

**GAUTENG DEPARTMENT OF EDUCATION
SENIOR CERTIFICATE EXAMINATION**

**COMPUTER STUDIES SG
(Second Paper: Theory)**

**OCTOBER / NOVEMBER 2005
OKTOBER / NOVEMBER 2005**

TIME: 3 hours

MARKS: 150

INSTRUCTIONS:

- Answer ALL the questions.
 - This paper consists of 14 pages. Please check that your paper is complete.
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**QUESTION 1
COMPUTER ARCHITECTURE**

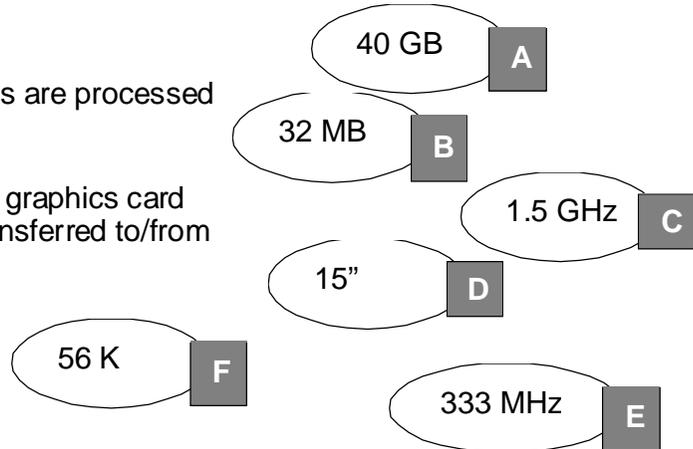
Questions 1.1 to 1.5 refer to the following advertisement:

**GET THIS FANTASTIC COMPUTER FOR
ONLY R12 000!**

Superstar 1.5 GHz Intel laptop
256 MB DDR 333 MHz
40GB HD
DVD/CD-RW Combo drive
ATI Mobility RADEON 9200
32 MB VGA
15" XGA LCD
Integrated LAN/Wireless LAN
Integrated 56K Modem
SD Memory Card Slot
PCMCIA slot
3 x USB 2.0
IEEE 1394A S-Video (Firewire)

- 1.1 The values in circles below right have been taken from the advertisement. For each description (numbered 1.1.1 – 1.1.6), choose the correct letter (A – F). Write down only the question number and the letter, e.g. 1.1.10 K. (6)

- 1.1.1 The modem speed
 1.1.2 The speed at which instructions are processed in this computer
 1.1.3 The size of the monitor
 1.1.4 The amount of memory on the graphics card
 1.1.5 The speed at which data is transferred to/from primary memory
 1.1.6 The size of the hard drive



- 1.2 Referring to the components listed in this advertisement, name TWO ways in which this computer can connect to the Internet. (2)
- 1.3 This computer has three USB ports, as well as a Firewire port.
- 1.3.1 Name ONE **difference** between a USB connection and a Firewire connection. (1)
- 1.3.2 Name ONE **similarity** between a USB and a Firewire connection. (1)
- 1.4 This computer has a memory card slot. What kind of memory is used in a memory card? (1)
- 1.5 Name FOUR different devices which can be plugged into a USB port. (4)
- 1.6 The following sentences describe the functions of components of the CPU. For each sentence, choose the correct component from the list marked A – F. Write only the question number and the letter, e.g. 1.6.5 K.

- A. cache memory
- B. control unit
- C. instruction set
- D. ALU
- E. register
- F. BIOS

- 1.6.1 The _____ performs all calculations.
- 1.6.2 A _____ is used to store the result of an instruction that has just been executed.
- 1.6.3 The _____ indicates whether data is to be fetched from memory or sent to memory.
- 1.6.4 The _____ is used to store data and instructions likely to be needed next by the CPU. (4)

- 1.7 Explain how **pipelining** works. (3)
- 1.8 Different kinds of memory are described below. For each of these, choose the correct term from the options A – E. Write only the question number and the letter, for example, 1.8.4 F.

