Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 11

NOVEMBER 2015

INFORMATION TECHNOLOGY P2

MARKS: **150**

TIME: **3 hours**

IINFTE

This question paper consists of 13 pages.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of SIX sections:

SECTION A:	Multiple-choice questions	(10)
SECTION B:	System Technology	(20)
SECTION C:	Communications Technologies and Network Technologies	(30)
SECTION D:	Data and Information Management	(27)
SECTION E:	Solution Development	(23)
SECTION F:	Integrated Scenario	(40)

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

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 (1.1–1.10) in the ANSWER BOOK.

1.1 This technology automates the configuration process of a device before it can be used.

A Caching
B Hot swappable
C Daisy chaining
D Plug-and-play (1)

1.2 The technology such as a retina scanner is called …

A intelligent scanning.
B biometrics.
C retanics.
D eye scanner. (1)

1.3 Attempt from people using an e-mail to try to convince someone to provide security-related information is called …

A phishing.
B pharming.
C scamming.
D snooping. (1)

1.4 A collection of programs that are designed to infiltrate a computer and gain the highest level of privileges to take control of the infected computer.

A Rootkit
B Trojan
C AdminBug
D Malware (1)

1.5 Artificial intelligence ...

A is the simulation of human decision-making processes by a computer system, programmed to react on input from sensors.
B is when people that think they are smart, but actually have a low IQ.
C is the process whereby certain routine office processes are carried out without human intervention.
D is the performance of physical tasks, commonly repetitive or dangerous ones by computer controlled machines. (1)

1.6 Calculate the answer of:
2 – 30 + 3 * (20 DIV 3)

A 166
B -150
C 46
D -10 (1)

1.7 With what is this icon shown here associated?

A Tiger-eye
B Spec Savers
C Nvdia
D RSS (1)

1.8 Which ONE of the following terms does NOT belong to the others?

A Android
B iOS
C Windows RT
D Linux (1)

1.9 A ... takes an entire program and translates it into machine language.

A interpreter
B computer
C compiler
D programmer (1)

1.10 Which ONE of the following is NOT true?

A A video card can have more than one fan to keep it cool.
B A video card's job is to generate images that are displayed on your monitor.
C Without a separate video card, the CPU has to do the job of the video card.
D All computers come out with a separate video card. (1)

TOTAL SECTION A: 10

SECTION B: SYSTEM TECHNOLOGIES

QUESTION 2

2.1 The motherboard is a large circuit board with many slots, connectors and different parts clearly visible all over it.

2.1.1 One of these connectors on your motherboard is a SATA connector. What would be connected to it? (1)

2.1.2 Referring to the motherboard, what is a *bus*? (2)

2.1.3 Where will you connect the CPU to the motherboard? (1)

2.2 The CPU and RAM are two of the most important components in a computer.

2.2.1 A point-to-point connection between these two components is available on the motherboard. What does this mean? (1)

2.2.2 These two components cannot function optimally without each other. Why would that be? (2)

2.2.3 List the FOUR steps of the machine cycle performed in the CPU. (4)

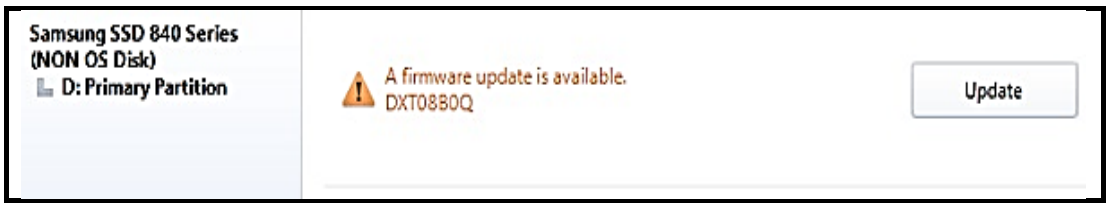
2.2.4 You are upgrading your RAM to 8 GB of RAM. The computer only recognises 4 GB of RAM. It is installed correctly and the RAM is not faulty. What could be the problem? (1)

