Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 11

NOVEMBER 2013

INFORMATION TECHNOLOGY P2

MARKS: **150**

TIME: **3 hours**

This question paper consists of 11 pages.

INSTRUCTIONS AND INFORMATION

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

SECTION A: MULTIPLE-CHOICE QUESTIONS AND MATCHING THE COLUMNS

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, for example 1.21 C.

1.1 The following are topologies used in networking today:

A Ring
B Star
C Bus
D All of the above (1)

1.2 Fibre optic cable uses … to carry signals.

A copper
B glass
C aluminium
D None of the above (1)

1.3 An internal bus:

A Connects printers to stand-alone PCs
B Comes in several types, such as data, instruction and address
C Stores the results of calculations performed in the CPU
D Communicates keystrokes to the CMOS (1)

1.4 Which is NOT a part that can be upgraded in a computer?

A CPU
B RAM
C Motherboard
D Cache memory (1)

1.5 Which is NOT an example of a type of processing?

A Multithreading
B Multitasking
C MultiRAM
D Multiprocessing (1)

1.6 Which of the following statements is true?

A 123.0.1.260 is a valid IP address
B An IP address is used to indicate the size of an IP packet
C www.blog.co.nl is an example of a website in South Africa
D 192.168.3.220 is a valid IP address (1)

1.7 A UPS ...

A is used to provide limited alternative power in the event of a power failure.
B stands for Universal Power Supply.
C is a type of connector that is used for keyboards.
D is used to connect two networks. (1)

1.8 Which are parts of a GUI interface?

A System tray, Desktop and Control Panel
B Control Panel, Start Button and Shortcuts
C Printers, Control Panel and System Tray
D Shortcuts, Icons and the Desktop (1)

1.9 DIMM is an acronym for ...

A Double Inline Memory Module.
B Dual Inline Memory Module.
C Dual Inline Memory Map.
D Double Iteration Memory Module. (1)

1.10 In which ONE of the following cases could a computer successfully replace a human being?

A An architect designing a building
B A person handing out tickets at a parking lot
C The manager of a multi-national company
D A fashion designer designing a new dress (1)

1.11 Match the COLUMN A with the correct answer in COLUMN B. Write down only the question number (1.11.1–1.11.10) and the matching letter (A–L) in COLUMN B in your answer book, for example 1.11.11 M.

COLUMN A		COLUMN B	
1.11.1	SMTP	A	Skype
1.11.2	AI	B	Central Processing Unit
1.11.3	Peer	C	Transfers files over the internet
1.11.4	Social Networking	D	Technique used to reduce the number of input errors
1.11.5	Data validation	E	Protocol responsible for delivery of mail
1.11.6	Cookies	F	Text file that is saved on your computer by a website
1.11.7	VoIP	G	Type of RAM
1.11.8	CPU	H	The study of devices that imitate human intelligence
1.11.9	FTP	I	Virtual community that communicates and interacts via the internet
1.11.10	Symbian	J	Anti-virus software
		K	Use and provide network resources
		L	Mobile operating system

(10 x 1) (10)

TOTAL SECTION A: 20

SCENARIO

You are offered the position of ICT manager of a new shopping mall. No ICT infrastructure has been put in place. You are tasked to help with implementation of ICT in the mall.

SECTION B: SYSTEM TECHNOLOGIES

QUESTION 2

During the course of your job, you meet with architects, electricians, shop owners and many other people involved in the mall. At one meeting you advise the shop owners that they would need to upgrade the computers they have.

"Upgrading will not be that expensive because of the modular design of the PC", you tell them.

2.1 Explain what *modular design* means. (2)

2.2 You explain that the shops must use modern input devices to reflect the mall being upmarket. What is an input device? Give TWO examples. (3)

2.3 Primary memory is upgraded most often. Name THREE differences between SRAM and DRAM. (3)

2.4 Besides RAM, name THREE other components which can be upgraded INSIDE the PC case. (3)

2.5 Someone starts talking about cache memory. Describe what *cache memory* is in terms of the CPU. (4)

2.6 Where else can one make use of a cache? Name TWO areas. (2)

2.7 Computers generally support *plug and play* which makes it even easier to upgrade. Explain the term *plug and play*. (3)

2.8 A motherboard has two bus types, namely the System Bus (or internal/front-side bus) and an External Bus. Describe the *System Bus* in detail and explain why it is mentioned in motherboard specifications. (4)

It can happen that the computer does not recognise the new device or adapter card that has been plugged in because the driver cannot be found.

2.9 What is a *driver*? (2)

2.10 How can this problem be solved? (2)

TOTAL SECTION B: 28

SECTION C: COMMUNICATION TECHNOLOGIES AND NETWORK TECHNOLOGIES

QUESTION 3

At the meeting of the mall stakeholders, you start discussions on networking the entire mall. One person who does not know anything about networks starts asking questions.

3.1 "Why should we network the entire mall?" she asks. Explain to her FIVE main advantages of having a network. (5)

The meeting starts arguing that it is going to be expensive implementing all the hardware necessary to include a network in the mall.

3.2 Explain what is necessary for each machine to be connected to a network. (4)

One member says he has heard of outsiders listening to their network traffic when using UTP cable.