1.8.1	In this kind of memory data is sent on the rise and fall of the clock pulse
1.8.2	In this kind of memory data is sent once with each clock pulse
1.8.3	This kind of memory does not lose its contents when the computer is switched off

A.	EEPROM
B.	DDR DRAM
C.	SDRAM
D.	cache memory
E.	static RAM

- 1.9 What device is normally plugged into the parallel port of a computer? (1)
- 1.10 Complete the following sentence by choosing the correct THREE items from the list below.

“You cannot have a functioning computer without _____.”

- A. a 3-D video card
- B. a CPU
- C. PCI slots
- D. RAM chips
- E. ROM
- F. a Firewire port

(3)
[29]

QUESTION 2 SYSTEM SOFTWARE

- 2.1 Name THREE functions of an operating system. (3)
- 2.2 The operating system forms part of the system software on any computer. Name one other program which also forms part of the system software. (1)
- 2.3 Name TWO operating systems which are **not** Microsoft operating systems. (2)
- 2.4 What is an **embedded operating system**? (1)

2.5 Write down TRUE or FALSE for each of the following sentences (2.5.1 – 2.5.4).

The kernel of the operating system

2.5.1 allocates memory to processes (programs).

2.5.2 is the first program that runs when you start up a computer.

2.5.3 is the interface between the operating system and the user.

2.5.4 controls the order in which processes are run.

(4)

2.6 Choose the correct answer from the following:

Multitasking is made possible by the fact that

A. one can open several windows on the screen at once.

B. a computer processes instructions faster than the user can type.

C. the speed of the CPU is much faster than the speed of any other component in a computer.

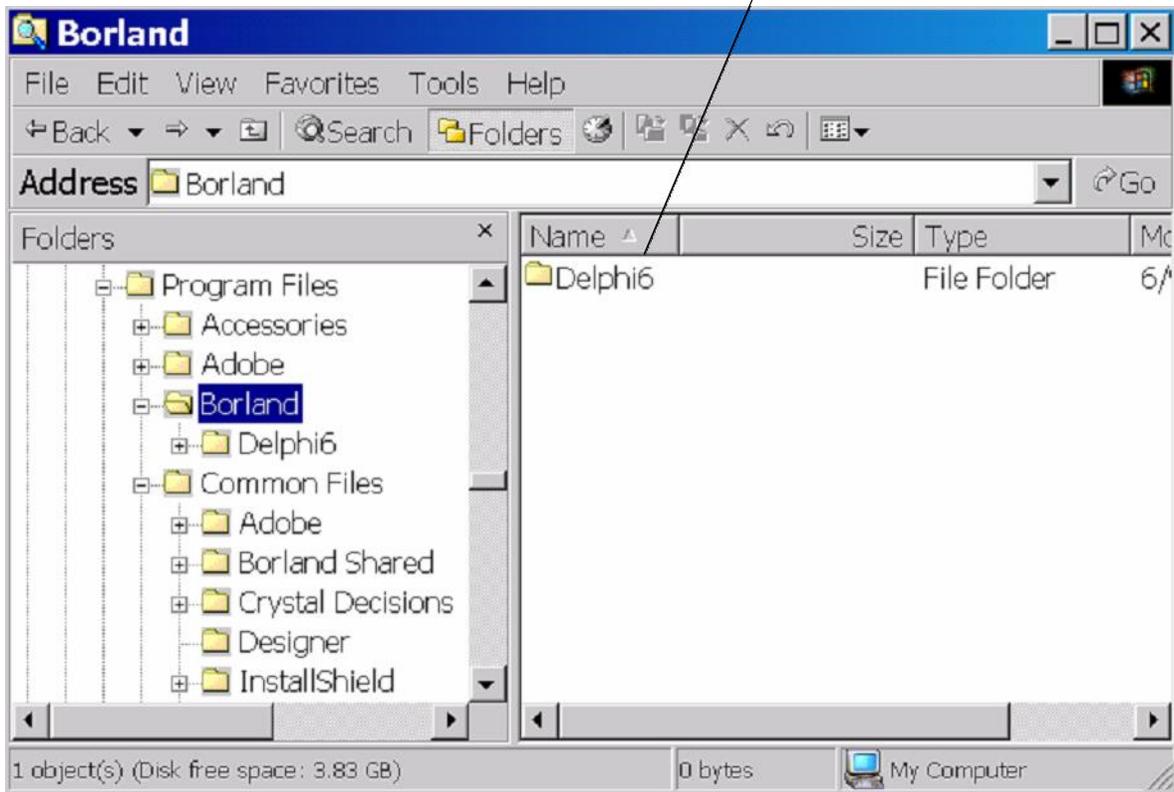
D. computers can connect to each other in a network.

