



# education

---

Department:  
Education  
**REPUBLIC OF SOUTH AFRICA**

**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 10**

**INFORMATION TECHNOLOGY P2 (THEORY)**

**EXEMPLAR PAPER**

**MARKS: 121**

**TIME: 3 hours**

**This question paper consists of 12 pages.**

**150 2 ET**

## **INSTRUCTIONS AND INFORMATION**

Read the following instructions carefully before answering the questions:

1. Answer ALL the questions.
2. Start each question on a NEW page.
3. QUESTION 1 must be answered on the special answer sheet provided.

**SECTION A: MULTIPLE-CHOICE QUESTIONS****QUESTION 1**

Various possible options are provided as answers to the following questions. Write only the letter (A - D) next to the question number (1.1 - 1.10) on the answer sheet provided.

- 1.1 Which ONE of the following is NOT a typical example of a hardware device?
- A Scanner
  - B Modem
  - C Search engine
  - D Flash disk
- 1.2 Which ONE of the following lists arranges the devices in INCREASING order of processing power?
- A PDA, server, laptop, mainframe
  - B Laptop, PDA, mainframe, server
  - C Server, mainframe, PDA, laptop
  - D PDA, laptop, server, mainframe
- 1.3 Which ONE of the following statements regarding secondary memory is FALSE?
- A Secondary memory is non-volatile
  - B Data on secondary memory is often stored magnetically or optically
  - C The typical access time of secondary memory is faster than that of RAM
  - D Secondary memory is cheaper than primary memory in terms of unit costs
- 1.4 Which ONE of the following components would NOT be found on the motherboard of a PC?
- A BIOS
  - B Cache memory
  - C System clock
  - D Registry
- 1.5 Which ONE of the following is NOT a typical function of an operating system?
- A Virus detection
  - B Memory management
  - C Resource allocation
  - D Control of peripheral devices

- 1.6 Which ONE of the following file extensions does NOT logically belong with the other three options?
- A .JPG
  - B .AVI
  - C .BMP
  - D .GIF
- 1.7 Which ONE of the following statements concerning the internet is FALSE?
- A The internet is a subset of the World Wide Web
  - B A unique location on the internet is known as a URL
  - C The top-level domain name .ORG typically refers to a non-profit organisation
  - D Internet addresses are translated to IP addresses by domain name servers
- 1.8 Which ONE of the following terms is an encrypted stamp of authentication that can be used in an e-mail to prove that the sender is who he/she says he/she is?
- A Digital divide
  - B Digital handshake
  - C Digital signature
  - D Digital icon
- 1.9 Which ONE of the following statements regarding cell references in spreadsheets is FALSE?
- A Cells are referenced first by column and then by row
  - B Cell references are relative, unless otherwise specified
  - C Cell references are limited to the current workbook or worksheet
  - D An absolute cell reference stays constant when copied as part of a formula
- 1.10 Which ONE of the following statements concerning primary keys in a database table is FALSE?
- A A primary key is a field or set of fields that uniquely identifies each record stored in the table
  - B A primary key may not contain a nil value
  - C Primary keys are used to relate records in different tables in a database
  - D A primary key must be a numerical type

