

REKENAARSTUDIE SG
COMPUTER STUDIES SG

MAART/MARCH 2000

Tyd: 1½ uur

Time: 1½ hours

WES-KAAP ONDERWYSDEPARTEMENT
WESTERN CAPE EDUCATION DEPARTMENT
ISEBE LEMFUNDO LENTSHONA KOLONI

SENIOR SERTIFIKAAT-EKSAMEN
SENIOR CERTIFICATE EXAMINATION

Skryf op die buiteblad van jou antwoordboek, teenoor die woord "Vak"-

**REKENAARSTUDIE STANDAARDGRAAD
(TEORIE)**

Write on the cover of your answer book, after the word "Subject" -

**COMPUTER STUDIES STANDARD GRADE
(THEORY)**

Hierdie vraestel bestaan uit 31 bladsye en 'n antwoordblad.
This examination paper consists of 31 pages and an answer sheet.

READ THE FOLLOWING INSTRUCTIONS CAREFULLY BEFORE ANSWERING THE QUESTIONS.

1. Answer SECTION A and SECTION B and then, depending on the modules that you have studied, answer the appropriate question in SECTION C. Thus, if you studied the
 - c **Programming Skills Modules**, you should answer Questions 1 to 8 and Question 9.
 - c **Business Skills Modules**, you should answer Questions 1 to 8 and Question 10.
 - c **Presentation Skills Modules**, you should answer Questions 1 to 8 and Question 11.
2. Answer Questions 1 and 2 in SECTION A on the special answer sheet at the end of this question paper.

Detach the answer sheet from the question paper and write your examination number in the space provided. Remember to place the answer sheet inside the front cover of your answer book before handing in your answer book at the end of the examination.
3. Answer Question 3 in SECTION A and all the questions in SECTIONS B and C in the answer book provided by the invigilator.

SECTION A

ANSWER ALL THE QUESTIONS IN THIS SECTION.

1. MULTIPLE-CHOICE QUESTIONS

The following questions **MUST** be answered on the special sheet attached to this question paper. Please ensure that your examination number is written in the space provided at the top of the answer sheet.

Select the one answer to each question which you think is the correct or the best answer and then make a cross over the appropriate letter on the answer sheet.

Example:

- 1.0 The abbreviation RAM means
- (a) rapid access to memory.
 - (b) rarely accessed memory.
 - (c) random access memory.
 - (d) readily accessed memory.

1.0 (a) (b) (X) (d)

- 1.1 Which of the following storage media has the fastest access speed?
(a) Compact disk
(b) RAM
(c) Hard drive
(d) ROM [1]
- 1.2 Which of the following is **NOT** an example of system software?
(a) Word processor
(b) Assembler
(c) Translator
(d) Compiler [1]
- 1.3 In the communication of data act as microwave relay stations.
(a) modems
(b) fibre-optic cables
(c) satellites
(d) routers [1]
- 1.4 The transfer of money from one bank account to another using data communication and without any paper transaction is referred to as
(a) Electronic Data Interchange (EDI).
(b) Electronic Funds Transfer (EFT).
(c) Internet transmission.
(d) electronic shopping. [1]

-
- 1.5 Too many hours of **entering data** without adequate rest can result in
- (a) carpal tunnel syndrome.
 - (b) electronic field emissions (EMF).
 - (c) computer vision syndrome (CVS).
 - (d) a virus.
- [1]
- 1.6 Characters and symbols written in magnetic ink can be found at the bottom of bank cheques. The process whereby these characters and symbols are read into a computer when such a cheque is reconciled by the bank is called
- (a) optical character recognition.
 - (b) magnetic strip reading.
 - (c) magnetic ink-character recognition.
 - (d) bar code reading.
- [1]
- 1.7 The BIOS (Basic Input/Output System) of a personal computer is stored in/on the
- (a) RAM.
 - (b) ROM.
 - (c) hard disk.
 - (d) operating system.
- [1]
- 1.8 Which of the following Internet Service Providers (ISPs) is **NOT** a South African ISP?
- (a) AOL
 - (b) Intekom
 - (c) M-Web
 - (d) NetActive
- [1]
- 1.9 Which department in a large motor assembly plant would see the Internet as a tool which can be used in the execution of their tasks?
- (a) Assembly
 - (b) Finance
 - (c) Parts
 - (d) Sales and marketing
- [1]
- 1.10 What do the following Internet addresses (URLs) have in common?
- <http://www.nedbank.co.za/>
<http://www.absa.co.za/>
<http://www.fnb.co.za/>
<http://www.nbs.co.za/>
- (a) E-commerce
 - (b) Education
 - (c) News
 - (d) Rugby
- [1]

2. TERMINOLOGY

Answer this question on the answer sheet attached to this question paper.