3.3 Explain the weaknesses of UTP cabling. (4)

One of the buildings is set a bit back from the others in the mall. The owner of this shop is worried about connectivity.

3.4 The building is 150 m away from the mall. Name TWO connection methods which could be used to connect this building to the rest of the network. (2)

3.5 Should speed be a factor in the above question, which ONE of the connection methods would you suggest? Motivate your answer. (2)

3.6 The mall covers an area of 200 m by 350 m, all on one street block. What type of network is this considered to be? LAN or WAN? (1)

A very prominent shop owner asks about security on the network. You suggest to the meeting to deploy a client-server model.

3.7 Name the other model which could be deployed if the network was small. (1)

3.8 Use a table to compare SIX aspects of these two models. (6)

TOTAL SECTION C: 25

SECTION D: DATA AND INFORMATION MANAGEMENT

QUESTION 4

4.1 The next topic of the meeting is how the general data management for the mall is going to look. This will encompass the management of rentals, levies, tenants, etc.

4.1.1 Describe the difference between *data* and *information*. (2)

There is some discussion as to which DBMS to use.

4.1.2 What does *DBMS* stand for? (1)

4.1.3 Name FOUR *DBMS* packages. (4)

4.2 You now open up discussion on data security. You discuss malicious threats as well as backup strategies. Give comprehensive definitions of the following:

4.2.1 Computer virus (3)

4.2.2 *Spam* (1)

4.2.3 *Spyware* (3)

4.2.4 *Phishing* (3)

TOTAL SECTION D: 17

SECTION E: SOLUTION DEVELOPMENT

QUESTION 5

You and your team develop software for the mall. You use a programming language that supports OOP and can access a database.

5.1 The database contains a number of features such as tables, queries, forms and reports. Your secretary has been tasked to set up a database of the shop owners in the mall. The main table called **tblSHOPOWNERS** in the database must contain the essential information about the shop owners.

5.1.1 Give THREE possible fields which could be used in this table, their data type and the field size where applicable. (3)

5.1.2 When you create the **tblSHOPOWNERS** table, the application suggests that you create or let it create a primary key. What is the purpose of a primary key? (2)

5.1.3 Give a suitable field which could be a primary key. Justify your answer. (2)

5.2 A shop owner asks you to write some software for his gym in the mall. The software has a database in the back end. The software has to read in the names of the gym members from the database table into an array and use a function to select a random member who will get a prize.

5.2.1 Write an algorithm which will perform this task. (8)

The database name is MALL_GYM while the table name in the database is MEMBERS. You are asked to write some SQL code to extract some information from the database.

5.2.2 Write SQL code to extract all the fields from the table, sorted in alphabetical order of the SURNAME field. (3)

5.2.3 Write SQL code to display the fields SURNAME, NAME, ID_NO, MEMBER_NO, PAID_UP of all the members who are fully paid up, sorted by the MEMBER_NO field. (5)

5.3 What does OOP stand for? (1)

5.4 A programmer tries to implement the following section of an algorithm:

```
1 cnt ← 0
2 num1 ← 1
3 input num2
4 total ← num1 + num2
5 while cnt < total
6   res ← total/cnt
7   output res
8   cnt ← cnt + 1
9 endwhile
```

When this algorithm is coded and executed, a critical error occurs.

5.4.1 Indicate what the error will be and the line number(s) from where the error arises. (2)

5.4.2 How can this error be corrected? (1)

TOTAL SECTION E: 27

SECTION F: INTEGRATED SCENARIO

QUESTION 6

You now have all shops connected in a LAN. The owners are excited about the new connectivity and are finding many innovative ways of using the technology to improve their turnover and make better profits.

6.1 In the IT workshop there is a lot of debate that goes on. One of the junior technicians who is just out of school starts asking questions.

6.1.1 He has heard of multitasking and asks what it is. Describe in your own words what you understand by the term multitasking. (3)

6.1.2 Explain how multithreading works and give an example. (4)

6.2 On reading the documentation for a piece of hardware your junior technician is installing into a new machine, the documentation talks of IRQs.

6.2.1 What is IRQ short for? (1)

6.2.2 How does an IRQ work? (3)

6.3 You have read that RAM loses its contents when powered off and ROM does not lose its contents.

With this in mind, describe in detail how a computer can possibly boot up. (5)

6.4 A machine that has just been set up for an architect has 4GB of RAM. The architect runs AutoCAD, Photoshop and MS Office. All these programs when loaded into RAM take up 8.7GB!

6.4.1 With this information and by referring to virtual memory, explain how this can work. (4)

6.4.2 What is thrashing and how can it be corrected? (4)

6.5 The shop owners are making good use of the Internet and all its services. Viruses are always a problem.

6.5.1 List THREE ways in which a user's actions could result in a virus getting onto the user's computer system via the network. (3)

6.5.2 What is an anti-virus update and why should it be performed? (2)

6.6 One shop owner asks you to install MS Office on her PCs from copied disks. You tell her this is against the law because MS Office is proprietary software.

6.6.1 What is the copying of proprietary software known as? (1)

6.6.2 Explain what proprietary software means. (2)

6.6.3 There are free software programs around. Give an example of a free operating system. (1)

TOTAL SECTION F: 33
GRAND TOTAL: 150