**TOTAL SECTION A: 10**

**SECTION B: HARDWARE AND SYSTEM SOFTWARE**

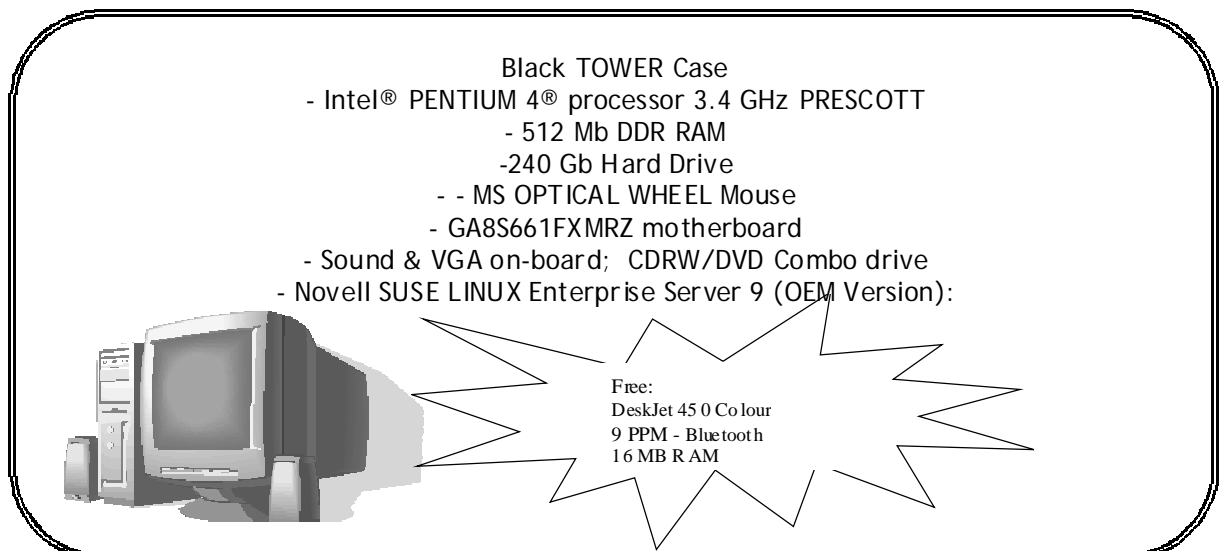
Read the following scenario and then answer the questions that follow:

**SCENARIO**

Paulo Alto, a local guesthouse, wants to computerise its operations and promote itself on the internet with the long-term view of organising package tours for the Soccer World Cup Tournament in 2010. They are prepared to put you on a small retainer for giving them advice and overseeing their IT operations on a temporary basis. The first step is to purchase a PC and printer for the front desk of the guesthouse, which will eventually act as the server for other computers in the guesthouse.

**QUESTION 2: COMPUTER ARCHITECTURE AND HARDWARE**

Study the following advertisement for a computer that could be considered to act as the server:



Black TOWER Case

- Intel® PENTIUM 4® processor 3.4 GHz PRESCOTT
- 512 Mb DDR RAM
- 240 Gb Hard Drive
- - MS OPTICAL WHEEL Mouse
- GA8S661FXMRZ motherboard
- Sound & VGA on-board; CDRW/DVD Combo drive
- Novell SUSE LINUX Enterprise Server 9 (OEM Version):

Free:  
DeskJet 450 Colour  
9 PPM - Bluetooth  
16 MB RAM

- 2.1 State what you would consider to be the **THREE** most important hardware specifications in this advertisement. Justify each of your choices as part of your answer. (3)
- 2.2 The size of the RAM is much less than the size of the hard drive. Is this a problem? Justify your answer by specifying the specific function and purpose of each of these components. (4)
- 2.3 Name the peripheral device that has obviously been omitted from this advertisement. (1)

- 2.4 As has become customary in many computer specifications, no stiffy drive has been specified.  
Explain why this has become the trend and give ONE hardware solution that has superseded stiffy drives in making data portable. (3)
- 2.5 The advertisement indicates that the printer also has RAM. Is this not perhaps a printing error? Briefly explain your answer. (2)
- 2.6 The printer is advertised as having Bluetooth technology.  
Explain whether this would be of any benefit to the guesthouse and how it would be of benefit. (2)
- [15]**

**QUESTION 3: OPERATING SYSTEMS AND SYSTEM SOFTWARE**

- 3.1 What software is being advertised? State in your answer whether it is application or system software. (2)
- 3.2 A freeware anti-virus program has come pre-installed on the server. The owner does not want to use this anti-virus program as it does not appear to have the facility to receive updates. He wants to uninstall this program.  
Briefly explain the TWO possible ways that might be used to uninstall the program. (2)
- 3.3 The owner has an old copy of an anti-virus program which he wishes to install.  
State what you would consider to be the FOUR most likely or important information he will have to supply when he runs the installation wizard. (4)
- 3.4 One of the first pieces of advice you gave the owner was to create a suitable folder or directory structure on the hard drive.  
What program should he have used to create this folder structure? (1)
- 3.5 Give TWO simple hints or pieces of advice on how to create a logical file structure for the guesthouse. (2)

- 3.6 The sales assistant at the computer store where he bought the server told the owner that he should defragment his hard drive on a daily basis. The owner nodded politely, but in fact, had no idea of what this was and what the sales assistant was even talking about!