For each of the following write down the letter of the item in Column B which best matches the description in Column A.

COLUMN A	COLUMN B
2.1 Primary memory which can be rewritten	A Amazon
2.2 A type of operating system where many independent computers use the secondary memory of a host computer	B Attenuation
2.3 The loss of signal strength over a distance caused by the length of the cable or atmospheric conditions	C CAD (Computer-Aided Design)
2.4 A system for displaying information on a computer screen in such a way that related items of information can be easily reached	D CD-ROM
2.5 A large bookshop found on the Internet	E HTML (Hyper Text Markup Language)
2.6 A technique used to obtain a more stable image which does not flicker on the monitor	F Hypertext
2.7 An operating system which has an integrated web browser	G ICQ and IRC
2.8 The use of computer communications to improve medical practice and training	H MIS (Management Information System)
2.9 This makes synchronous communication via the Internet possible	I MMX
2.10 A computer language well known by a web master	J Multi-access
	K PIM (Personal Information Manager)
	L Non-interlaced
	M Telemedicine
	N EPROM
	O Distributed processing
	P Windows 3.1
	Q Windows 98
	R Interlaced

3. TRUE OR FALSE

ANSWER THIS QUESTION IN THE ANSWER BOOK PROVIDED TO YOU BY THE INVIGILATOR.

In each of the following cases state whether the statement is true or false. Correct each false statement by rewriting the statement, changing the bold-printed portions only. No marks will be awarded for simply negating the false statement.

- 3.1 The resolution of a monitor can be described by indicating the **number of pixels** on the screen. [2]
- 3.2 In Windows 95/98 **File Manager** is used to copy, delete and move folders. [2]
- 3.3 **Bps** is the unit of speed of the pulses that carry data over a telephone line. [2]
- 3.4 The origin of the Y2K problem is that programmers originally used dates in which the year was represented by **4** digits. [2]
- 3.5 It is **illegal** to make backup copies of software which you bought. [2]

SECTION B**ANSWER ALL THE QUESTIONS IN THIS SECTION.****4. COMPUTER ARCHITECTURE**

- 4.1 More and more programs are distributed by means of compact disks.
- 4.1.1 Name **TWO** advantages that this method of distribution has over the previously popular floppy disk. (2)
- 4.1.2 To what does the "32x" which appears on a compact disk drive refer? (1)
- 4.1.3 What is the basic difference between CD-R and CD-RW? (1) [4]
- 4.2 The speed of the execution of programs can be increased by the use of cache memory.
- 4.2.1 What is cache memory? (1)
- 4.2.2 Name **TWO** types of cache memory. (2) [3]
- 4.3 Your friend has a computer with a 80386DX processor and 4MB RAM which are plugged into 2 of the four slots on the memory bank. The hard drive still has 1GB storage space available. The only other secondary memory device is a floppy drive. The computer has a 15" monitor, a mouse and a 101-key keyboard. The operating system is Windows 3.1.

Your friend wishes to install the MS-Office 97 suite on the computer. A software dealer has indicated that the program's specifications are as follows:

486 or higher processor
 MS Windows 95/NT/98
 16 MB RAM to run applications individually and 32 MB memory to run applications simultaneously
 73 – 191 MB available hard disk space
 CD-ROM drive
 VGA or higher resolution monitor
 Mouse

If your friend wishes to upgrade the computer, what hardware must be installed so that the computer meets the minimum requirements to load the software and use it optimally?

