GAUTENG DEPARTMENT OF EDUCATION
SENIOR CERTIFICATE EXAMINATION

FEB / MAR 2006

COMPUTER STUDIES SG
(Second Paper: Theory)

TIME: 3 hours

MARKS: 150

INSTRUCTIONS:

- Answer ALL the questions.

- This paper consists of 16 pages. Please check that your paper is complete.

QUESTION 1
BINARY LOGIC

1.1   Simplify the following expression:

A.A' + (B + B')   (3)

(Note that it is not necessary to know the values of A or B to answer this
question. Show all steps.)

1.2   Consider the following function: $F(x, y, z) = x'y + (y + z)'$. Determine the value
of the function if $x = 1$, $y = 1$ and $z = 0$.   (3)

1.3   The table below contains information about birds.

Letter	Name	Type	Status
A	European swallow	swallow	migrant
B	Steppe buzzard	buzzard	migrant
C	Lesser-striped swallow	swallow	resident
D	White-fronted bee-eater	bee-eater	resident
E	Jackal buzzard	buzzard	resident
F	European bee-eater	bee-eater	migrant

Write down the **letter/s** of the bird(s) which meet the following criteria:

1.3.1   swallow OR resident AND bee-eater
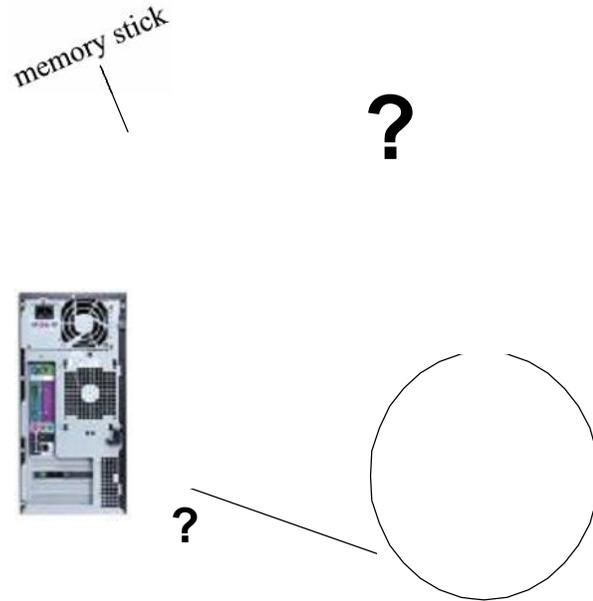
1.3.2   NOT swallow OR migrant   (4)

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QUESTION 2

COMPUTER ARCHITECTURE

Johnny Screenbean bought himself a new computer, and a new Flash memory stick. He is wondering what must be plugged in where on his computer.

2.1   Johnny can plug his new memory stick into the USB port at the back of the computer. Name THREE other devices which can also be plugged into a USB port.   (3)

2.2   Which one of the following would be a typical indication of the amount of data which can be stored on Johnny's memory stick?

A. 40 GB   B. 256 MB   C. 1.44 MB   (1)

2.3   Two advantages of USB (Universal Serial Bus) are that it supports Plug and Play, and that it is "hot swoppable".

2.3.1   What does "**hot swoppable**" mean? (Note: explain the concept "hot swoppable").   (1)

2.3.2   What does it mean if a device is a "**Plug and Play**" device? (Again: explain the concept.)   (2)

2.4   Name TWO different devices which could be plugged into a PS/2 port.   (2)

2.5   What device is commonly plugged into an LPT1 port?   (1)

2.6   Is an LPT1 port a serial port or a parallel port?   (1)

2.7   What device is normally plugged into a Firewire port?   (1)

P.T.O.

```
1........    Intel Pentium 4  2.6 GHz (800MHz FSB)
2........    MSI 6728 Neo2 Motherboard with 10/100 LAN
3........    512 MB DDR RAM
4........    Geforce FX 5200 AGP 64MB
5........    80GB IDE Drive ATA
6........    CD-Writer 52x24x52
7........    1.44 Stiffy Drive
8........    Optical Mouse
```

Questions 2.8 – 2.11 refer to the specifications for Johnny's computer, as shown above.