(1)

2.7 What is stored in the Windows “Registry”?

(1)

2.8 Madelein wants to remove the program “Delphi6” from her computer. Her friend, Johan, tells her to open Windows Explorer, highlight “Delphi6”, and press delete.



2.8.1 It is not a good idea to remove any program using Johan’s method. Explain why not.

(1)

- 2.8.2 Explain to Madelein what the best way of removing this program from her computer would be. (1)
- 2.9 Describe TWO actions which Madelein should perform regularly as part of “computer maintenance” (so that her computer functions well). (2)
- 2.10 Madelein recently upgraded her software by changing from Windows '98 to Windows XP. Name TWO advantages that she gained by doing this upgrade. (2)
- [19]**

QUESTION 3
BINARY LOGIC

- 3.1 Write down the order of precedence of the Boolean operators. (2)
- 3.2 Simplify the following Boolean expression: (1)

$$A.A' =$$

- 3.3 If $a = 1$, $b = 0$ and $c = 1$, determine the value of the following expression. (Show all your working.)

$$(a' + bc)' + ac' + b' \quad (3)$$

- 3.4 The Boolean function F is defined as follows:

$$F(X, Y, Z) = X'(YZ)'$$

Copy the following table and complete it to form the truth table for the function F.

X	Y	Z	X'	YZ	(YZ)'	F
0	0	0				
0	0	1				
0	1	0				
0	1	1				
1	0	0				
1	0	1				
1	1	0				
1	1	1				

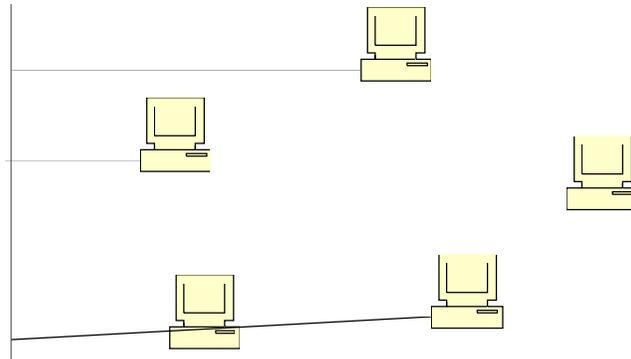
(4)
[10]

QUESTION 4
DATA COMMUNICATION

A certain company has two offices:

- A large office in Johannesburg, with a client-server network
- A smaller office in Durban, with a peer-to-peer network

4.1 Below is a sketch showing how the computers in the Durban office are connected:



- 4.1.1 What topology is shown in this diagram? (1)
- 4.1.2 Draw a sketch showing the 5 computers, but connect them using a different topology. (1)
- 4.1.3 Write down the name of the topology shown in your sketch for Question 4.1.2. (1)
- 4.1.4 Write down the name of a LAN architecture which uses the topology in your answer to 4.1.3. (1)
- 4.2 Ten years ago this company did not have any networks; all their computers were stand-alone computers. Name THREE advantages that they gained when they joined their computers in a network. (3)
- 4.3 Today the office in Durban has a peer-to-peer network. Give TWO facts about a peer-to-peer network. (2)
- 4.4 Name TWO problems or disadvantages that can be experienced in a client-server network. (2)
- 4.5 The server in the Johannesburg office has Windows 2000 Server loaded on it. Name another operating system which could also be used in a client-server network. (1)