Explain, in simple terms, the following to the owner:

- 3.6.1 A defragmented hard drive
- 3.6.2 Why it is necessary to defragment a hard drive
- 3.6.3 Briefly comment on the advice that a hard drive must be defragmented on a daily basis

(4)  
[15]

#### QUESTION 4: DATA COMMUNICATION AND NETWORKS

- 4.1 The first priority for the owner is to be able to receive and send e-mail.  
Name any additional hardware that might be needed to accomplish this and briefly explain the function or purpose of this hardware. (2)
- 4.2 State, in clear steps, what still needs to be done to set up the e-mail account once the necessary hardware has been purchased and installed correctly. (3)
- 4.3 The owner has managed to source an old Pentium II PC that he wants to install in the dining-room for billing purposes for meals.  
State TWO practical advantages of linking this computer to the central server at reception. (2)
- 4.4 Outline the procedure you would follow to link these two computers that are approximately 10 metres apart. Name any additional hardware or software you might need to install to complete this process. (3)
- 4.5 Will it be a problem if the computer in the dining-room is of a much lower specification than that of the server? Briefly substantiate your answer. (2)

[12]

**TOTAL SECTION B: 42**

**SECTION C: APPLICATION AND IMPLICATIONS****QUESTION 5: e-COMMUNICATIONS**

- 5.1 The owner has never actually sent e-mail, but he has heard of people referring to something called *Netiquette*.  
Give the owner THREE practical rules of *Netiquette* when sending e-mails. (3)
- 5.2 The owner has been directed to a search engine, as he wants to find out which other guesthouses might be available in his area. He enters the phrase 'guesthouses' and receives several million hits!  
Give THREE practical suggestions on how he can narrow down the search to get more relevant results. (3)
- 5.3 The owner wishes to establish his presence on the internet. He has been told to register a domain name in order to host his website on the server at the guesthouse.  
Explain the following to the owner:
- 5.3.1 What a domain is
- 5.3.2 A possible choice of domain name for the guesthouse
- 5.3.3 How to register the domain name (3)
- 5.4 The owner has used his newly installed e-mail facilities to send out electronic brochures to a number of overseas travel agents. He has received feedback from some agents indicating that firstly the e-mail was very large and secondly that they could not open the brochure attachment.  
Explain to the owner what the potential causes of these two problems are and also give ONE solution for each of these problems. (4)
- 5.5 The owner has suddenly received many unwanted e-mail messages or spam.  
Suggest TWO practical ways to combat this problem. (2)
- [15]**



**QUESTION 6: SOCIAL AND ETHICAL ISSUES**

- 6.1 The owner's wife is unhappy with all the sudden expenditure on computer equipment and software. She says the guesthouse has been running perfectly well for 15 years without all these 'gimmicks' and fails to see how all this expenditure could possibly make the guesthouse more popular and more profitable.
- Help the owner to persuade his wife to see how the new technology can improve their income by giving THREE points to consider. (3)
- 6.2 The owner also wants to install the anti-virus package on the computer in the dining-room. Can he do this, seeing that the computers belong to the same business? Briefly substantiate your answer. (2)
- 6.3 The owner's wife does not want to spend prolonged periods of time in front of the computer, as she has heard that computers can have an adverse effect on health.
- Name THREE ways in which computers can possibly contribute to ill health. (3)
- 6.4 State TWO practical precautions that you could take to prevent your health from being adversely affected by prolonged use of a computer. (2)
- 6.5 The owner's wife is a prominent Aids activist and does a lot of voluntary work in the local community.
- Explain to her THREE ways in which technology can promote Aids awareness and be of benefit to the prevention and treatment of Aids in her community. (3)
- 6.6 An office suite package is a necessity for the guesthouse, but the owner feels that many of the commercially available packages are too expensive for his liking. He has been warned by colleagues against using open source equivalents, as they claim they are not good enough.
- Comment critically on this advice by stating the advantages of using open source software. (2)

**[15]****TOTAL SECTION C: 30**

**SECTION D: PROGRAMMING AND SOFTWARE DEVELOPMENT**

The owners and employees of the guesthouse are essentially end-users in terms of using computers. This prevents them from developing any of their own software solutions and they are therefore limited to buying off-the-shelf products, unless you can step in and help them.