2.8   Line 1 shows "**2.6 GHz**". Which one of the following sentences is correct?

A.   2.6 GHz refers to the speed at which data is transferred inside the computer.

B.   2.6 GHz refers to the speed at which the CPU processes instructions.

C.   2.6 GHz indicates how much data can be stored on the hard drive.   (1)

2.9   Line 3 shows "**DDR RAM**". Write down TRUE or FALSE for each of questions 2.9.1 – 2.9.3.

2.9.1   DDR RAM is used for the permanent storage of data.

2.9.2   DDR RAM is a form of static RAM.

2.9.3   DDR RAM transfers data at double the rate compared to SDRAM.   (3)

2.10   The Geforce graphics card (line 4) is an AGP graphics card. It is also a 3-D video card.

2.10.1   How does **AGP** help to improve the display of graphics on a computer?   (1)

2.10.2   3-D video cards have two components which are not found on standard video cards. Name these TWO components.   (2)

2.11   Line 5 shows "**80GB IDE Drive ATA**".

2.11.1   What component of the computer is referred to in this line?   (1)

2.11.2   Name TWO characteristics of an IDE interface.   (2)

The following questions are independent, and do not relate to Johnny's computer mentioned above.

2.12   The following list shows different types of memory:

A.	Static RAM
B.	Read Only Memory
C.	Dynamic RAM
D.	Virtual memory

For each of the sentences below, indicate which type of memory (A, B, C or D) applies to it. Write only the question number and a letter, for example: 2.12.8 E.

2.12.1   This memory needs to be refreshed in order to keep its contents.

2.12.2   This memory makes use of space on the hard disk.

2.12.3   This is used for cache memory.

2.12.4   This memory stores programs which are needed when a computer is started up.

2.12.5   This memory represents the largest amount of memory that is used in a computer.

2.12.6   There are new types of this memory which can actually be erased and changed by ultra-violet light or by software.

2.12.7   This memory is used to store data and instructions when there is not enough space in Dynamic RAM.   (7)

2.13   Computers with cache memory can have level 1 or level 2 cache memory. Explain how cache memory is used to improve the overall performance of a computer.   (2)

2.14   Adding cache memory was just one way of developing and improving processors. Name TWO other methods that were used to improve the performance of processors (CPUs).   (2)

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QUESTION 3
SYSTEM SOFTWARE

3.1 Johnny's friend has given him this list of operating systems. Study the list and answer the questions which follow. (All answers for Questions 3.1.1 – 3.1.4 must be chosen from this list.)

> - Windows 2000
> - Pocket PC
> - UNIX
> - Windows XP
> - Linspire (previously called Lindows)
> - Linux
> - NT
> - Palm OS
> - Novell Netware

3.1.1 Apart from Windows 2000 or Windows XP, write down ONE other operating system which Johnny could use on his computer. (Johnny will be using his computer at home, and not linked to any other computers.)

3.1.2 Write down TWO operating systems which are open source and freely available.

3.1.3 Write down TWO operating systems which can be used on a PDA.

3.1.4 Name ONE operating system which is used in client-server networks. (6)

3.2 Name FOUR functions of an operating system. (4)

3.3 An operating system uses a directory to store information about each file on the hard disk. One detail stored is the size of the file. Name two other details that are stored about each file. (2)

3.4 When a computer is started up, the operating system is not loaded immediately. Another set of programs is the first to run at start-up time. This set contains routines called POST, as well as other programs.

3.4.1 What is the name of this program (or set of programs)? (1)

3.4.2 What is the function of the POST routines? (1)

P.T.O.