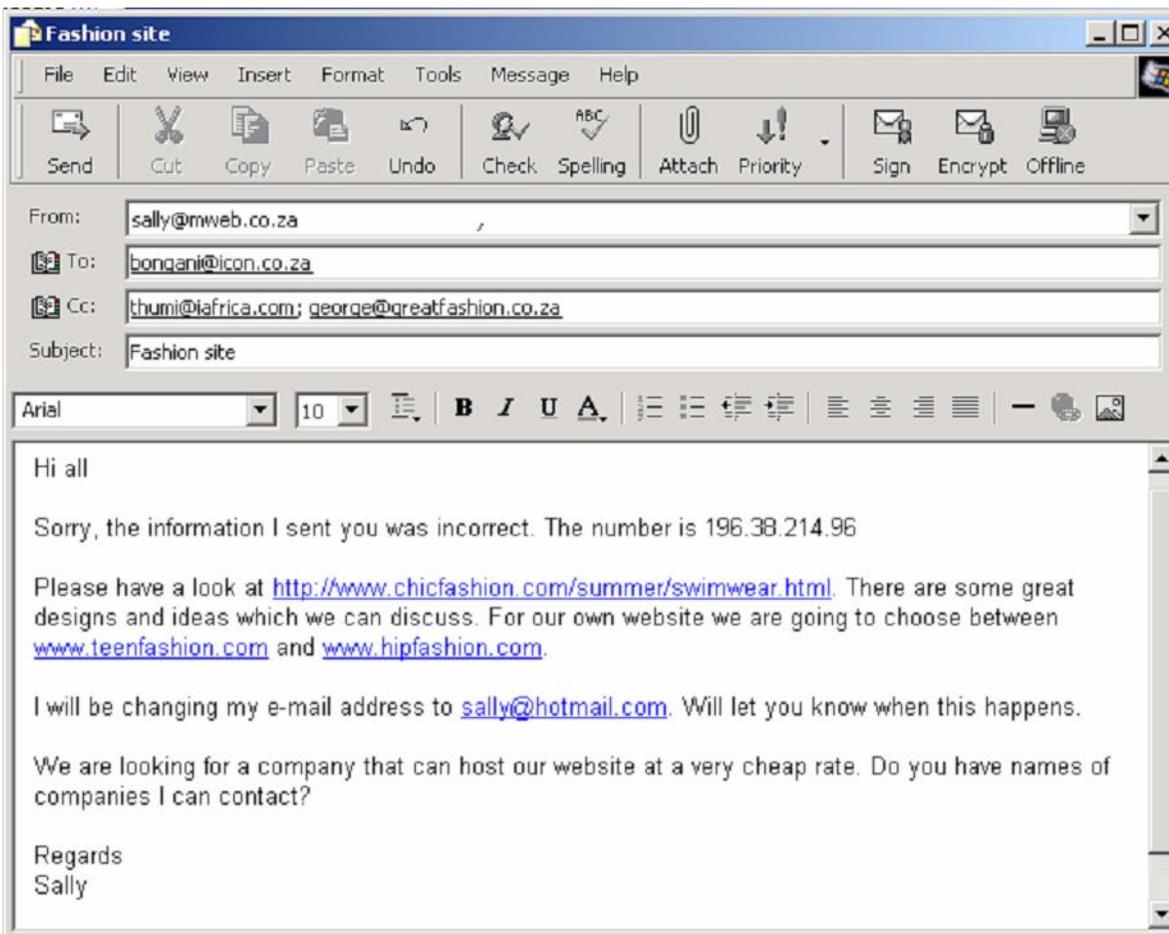
- 4.6 Jennifer works in the Johannesburg office and creates many new spreadsheet files every day. It is possible that these files could be deleted or corrupted (by accident, or by a person intending to do damage).
- 4.6.1 Name ONE precaution that Jennifer can take against losing files that she created. (1)
- 4.6.2 Name TWO precautions that the network administrator should take to ensure the safety of Jennifer's files. (2)
- 4.6.3 How does it happen that files on a network are deleted or corrupted *deliberately*? (Describe one possible reason.) (1)
- 4.7 The Johannesburg office is connected to the Internet by means of an ADSL line.
- 4.7.1 What does **ADSL** stand for? (1)
- 4.7.2 Name TWO advantages of having an ADSL connection. (2)
- 4.8 Below are some acronyms which are used to describe networks:
- | | |
|----|-----|
| A. | LAN |
| B. | GAN |
| C. | MAN |
| D. | WAN |
- Choose the correct acronym for each of 4.8.1 and 4.8.2, and write out the acronym in full.
- 4.8.1 The network in the Durban office
- 4.8.2 The network formed by the Durban and Johannesburg offices linked with each other (4)
- 4.9 Data can be transmitted across large distances by means of satellite communication.
- 4.9.1 What transmission medium is used in satellite transmission? (1)
- 4.9.2 Name TWO disadvantages of satellite transmission. (2)
- 4.10 Explain each of the following terms:
- 4.10.1 Eavesdropping
- 4.10.2 Serial communication
- 4.10.3 Full-duplex communication (3)