[3]

5. THE OPERATING SYSTEM AND SYSTEM SOFTWARE

- 5.1 Name **FOUR** functions of an operating system. [4]
- 5.2 Name **TWO** types of system software apart from the operating system. [2]
- 5.3 Operating systems use buffers and spoolers to manage input and output. Briefly explain the basic difference between the two techniques. [2]

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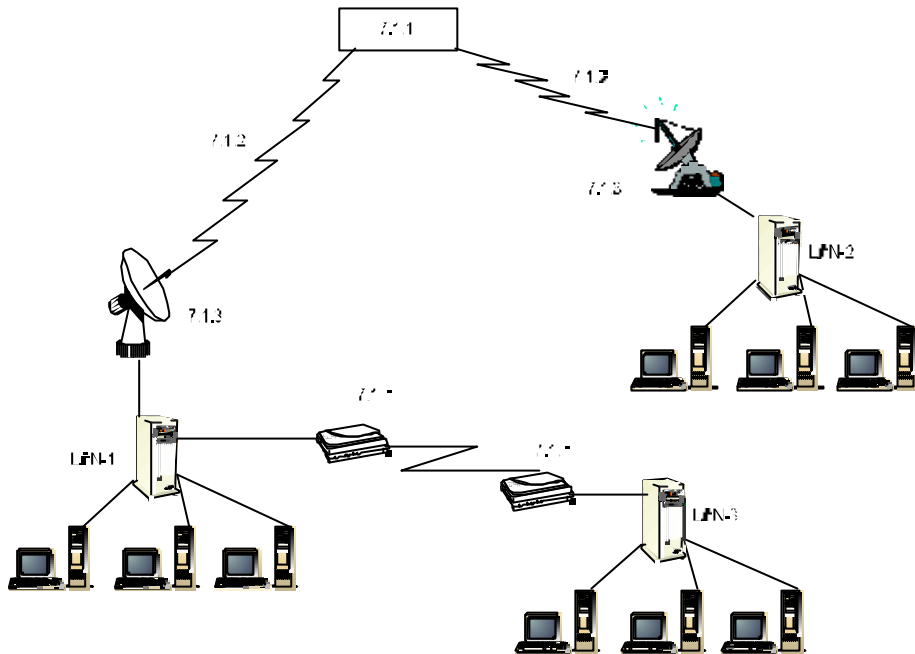
6. COMPUTER TRENDS

- 6.1 Many businesses print their invoices on a dot matrix printer instead of a laser printer. Apart from the fact that it is cheaper, why do they use a dot matrix and not a laser printer? [1]
- 6.2 Why do hackers and crackers (who illegally copy and alter programs) cost businesses money, even though they may not be part of the business? [1]
- 6.3 Give **ONE** example of the kind of jobs that might be threatened by the use of information technology. [1]
- 6.4 Dr Stephen Hawking is a brilliant theoretical physicist who suffers from a rare neuromotor disease that has left him increasingly paralysed. He wrote his best-selling book called *A Brief History of Time* using a voice synthesizer. Describe **ONE** other way in which computer technology can assist disabled people. [1]
- 6.5 It is essential to keep up-to-date with information technology. Name **TWO** sources where the latest information can be found. [2]
- 6.6 Virtual reality is very popular in the world of games.
- 6.6.1 Give **ONE** clear example where it is used or can be used in the training field. (1)
- 6.6.2 In the training field, why is it more beneficial to use virtual reality than real life? (1) [2]
- 6.7 The Internet provides many resources to facilitate the provision of information.
- 6.7.1 In this respect, what are Ananzi and Aardvark? (1)
- 6.7.2 What is the function of Ananzi and Aardvark? (1) [2]

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7. DATA COMMUNICATIONS

7.1 Study the following diagram of a Wide Area Network and then answer the questions that follow.



Write down the numbers 7.1.1, 7.1.2, 7.1.3 and 7.1.4 in your answer book and next to each write down the name from the following list that best matches the diagram of a WAN.

- | | |
|----------------------------|----------------|
| Bus network | Cable |
| High-frequency radio waves | Modem |
| Satellite | Satellite dish |
| WAN | |

[4]

7.2 In many parts of South Africa there are no telephone lines. This makes connecting to a Point of Presence (PoP) for Internet connectivity virtually impossible. Give **TWO** ways in which people in rural areas can use the Internet where there are no Telkom telephone services.

[2]

7.3 In the USA in 1998 over 5.5 million people were teleworkers who communicated with their workplace via networks. (The SA numbers are not known but they are increasing.)