3.5 It is important to install an anti-virus program on one's computer. Besides installing the program, name ONE other action or precaution which is needed for an anti-virus program to function properly. (1)

3.6 What is the function of a "**driver**" program? (2)

3.7 One of the programs that comes with the Windows System Tools is "**Disk Defragmenter**" (commonly called "Defrag"). Explain what this program does. (2)
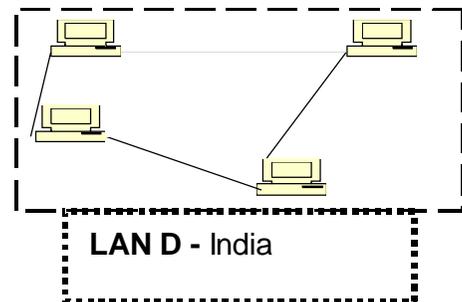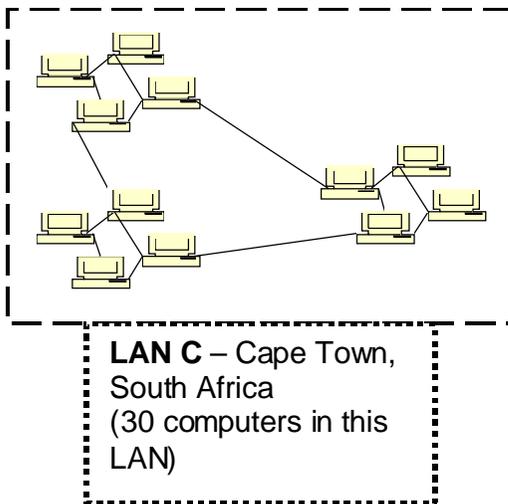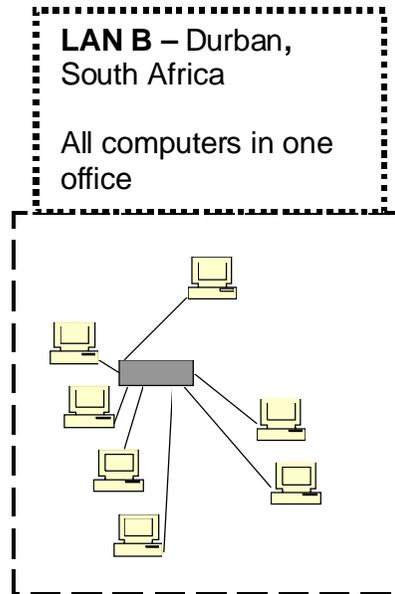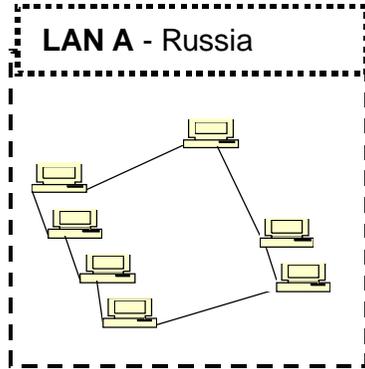
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QUESTION 4
DATA COMMUNICATION

4.1 We gain many advantages when linking computers in a network. Describe THREE of these advantages. (Please note: explain clearly in full sentences.) (3)

4.2 The acronym GAN is used to indicate a "Global Area Network".

    4.2.1 Give ONE example of a global area network that exists today. (1)

    4.2.2 "GAN" and "LAN" are two of a few three-letter acronyms used to describe networks. Name TWO others, and write in full what the acronym stands for. Use the table below to present your answers.

Example	GAN	Global Area Network
4.2.2 (a)	…AN	
4.2.2 (b)	…AN	

(4)

LAN B – Durban, South Africa

All computers in one office

LAN A - Russia

LAN C – Cape Town, South Africa
(30 computers in this LAN)

LAN D - India

4.3   The computers in the sketch above are linked in a Global Area Network. Many different media are used to send data between these computers.

