of the computer system.

2.1.1   What does the term *modular design* mean?   (1)

2.1.2   Give TWO advantages of modular design.   (2)

2.2   Most books that he reads state that the computer depends on the amount of RAM it has.

2.2.1   Expand the term/abbreviation **RAM**.   (1)

2.2.2   Why is RAM essential for the computer?   (1)

2.2.3   Give THREE characteristics of RAM.   (3)

2.2.4   RAM is usually supplied as small, rectangular electronic boards. What are these boards called?   (1)

2.3   Your uncle has been told that the computer system uses caching as one of its techniques to speed up its operations.

2.3.1   Describe the term *caching* in a computer system.   (1)

2.3.2   State the TWO types of caching found in the computer system.   (2)

2.3.3   Identify TWO parts of the computer system which use caching.   (2)

2.4   He has also found that an operating system is very important for the computer system to work, and the best systems are open source.

2.4.1   State TWO functions of operating system software.   (2)

2.4.2   List TWO advantage of open source software.   (2)

2.4.3   List TWO disadvantage of open source software.   (2)

TOTAL SECTION B: **20**

SECTION C: COMMUNICATION AND NETWORK TECHNOLOGIES

QUESTION 3

Computers, laptops, tablets and phones need to be networked within the computers in the three rooms.

3.1   You advise your uncle to setup a Wi-Fi Network.

      3.1.1   Define a *computer network*.   (3)

      3.1.2   What is *Wi-Fi*?   (1)

      3.1.3   Name TWO advantages and TWO disadvantages of Wi-Fi.   (4)

3.2   Hardware will be required to set up the Wi-Fi Network. Motivate why EACH of the following items are required by briefly explaining the function of each item in a network:

      3.2.1   Wi-Fi Network Adaptors   (1)

      3.2.2   ADSL Modem   (3)

      3.2.3   Wi-Fi Hotspot   (2)

3.3   Your uncle is considering publicising his business on the internet and has heard that he can use either a microblog or a vlog service.

      3.3.1   Differentiate between a microblog AND a vlog service.   (2)

      3.3.2   Provide an example of a microblog AND a vlog service.   (2)

3.4   Some of his documents, pictures and videos and pictures will need to be compressed.

      3.4.1   Explain why it is necessary to *compress files*.   (1)

      3.4.2   Which type of files are usually compressed?   (1)

      3.4.3   Differentiate between **Lossy compression** and **Lossless compression**.   (2)

      3.4.4   Provide the name for the most commonly used image file compression format.   (1)

3.5   He has to decide whether to setup an intranet or extranet.

      3.5.1   Define an ***intranet***.   (2)

      3.5.2   Give an advantage associated with setting up an extranet.   (1)

TOTAL SECTION C: 26

SECTION D: DATA AND INFORMATION MANAGEMENT

QUESTION 4

TABLE 1			
CustomerID	OrderID	ProductID	UnitPrice
MMSE	10M	11	72.00
LOHNRHO	11L	42	15.00
RHIN	17R	72	75.69
MMSE	21M	42	69.99
RHIM	22R	40	50.00

TABLE 2	
ProductID	ProductName
11	Faux Green Tile
40	Porcelain Blue Tile
42	Bone White Tile
72	Cream Yellow Granite Tile
75	Grey Granite Tile

A database has been designed with information about the orders, clients and products that they buy. It is made up of tables, fields and records.

4.1 Define each of the following:

    4.1.1 A database field (2)

    4.1.2 A database record (2)

    4.1.3 A database table (3)

4.2 The database will be designed on one computer and will run on one standalone computer.

    4.2.1 What is the name given to this type of database? (1)

    4.2.2 Give an example of a program that can be used to design the database mentioned in QUESTION 4.2.1. (1)

    4.2.3 What is the name given to a database that is shared on the intranet? (1)

    4.2.4 Give TWO examples of programs that can be used to design the database described in QUESTION 4.2.3. (1)

4.3 Errors can be made whilst entering data into the database. Describe FOUR ways in which data can be validated. (8)

4.4 The TWO tables are not linked together. The primary keys and foreign keys need to be identified in order for them to be linked.

    4.4.1 What is a *primary key*? (1)

    4.4.2 Identify the primary keys of the two tables. (2)

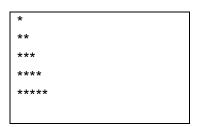   4.4.3 Redraw the two tables showing how they can be joined together. (4)

TOTAL SECTION D: 26

SECTION E: SOLUTION DEVELOPMENT

QUESTION 5

You have offered to develop applications for you uncle.

5.1 A section of you program needs to output the following pattern in an output component.

```
*
**
***
****
*****
```

      5.1.1   What is the minimum amount of variables required to accomplish this task? (1)

      5.1.2   Design a flowchart or write pseudo code for the program. (9)

5.2 You have to decide whether to use the *For Loop* or the *While loop*. Explain the differences between the loops. (4)

5.3 Sometimes you have to use arrays in your program.

      5.3.1   Define the term, *array*. (2)

      5.3.2   Give TWO examples when it is advisable to use an array. (2)

5.4 List and explain THREE types of errors that you may encounter when writing/executing a program. (6)

5.5 You have heard fellow programmers saying *"variables have local scope and global scope"*. Explain what this statement means. (2)

TOTAL SECTION E: **26**

SECTION F: INTEGRATED SCENARIO

QUESTION 6

Before setting up the Wi-Fi network for the company, your uncle has done some research and encountered many concepts that he needs you to answer.

6.1   He starts by asking basic questions on networks.

      6.1.1   Why do we need networks? Give FOUR reasons.   (4)

      6.1.2   Name the THREE network topologies in use.   (3)

      6.1.3   Draw ONE network topology and label the parts.   (3)

      6.1.4   TCP/IP is considered to be a suite of protocols. Apart from TCP and IP name THREE other protocols in this suite.   (3)

6.2   He has also been advised that once he is connected to the internet, his chances of receiving unsolicited mail increases. He also plans to be doing online banking.

      6.2.1   What is this *unsolicited mail* called?   (1)

      6.2.2   Is it possible to stop unsolicited mail from getting into your mailbox? Motivate your answer.   (2)

      6.2.3   Banks take measures to protect their users from hackers. Describe TWO security features banks employ to improve security.   (4)

      6.2.4   Give THREE measures you can take to protect yourself from someone trying to get your banking details.   (3)

6.3   You uncle needs to restrict access to the company information:

      6.3.1   Explain THREE physical measures that he can take.   (3)

      6.3.2   Explain TWO software measures that he can take.   (2)

6.4   Your uncle has also read that he can save money and resources if his workers telecommute. Others are encouraging him to setup either a virtual office or a mobile office.

      6.4.1   Briefly explain what telecommuting is.   (1)

      6.4.2   Describe TWO disadvantages of telecommuting.   (4)

      6.4.3   Explain the difference between a **virtual office** and **a mobile office**.   (4)

                                                 TOTAL SECTION F: **37**

                                                       GRAND TOTAL: **150**