2.3 In need of more memory, you decided to make use of virtual memory.

2.3.1 What is *virtual memory*? (2)

2.3.2 How does the computer make use of virtual memory? (2)

2.4 Look at the following screen shot and answer the questions that follow.



2.4.1 What is *firmware*? (1)

2.4.2 List TWO reasons why you would want to update your firmware. (2)

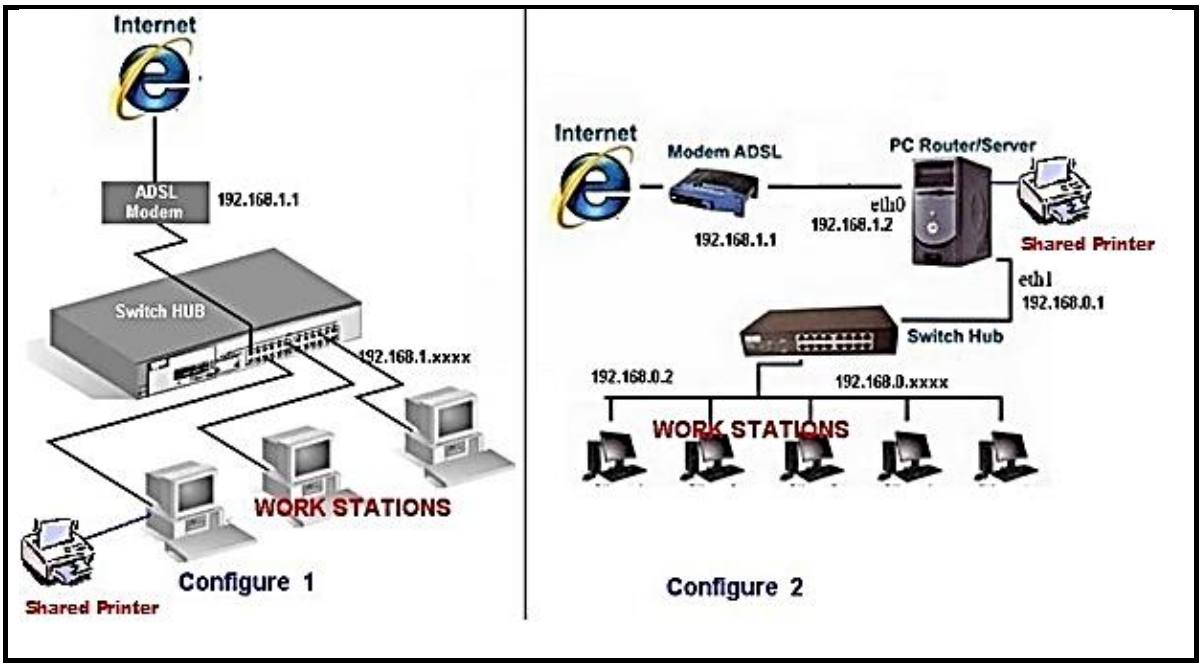
2.4.3 What does *partition* refer to? (1)

TOTAL SECTION B: 20

SECTION C: COMMUNICATION TECHNOLOGIES AND NETWORK TECHNOLOGIES

QUESTION 3

Study the following representation of a network (*from Google images*) and answer the questions.