**QUESTION 7: DATA STRUCTURES**

- 7.1 In developing programs, it is important to determine what data needs to be input and the type of the data.

What is meant by the term *data type* and what is its significance with regard to the program?

Illustrate your answer by referring to TWO common data types that you have encountered in the programming language that you have used. (4)

- 7.2 One of the programs you need to develop for the guesthouse, is to be able to interactively read in customers' menu choices at mealtimes. Calculate the bill, add a service charge and calculate the change due to them.

7.2.1 Would it be necessary to store this information? Briefly substantiate your answer. (2)

7.2.2 Give TWO benefits that could be derived if the information were to be stored. (2)

7.2.3 What type of data structure could be used if you needed to store this information in memory before it is written to a file? (2)

**[10]**

**QUESTION 8: PROGRAM DEVELOPMENT AND TESTING**

- 8.1 The owner currently uses a manual system to calculate the weekly wages of his employees who are paid on an hourly basis. There are three different hourly rates that can be used, depending on the classification of the employee. In addition, provision has to be made for overtime rates which are at 1½ times the relevant hourly rate.
- 8.1.1 List THREE items of data that would be needed to calculate a specific employee's wage for a day. (3)
- 8.1.2 Give THREE typical GUI components that could be used as part of the interface for capturing this information. Briefly explain why you would use each of these components. (3)
- 8.1.3 List TWO typical types of validation that you would have to perform on the data that was input to calculate the wage of the employee. (2)
- 8.2 After implementing the payroll system, the owner of the guesthouse finds bugs in the system, even though you feel that you were very thorough in testing the system.
- Give TWO possible reasons why there are still bugs in the system at this stage. (2)
- [10]**
- TOTAL SECTION D: 20**

**SECTION E: INTEGRATED SCENARIO****QUESTION 9**

- 9.1 The owner wishes to purchase a PDA device.
- Give TWO reasons why this device could be of benefit to him. (2)
- 9.2 State TWO things that he should consider when shopping for a PDA that is different from the criteria you would use when purchasing a PC. (2)
- 9.3 As the computer facilities at the guesthouse grow, more and more employees have access to the system.
- Give TWO practical suggestions on how to restrict different users only to information and programs that are relevant to them. (2)

- 9.4 You have installed a firewall for the guesthouse and the owner complains that some e-mail attachments are being rejected by the firewall.  
List TWO types of files (by their extensions) that might be rejected by a firewall. (2)
- 9.5 The owner wishes to download income tax forms from the internet, but has no idea of what website he should go to.  
Give TWO practical suggestions on how he can locate the relevant website. (2)
- 9.6 The owner would like to expand his business and is looking for more partners to invest their capital in his business. He wants to show the income, expenditure and profit margins over the last three years.  
In your opinion, what would be the best way to present this data and what package would you use to compile this data? (2)
- 9.7 You need to write a program to calculate the total wage bill for the year for UIF purposes. The information needs to be read from a file using a loop. There are two types of a loop used in virtually all programming languages, namely the *For* loop and the *conditional* loop.
- 9.7.1 Explain the difference between a *For* and a *conditional* type of loop by referring to a suitable example or set of circumstances when you would use each loop. (2)
- 9.7.2 In general, conditional loops can be classified as post-test or pre-test loops.  
Illustrate your answer by giving a set of circumstances where you would use each of these types of conditional loops. (3)
- 9.8 The owner has calculated the PAYE tax for each employee in a spreadsheet. When he uses a formula to total the values in the spreadsheet, it gives a slightly different answer to the one he gets when he uses a manual calculator. The values are all whole numbers.  
What is the most likely cause of this error in the spreadsheet? Explain your answer clearly. (2)

**TOTAL SECTION E: 19**

**GRAND TOTAL: 121**