4.3.1   Name THREE different types of cables that can be used to link the computers in network **B**.   (3)

4.3.2   Give ONE example of unbounded media that could be used to send data from computer **A** to computer **D**.   (1)
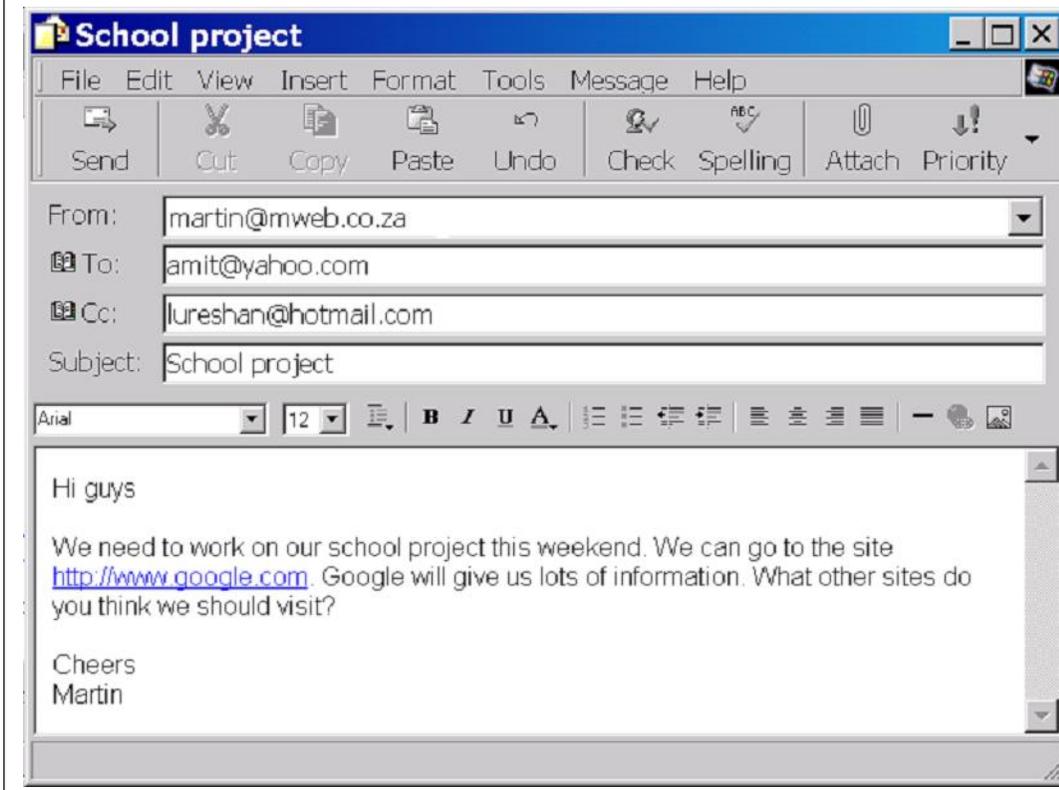
4.3.3   Tumelo is using infrared transmission to send data from his PDA to his printer. What other wireless medium could he use to send the data from the PDA to the printer?   (1)

4.3.4   Give ONE fact about infrared transmission in general (for example, your answer can be a disadvantage or advantage of using infrared).   (1)

4.3.5   There are 30 computers linked together in **LAN C**, in one building. This network needs a network administrator. Describe THREE tasks that a network administrator must perform to ensure that a network runs smoothly.   (3)

4.4   Name THREE different LAN architectures.   (3)

4.5   The network in **LAN A** (shown on page 8) uses the CSMA/CD access method. This means that LAN A probably uses the …………………. LAN architecture.   (1)

4.6   Explain how the CSMA/CD access method works.   (3)

4.7   Name ONE other network access method.   (1)

4.8   State TRUE or FALSE for each of the statements 4.8.1 – 4.8.3.

In a peer-to-peer network

4.8.1   all computers on the network have equal access to any of the information found on the network.

4.8.2   some computers must be set up to have control over other computers.

4.8.3   it is possible to share a printer for use by all computers in the network.   (3)

4.9   Name ONE advantage of having a client-server network rather than a peer-to-peer network.   (1)

4.10   **LAN B** in the sketch on page 8 uses a switch (intelligent hub) to connect the computers. In providing this connection, the switch performs TWO tasks. Describe these tasks.   (2)

4.11   Apart from a switch, there are other devices that also provide connections inside a LAN and between different LANs. Name TWO of these devices.   (2)

4.12   Switching techniques determine how data is sent from one network to another. One example is cell switching. Name TWO characteristics of cell switching.   (2)

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QUESTION 5

INTERNET AND NEW TECHNOLOGY

Below is an e-mail sent by Martin to his friends Amit and Lureshan. Study the e-mail and answer the questions which follow.