3.1 Define a *network*. (3)

3.2 In the image it is shown that the network is used to share a printer (hardware) and Internet. List THREE other reasons for having a network. (3)

3.3 Apart from communication, what is the function of a NIC (Network Interface Controller)? (2)

3.4 A star topology is used in this representation of a network.

3.4.1 Define the term *topology*. (1)

3.4.2 Explain why the star topology is overall a popular choice. (2)

3.5 Cabling is part of a network. UTP and fibre optic cables are the two main types of cables.

3.5.1 Differentiate between these two cables by describing how data is transferred over the cables. (2)

3.5.2 Which cable is mostly used in this type of network? (1)

3.6 ADSL is used as Internet connection. State TWO advantages using a fixed line connection such as ADSL over a mobile connection. (2)

3.7 Differentiate between a *router* and a *switch*. (2)

3.8 Briefly explain the function of a modem in data communication. (2)

3.9 An important part of a network is a *firewall*. Name TWO ways that a firewall protects your computer. (2)

3.10 The way that information is controlled in a network classifies LANs in two formats. What kind of LAN format is represented in the picture? (1)

3.11 Protocols are necessary to enable transmission across a network or the Internet. Briefly describe where each of the following will be used.

3.11.1 SMTP (1)

3.11.2 POP3 (1)

3.12 SSL is a protocol used to ensure the security of communication and transactions on the Internet. Briefly describe how SSL works. (3)

3.13 Give TWO differences between a normal workstation and a server. (2)

TOTAL SECTION C: 30

SECTION D: DATA AND INFORMATION MANAGEMENT

QUESTION 4

4.1 Explain the difference between *data* and *information*. Use examples as part of your answer. (3)

4.2 What does the currency of data refers to? (1)

4.3 Briefly explain the difference between *data warehousing* and *data mining*. (2)

4.4 A database can be described as a collection of data or facts regarding a specific topic.

4.4.1 List THREE advantages of using database software. (3)

4.4.2 Tabulate TWO of the main differences between the functioning of a desktop database compared to a server DBMS. (4)

4.4.3 A distributed database is much more complex to manage than a database stored on a single computer. List TWO issues that arise from a distributed database. (2)

4.5 The tables below are used for students entering the IT Expo. The table names are shown on top, followed by the fields inside each table.

TblStudents
sID
sNAME
sSchool
sSchoolNumber
sSchoolEmail
sGrade
sGender
ExpoID

tblExpo
eID
eName
eType

4.5.1 What is the purpose of a primary key in a table? (1)

4.5.2 Identify the primary keys in each one of the tables. (2)

4.5.3 With respect to relational databases, what is a *foreign* key? (2)

4.5.4 Identify the foreign key in the above example. (1)

4.5.5 Re-draw the above tables in your ANSWER BOOK. Create a relationship between the two tables and show what kind of relationship exists between the two tables. (2)

4.5.6 The database design is bad, which can result in problems when you want to modify the database. List TWO potential errors or problems that can occur. (2)

4.5.7 Split the two tables into THREE tables to avoid these problems listed in QUESTION 4.5.6. (2)

TOTAL SECTION D: 27

SECTION E: SOLUTION DEVELOPMENT

QUESTION 5

5.1 Study the algorithm below, written in pseudo code.

Line

1. Sum ← 0
2. Loop_var ← 1 to 10
3. If loop_var MOD 2 = 0 Then
4. Sum ← Sum + Loop_var
5. End loop
6. Display Sum

5.1.1 Name the loop that would be the best choice when coding this algorithm in Delphi. (1)

5.1.2 Use the following headings to draw and complete a trace table in your ANSWER BOOK to show how the content of the variables change while tracing the steps of the given algorithm. Use as many lines as you require.

Line	Sum	Loop_var	Loop_Var MOD 2	Loop_var MOD 2 = 0?	Loop_var > 10?	Display

(4)

5.1.3 What is the purpose of this program? (2)

Study the following example of a text file, showing the names of students, followed by the number of tickets sold for an arts festival to be held at a school:

```
ANDRIES, 43
ETIENNE, 44
COBUS, 53
RUTH, 12
DIHAN, 46
SHANNON, 87
ZAZA, 34
CHAD, 56
JAN HENDRIK, 35
LARNESE, 75
TANDO, 74
MARIE-LOUISE, 34
MICHAELA, 22
BIANCA, 64
```