7.3.1 Give **ONE** advantage for a worker to work in such a way from his/her home. (1)

7.3.2 Name the **TWO** most important pieces of electronic equipment for a teleworker. (2) [3]

7.4 When a business has a WAN it has to make sure that its data is secure from people within and outside the organisation. Briefly discuss **THREE** methods of achieving security. [3]

8. COMPUTERS IN SOCIETY

- 8.1 An animal protection society which has 1600 members has stored the names and addresses of all its members in a computer file on a stand-alone computer. Part of the file is shown below.

Surname	Initials	Address	Town	Postcode
Adams	B	8 Solomon Street	Paarl	7646
Brown	J		Guguletu	7750
De Jager	A	62 Dennegeur Avenue	Wellington	7655
Mtsi	S	4 Winnipeg Close	Mtsi	7405
Salie	E	6 Kanna Crescent	Humansdorp	6300

The first time letters were sent out using the data in the database the Post Office returned two of them as undelivered. When the secretary checked the data she found two errors.

- 8.1.1 Write down what the **TWO** errors were. (2)
- 8.1.2 Give the most likely reason for these errors. (1)
- 8.1.3 Suggest **ONE** way in which the errors could be avoided. (1)
- 8.1.4 Give **ONE** other example of useful member data that the society could store on computer. (1) [5]
- 8.2 One of the clerks at the society has worked there for nearly 40 years.
- 8.2.1 What would be the disadvantage for her in having a list of members' names and addresses stored in a computer file? (1)
- 8.2.2 Explain to the clerk **TWO** advantages of storing members' names and addresses in a computer file. (2) [3]
- 8.3 What inexpensive Windows-based spreadsheet program could the society use to manipulate figures and keep track of its income? [1]
- 8.4 Is this stand-alone computer liable to get the Melissa or Happy99 virus? Give a reason for your answer. [1]

SECTION C

**ANSWER ONLY ONE QUESTION FROM THIS SECTION.
ANSWER QUESTION 9 OR 10 OR 11.**

9. PROGRAMMING SKILLS MODULE

**ANSWER THIS QUESTION ONLY IF YOU HAVE STUDIED
THE PROGRAMMING SKILLS MODULE.**

- 9.1 Indicate how the number -89_{10} will be represented in a computer which uses two's complement representation if 8 bits are used to represent the number.

Use a diagram such as the one below:

-128	64	32	16	8	4	2	1

[3]

- 9.2 Use truth tables to prove that $(A.B)' = A' + B'$

[4]

- 9.3 The following program segment in which the variables are declared and values allocated to the variables was executed:

```
VAR
    Length, Cost      : Real;
    Classification    : Char;
    Correct           : Boolean;
```

```
Begin
    Length := 36.0;
    Cost   := 1.50;
    Classification := 'S';
    Correct := False;
```

What will be the value of the following Boolean expressions?

- 9.3.1 $(\text{Length} \geq 24) \text{ AND } (\text{Cost} > 1.55)$ (2)

- 9.3.2 $(\text{Classification} = \text{'S'}) \text{ OR } (\text{NOT Correct})$ (2)

- 9.3.3 $(\text{Correct}) \text{ OR } (\text{Cost} = 1.50)$ (2) [6]

9.4 ABC Stores has a special offer on the sale of cassettes. The following program calculates the total sales price for any number of cassettes. Study the program and answer the questions that follow.

```
PROGRAM CalculatePrice;

USES Crt;

Const      CostPrice = 3.00;
           SellingPrice = 5.00;

Var        Total      :      integer;
           AmountDue  :      real;

BEGIN
  Clrscr;
  Write ('Number of cassettes sold? ');
  Readln (Number);
  IF number <= 4      THEN AmountDue := Number * SellingPrice
                       ELSE AmountDue := (Number*SellingPrice) -
                       (Number - 4) * SellingPrice *25/100;
  Writeln ('Total SellingPrice = ', AmountDue:8:2);
END.
```

9.4.1 What is the amount due for 3 cassettes? (1)

9.4.2 What is the amount due for 8 cassettes? (2)

9.4.3 Complete the following short advertisement for a newspaper advertising the special offer.

"Cassettes for sale at Phone ABC Stores at 021-3456789" (2)