- 4.11 Write down the terminology (one or two words) for each of the following:
- 4.11.1 A network cable which transmits data by means of light
 - 4.11.2 A wireless transmission medium which transmits data by means of light
 - 4.11.3 An internetwork device which can connect networks that do not use the same protocol
 - 4.11.4 A system which prevents unauthorized users from gaining access to a network
 - 4.11.5 A term which describes the total number of bits per second which can be transferred across a communication medium (for example, across an ADSL line)
 - 4.11.6 A switching technique where full messages are sent, with the sender and receiver connected for the duration of the transmission

(6)
[35]

QUESTION 5 INTERNET AND NEW TECHNOLOGY

Questions 5.1. – 5.7 refer to the following e-mail message:



- 5.1 The number **196.38.214.96** is used to uniquely identify a computer on a network. What term is used to describe this kind of address? (1)
- 5.2 What is the name of Bongani's ISP (Internet Service Provider)? (1)
- 5.3 Name TWO other ISP's whose names can be found in this e-mail message. (2)
- 5.4 From the e-mail shown above, write down examples of
- 5.4.1 a part of an e-mail address that shows in which country that e-mail address is registered.
 - 5.4.2 a URL.
 - 5.4.3 a domain name. (3)
- 5.5 Sally is changing her e-mail address from sally@mweb.co.za to sally@hotmail.com. Name ONE advantage that Sally gains from having a hotmail e-mail address rather than an address like sally@mweb.co.za. (1)
- 5.6 What does it mean to **host a website**? (2)
- 5.7 Give ONE example of a South African search engine. (1)
- 5.8 What is a **proxy server**? (2)
- 5.9 Name THREE tasks that one can perform using a PDA. (3)
- 5.10 Data can be transferred from a PDA to another computer using Bluetooth.
- 5.10.1 Give another example where Bluetooth is used to transfer data from one device to another. (1)
 - 5.10.2 The use of Bluetooth is not the only means of transferring data from a PDA to a computer. Name another method that could be used for the same purpose. (1)
- 5.11 Name TWO advantages of using a digital camera rather than a conventional camera. (2)
- 5.12 What does **WAP** stand for? (1)
- 5.13 Name ONE example where WAP is utilized in the transfer of data. (1)

[22]

QUESTION 6
SOCIAL IMPLICATIONS

In many companies employees have unlimited access to the Internet and e-mail. One disadvantage is that employees spend time during work deleting spam from their e-mails.

- 6.1 Name ONE other disadvantage (for the employer) of employees having access to the Internet. (1)
- 6.2 What advantage is there *for the employer*
 - 6.2.1 in giving Internet access to his employees? (1)
 - 6.2.2 in giving e-mail facilities to his employees? (1)
- 6.3 What is **spam**? (1)
- 6.4 Describe ONE precaution that one can take to avoid receiving **spam**. (1)
- 6.5 Through the use of the Internet a company's computers can be infected by computer worms. What is a **computer worm**? (2)
- 6.6 Give THREE examples of computer crime. (3)
- 6.7 Draw a table with headings as shown below. Name and describe THREE jobs which would not exist today if we did not have computers. (Be careful when you answer this question – note that the job **must** be computer dependent.)

Question number	Job	Description
Example	Network cable technician	Installs and tests cables for computer networks
6.7.1		
6.7.2		
6.7.3		

(6)
[16]

QUESTION 7
APPLICATIONS AND PACKAGES

7.1 Sibusiso is a businessman who employs young people to sell coat-hangers at street corners. Below is his spreadsheet showing how many coat-hanger packs were sold.