5.1   What is the name of Martin's ISP (Internet Service Provider)?   (1)

5.2   Although Amit's e-mail address is amit@yahoo.com. Yahoo is not an Internet Service provider. What is the primary function of the site www.yahoo.com?   (1)

5.3   Name TWO other Internet Service Providers (besides the ISP that you named in your answer to question 5.1).   (2)

5.4   "http" stands for Hypertext Transfer Protocol.

      5.4.1   What is "**hypertext**"?   (1)

      5.4.2   What is a "**protocol**"?   (2)

5.5   Amit's friend Diana has the following e-mail address: diana@ppl.co.za.

      5.5.1   What does the "**co**" in her address refer to?   (1)

      5.5.2   What does the "**za**" in her address refer to?   (1)

5.6   Pages that are to be displayed on the Internet are written in a special language. What is this language called? (You may give the abbreviation or write out the name in full.)   (1)

5.7   Many companies have websites where they sell goods on the Internet. Name TWO advantages **for a company** to sell goods on the Internet.   (2)

5.8   Name ONE precaution that we as **buyers** must take when we buy goods on the Internet.   (1)

5.9   What is a **PDA**?   (1)

5.10   Smartphones can be used for many purposes besides making a phone call. Name THREE other uses of a smartphone.   (3)

5.11   What device is usually characterized by the number of megapixels that it can work with?   (1)

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QUESTION 6
SOCIAL IMPLICATIONS

6.1   As a result of the use of computers, there are many types of jobs where fewer people are employed, or the job no longer exists. Name TWO such jobs, and describe the reasons why there have been these job losses. (To answer this question, copy the table below and fill in your answers.)

	Type of job	Reason why fewer people employed
Example:	Cashier at parking garage exit (where one pays for parking)	At some parking garages one can pay for parking at a computerized pay station
6.1.1		
6.1.2		

(4)

6.2   Banking on the Internet is convenient, but can also lead to problems.
       Describe TWO problems associated with Internet banking transactions.   (2)

6.3   When we spend long hours working or playing at a computer, this can have an adverse effect on our health. Describe TWO ways in which excessive computer use can affect our health.   (2)

6.4   Digital certificates are used for our protection in several ways. One example: a digital certificate can be used to verify that a web site is really the site for that company, and not created by a hacker. Give TWO more examples of what digital certificates can verify (verify = make sure of…).   (2)

6.5   Each digital certificate carries certain information which is needed for this certificate to function. One example: a serial number for this certificate. Besides the serial number, give TWO more examples of information that is attached to a digital certificate.   (2)

6.6   What is **spyware**?

       (Note: give enough information, as this question counts 3 marks)   (3)

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QUESTION 7

APPLICATIONS AND PACKAGES

7.1   7.1.1   Three types of programs which are included in the Microsoft Office Professional Suite are: a word processor, a spreadsheet, and a presentations program. Name ONE other **type** of program which also forms part of this Suite. (1)

7.1.2   Copy the table below in your answer book, and complete rows 2 – 4 so that there are TWO examples of each type of program. (To save time you may copy only the last three rows.)