9.4.4 Rewrite the IF-statement to comply with the following condition:

A customer pays the full price for the first 5 cassettes, but if he buys more than 5 he gets a discount of 10% on all the cassettes that he buys. (2) [7]

10. BUSINESS SKILLS MODULE

**ANSWER THIS QUESTION ONLY IF YOU HAVE STUDIED
THE BUSINESS SKILLS MODULE.**

- 10.1 A hardware store has a shop in the main road of a small town and a depot where building material is stored and sold, in the industrial part of the town. The administrative office is at the shop. Telkom provides the communication link between the depot and the administrative office. The shop and the administrative office are on the same LAN.
- 10.1.1 Is use made of serial or parallel transmission between the depot and head office? Give a reason for your answer. (2)
- 10.1.2 Each work station is equipped with a network interface card. Give **TWO** functions of such a card. (2)
- 10.1.3 Which application package (word processor, spreadsheet, database, desktop publisher, accounting package) will be needed to:
- (a) send a letter to a client? (1)
 - (b) keep a record of stock? (1)
 - (c) prepare an attractive handbill for a promotion campaign? (1)
 - (d) calculate the weekly wages of each worker? (1) [8]
- 10.2 In a certain database there are, amongst others, two fields, viz.
- a field "YYYY" for the year in which children were born. This field is defined as an integer with a length of 4.
 - a field SMALLPOX which indicates if a child has been vaccinated against smallpox. It is defined as Boolean.
- 10.2.1 Do you think this database is Year 2000 compliant? Give a reason. (2)
- 10.2.2 If in the year 2000 we wish to define the age of a child for sports purposes we say he/she is Under 12 if he/she was born in 1988 ($2000 - 1988 = 12$). Which age group will be obtained with the following queries?
- (a) $YYYY = 1986$ (1)
 - (b) $YYYY > 1986 \text{ AND } YYYY < 1988$ (1)
- 10.2.3 Which group of children will be obtained with the following queries?
- (a) $YYYY > 1986 \text{ AND } \text{SMALLPOX} = \text{TRUE}$ (2)
 - (b) $\text{NOT SMALLPOX AND } YYYY \neq 1987$ (2)

10.2.4 Name **TWO** other data types (apart from INTEGER and BOOLEAN) whereby fields in a database can be defined. Give an example of such a field with every type you give.

(4) [12]

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11. PRESENTATION SKILLS MODULE**ANSWER THIS QUESTION ONLY IF YOU HAVE STUDIED
THE PRESENTATION SKILLS MODULE.**

- 11.1 What type of graph would you normally use to represent the following? Select from bar, line, pie and scatter graphs.
- 11.1.1 Changing temperature over a year (1)
- 11.1.2 Amount of rainfall in each month (1)
- 11.1.3 Whether the number of flowers on a plant is related to its height (1)
- 11.1.4 Showing the percentage of taxes used for health, education, roads, defence and other items (1) [4]
- 11.2 Diagrams and graphs tend to enhance a report.
- 11.2.1 Where does a chart program usually obtain its data? (1)
- 11.2.2 Why should one use graphs or charts instead of a simple list of numbers in a presentation? (1)
- 11.2.3 Which method of picture storage would probably be used for a CAD package - vector or BMP? (1)
- 11.2.4 Why is the enlargement of an object-based drawing more accurate than that of a pixel-based drawing? (1) [4]
- 11.3 One of the most useful facilities provided by the Internet is the World Wide Web.
- 11.3.1 Give **ONE** way in which you tell that the information on a World Wide Web page is up-to-date. (1)
- 11.3.2 There is so much information on the World Wide Web. Give **ONE** clue that one would see on a Web page to indicate the authenticity of the information. (1) [2]

-
- 11.4 You are given a computer disk. After you have scanned it for viruses you discover a number of files on the disk. What type of files end with the following extensions OR where could you use these files?
- 11.4.1 AVI (1)
- 11.4.2 BMP (1)
- 11.4.3 TIF (1)
- 11.4.4 DXF (1)
- 11.4.5 WAV (1)
- 11.4.6 JPG (1)
- 11.4.7 DOC (1)
- 11.4.8 PPT (1) [8]
- 11.5 Name **TWO** careers where people were involved in creating a publication, before the development of desktop publishing. [2]

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TOTAL: 100 MARKS