	A	B	C	D	E	F	G	H	I
1	Coat hangers sold (packs of 10)								
2		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Total
3	Bongani	a	8	6	9	11	15	4	53
4	Tasneem	a	7	a	11	10	19	5	52
5	Mpho	9	a	6	13	a	24	17	69
6	Joe	11	9	8	12	15	26	9	90
7	Wynand	a	6	7	11	12	22	8	66
8	Maria	8	7	11	a	15	21	18	80
9	Total:	28	37	38	56	63	127	61	410
10	Average:						21.167		
11									
12	Total persons absent:		7						

Here is the same spreadsheet,

- showing the functions instead of the values.
- showing only Monday, Tuesday, Saturday, Sunday.

	A	B	C	G	H	I
1	Coat hangers sold (packs of 10)					
2		Monday	Tuesday	Saturday	Sunday	Total
3	Bongani	a	8	15	4	=SUM(B3:H3)
4	Tasneem	a	7	19	5	=SUM(B4:H4)
5	Mpho	9	a	24	17	=SUM(B5:H5)
6	Joe	11	9	26	9	=SUM(B6:H6)
7	Wynand	a	6	22	8	=SUM(B7:H7)
8	Maria	8	7	21	18	=SUM(B8:H8)
9	Total:	=SUM(B3:B8)	=SUM(C3:C8)	=SUM(G3:G8)	=SUM(H3:H8)	=SUM(B9:H9)
10	Average:			=SUM(G3:G8)/6		
11						
12	Total persons absent:		=COUNTIF(B4			

The function in cell C12 is incomplete. See question 7.1.4

7.1.1 The second extract above shows the columns A, B, C, G, H, I. Columns D – F were not deleted. Explain the steps needed to show only some of the columns in a spreadsheet. (2)

7.1.2 In cell G10 Sibusiso wants to show the average coat hanger packs sold on Saturday. He typed: **=SUM(G3:G8)/6**

In cell B10, assuming that G3:G8 was changed to B3:B8, will this function also work for Monday? Give a reason for your answer. (2)

- 7.1.3 Write down an improved function for cell G10. (2)
- 7.1.4 Complete the function in cell C12 so that it will count the number of a's in the sales figures for Monday to Sunday. (2)
- 7.2 Sibusiso imported the data from the spreadsheet into a database table, and then added the sellers' cellphone numbers. Below are the contents of the database table.

Name	Telephone number	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Bongani	823556783	a	8	6	9	11	15	4
Tasneem	821458776	a	7	a	11	10	20	5
Mpho	725673232	9	a	6	13	a	24	17
Joe	843537854	11	9	8	12	15	26	9
Wynand	835674455	a	6	7	11	12	18	8
Maria	825563421	8	7	11	a	15	21	18

- 7.2.1 How many fields are there in this table? (1)
- 7.2.2 Sibusiso typed in the cellphone numbers, but all the leading zeros disappeared. What must he do to enable the cellphone numbers to display correctly? (1)

Monday
a
a
9
11
a
8

} Sales figures for Monday

- 7.2.3 The extract above shows the sales figures for Monday. Within this database, what is the data type of the sales figures? Give a reason for your answer. (2)
- 7.2.4 What is the disadvantage of having this data type for the sales figures? (1)
- 7.3 Which one of the following programs should be used to open the document "sales tactics.pdf"?
-  sales tactics.pdf
- A. Microsoft Word
 B. Excel
 C. Quickbooks
 D. Adobe Acrobat Reader (1)
- 7.4 What do the following three programs have in common?
 Paradox, Approach, Base (1)
- 7.5 Which office suite contains the program Quatro Pro? (1)

7.6 What is the program **Pastel** used for? (1)

7.7 While Madelein is surfing the Internet, a small window appears with the following message:

“Do you wish to have Flash Player 7 installed? Yes No”

7.7.1 Flash Player is needed to run certain programs or files on a computer. What type of files are these? (1)

7.7.2 Would you advise Madelein to click on “Yes” or “No”? Give a complete explanation for your answer. (1)

[19]

TOTAL: 150