Row	Type of program	Example 1	Example 2
1	Word processor	Microsoft Word	Wordperfect
2	Spreadsheet	Microsoft Excel	
3	Accounting program		
4	Presentations		

(5)

7.1.3   The Microsoft Office Premium Suite includes a program which is used specifically to create web pages. What is the name of this program? (1)
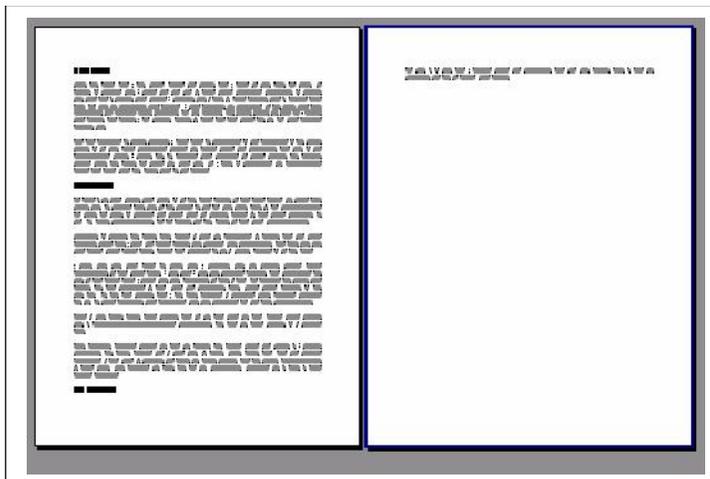
7.2 Xolile has her own swimming-pool company called "Clearwaters". Clearwaters makes, sells and installs swimming-pools. Appendix A on page 16 shows a letter that Xolile has typed.

Identify the following in Xolile's letter. Write only the question number and the letter, e.g. 7.2.10 K.

7.2.1 Use of italics

7.2.2 Right-aligned text

7.2.3 Use of tabs (general, no decimal or centred settings)

7.2.4 Use of superscripts

7.2.5 Use of tab stops (decimal)

7.2.6 Use of tab stops (centered)

(6)

7.3 Xoxile has typed another letter in a word processor. The letter almost fits onto one page.

Name TWO actions that she can take in order to fit the letter onto one page, **without changing or deleting any of the words or headings.** (2)

7.4   Xolile was given the following file by a friend:

pool designs.pdf

Which one of the following programs can she use to open this file?

   A. Powerpoint

   B. Adobe Acrobat Reader

   C. Presentations

   D. Microsoft Word   (1)

7.5   Xolile has typed the following data in a spreadsheet:

	A	B	C	D
1	134.419			Hennie
2	-45			Bongani
3	20			Hanro
4	35			Anne
5	15			Heather
6				Jabulani

She now adds the following:

   In cell B1: =ROUND(A1, 2)

   In cell B2: =ABS(A2)

   In cell B3: =LARGE(A3:A5,2)

   In cell B4: =COUNTIF(D1:D6, "H*")

What will be displayed in:

7.5.1   Cell B1?

7.5.2   Cell B2?

7.5.3   Cell B3?

7.5.4   Cell B4?   (4)

                                                                    [20]

                                            TOTAL: 150

APPENDIX A

Clearwaters Monthly Report

This month we sold and installed the following swimming-pools:

Ref no	Foreman	Pool shape	Pool size	Customer satisfaction
$T8_r$-41	Hennie	round	40.5	Very happy
$T9_k$-32	Bongani	kidney	30	Very happy
$T10_r$-45	Anne	rectangle	55.25	Satisfied
$T11_k$-38	Bongani	L-shaped	35	Satisfied
$T12_r$-210	Anne	round	42	Very happy
$T13_k$-310	Hennie	splash	12	Unhappy

A

B While we are pleased to see that most customers were happy, we would like to improve our service so that every single customer rates his/her satisfaction as "very happy". To achieve this, we need to contact past unhappy customers to find out why they were unhappy.

Here is a list of customers to contact:

Name	Pool	Pool size	Telephone number
Peter	round	$40.5m^3$	012-664-2351
Olawumi	kidney	$38.85m^3$	0834125430
Martin	L-shaped	$56.15m^3$	0141-435-7788
Amit	splash	$11.5m^3$	01215-231-5433

C   **D**   **E**   **F**

Here is an extract from a letter received from one of our happy customers:

G I would definitely recommend your company to my friends. The kidney-shaped pool that you installed for me is flawless. It was neatly built, the curves are very smooth, and the paving around the pool was also *excellently done*. Well done to Clearwaters!

To each one of you, thank you for all your hard work and effort.

Xolile

END