5.2 Examine the following code written in Delphi to determine the number of tickets sold and answer the questions that follow.

```
N ← 0
Open the text file
Repeat
   Read line of text from text file
   Retrieve the numerical value out of the line    //5.2.1
   Convert text to numerical value and store in array arrNum
   Tot ← Tot + arrNum[N]
   Avg ←Tot / N
   N ← N+1
Until end of text file
Display the value of the average
```

5.2.1 Write down an algorithm that can be used to retrieve the numerical value out of a single line. (3)

5.2.2 Write down the declaration for the array. (3)

5.2.3 When coding this algorithm, a runtime error will occur. Explain why this error will occur and also give a possible solution for the problem. (2)

5.2.4 A logical error will also occur upon running this algorithm. Explain why this error will occur and also give a possible solution for the problem. (2)

5.2.5 Why would the algorithm not work if the text file existed, but was empty? (2)

5.4 Study the following extract of a function receiving a string value to count the vowels in the string. The coding is written in Delphi. Complete the declaration for the function.

```
Function {5.3}
Var
  K : integer;
Begin
  Result := 0;
    For K := 1 to length(sString) do
     If sString[K] in [‘A’, ‘E’, ‘I’, ‘O’, ‘U’] then result := r + 1;
End;
```

(4)

TOTAL SECTION E: 23

SECTION F: INTEGRATED SCENARIO

QUESTION 6

Having the world at your fingertips through Internet so commonly used nowadays, you and your cousin decides to take your entrepreneur business to the next level.

6.1 In order to get your business out there, you realised you need a website. Soon you face the challenge between choosing between Web 1.0 versus Web 2.0.

6.1.1 Define a *website*. (2)

6.1.2 Explain the difference between these two web versions by listing TWO characteristics of each. (4)

6.1.3 You decide it will be a business or marketing website. List THREE other types of websites. (3)

6.2 A friend introduced you to *KickStarter* and suggested use *crowd-funding* to get your feet off the ground. Explain what *crowd-funding* is. (2)

6.3 With your cousin not staying in the same town as you are, you need to be able to communicate with each other. You chose FaceTime.

6.3.1 Name the operating system you will need in order to use FaceTime. (1)

6.3.2 Which protocol is used to enable FaceTime? (1)

6.4 Sending large files to your cousin can be a problem. You sometimes need to compress the files. Your options are between a *lossy* compression and a lossless compression. In which situation will it be best to use each of the two compression methods? (2)

6.5 Most of the time you are using your tablet.

6.5.1 A tablet uses a SSD for storage. Tabulate THREE comparable differences between a SSD and a HDD. (3)

6.5.2 The battery life of your tablet seems to be very short. List THREE things you can do to lengthen the battery life. (3)

6.5.3 You connect your tablet, phone and computer to a network. What do we call this type of network? (1)

6.6 Your tablet and computer are using two different kinds of operating systems.

6.6.1 List THREE functions of an operating system. (3)

6.6.2 What technology can you make use of to install two different operating systems and software onto one computer? (1)

6.7 Your computer has a single core CPU. State if the following processing techniques will be able to take place. Motivate your answers.

6.7.1 Multi-tasking (2)

6.7.2 Multi-processing (2)

6.8 Having a business, backup and archiving is extremely important.

6.8.1 Explain the difference between *backups* and *archives* by using suitable examples in each case. (2)

6.8.2 You suggest the use of cloud synching. What is *cloud synching*? (2)

6.9 You decided to use PayPal as online payment method for customers.

6.9.1 In which country/countries will you be able to make use of PayPal? (1)

6.9.2 List TWO security features that should be present on a website when using something like PayPal. (2)

6.9.3 When you pay with PayPal, your financial information is never shared with the seller. Encryption is used to ensure this. What is *encryption*? (1)

6.9.4 Setting up the payments, you get confused between data validation and data verification. Explain the difference between *data validation* and *data verification* by referring to a suitable example. (2)

TOTAL SECTION F: 40
GRAND TOTAL: 150