



education

Department:
Education
REPUBLIC OF SOUTH AFRICA

**NATIONAL SENIOR CERTIFICATE
NASIONALE SENIOR SERTIFIKAAT**

GRADE / GRAAD 12

**INFORMATION TECHNOLOGY P2 (Theory)
INLIGTINGSTEGNOLOGIE V2 (Teorie)**

**FREE STATE – COMMON PAPER JUNE 2009
VRYSTAAT – GEMEENSKAPLIKE VRAESTEL JUNIE 2009**

**MARKS : 180
PUNTE : 180**

**TIME: 3 hours
TYD: 3 uur**

**This question paper consists of 8 pages.
Hierdie vraestel bestaan uit 8 bladsye.**

INSTRUCTIONS AND INFORMATION
INSTRUKSIES EN INLIGTING

1. This question paper consists of SIX questions.

1. Hierdie vraestel bestaan uit SES vrae.

2. Answer ALL the questions.

2. Beantwoord AL die vrae.

3. Read ALL the questions carefully.

3. Lees AL die vrae aandagtig deur.

4. Number the answers correctly according to the numbering system used in this question paper.

4. Nommer die antwoorde volgens nommeringstelsel wat in hierdie vraestel gebruik is.

5. Write neatly and legibly.

5. Skryf netjies en leesbaar.

SECTION A / AFDELING A**QUESTION 1 / VRAAG 1**

Choose the correct answer for the following questions/statements. Only write down the question number and the letter (A-D). Each question has only one answer.

Kies die korrekte antwoord vir die volgende vrae/stellings. Skryf slegs die vraagnommer en die simbool (A-D) neer. Elke vraag het slegs een antwoord.

- 1.1 ... is a relatively new bus standard capable of extremely fast transfer of data.
... is 'n relatiewe nuwe busstandaard wat tot vinnige oordrag van data in staat is.
- A Chipset
 - B USB
 - C BIOS
 - D PCI Express
- 1.2 In the CPU the ... is responsible for making comparisons and for doing integer arithmetic.
In die SVE is die ... verantwoordelik vir die tref van vergelykings en die uitvoer van heelgetalberekenings.
- A ILU
 - B ALU
 - C HPU
 - D FPU
- 1.3 In the CPU the ... the works with real numbers.
In die SVE werk die ... met reële getalle.
- A ILU
 - B ALU
 - C HPU
 - D FPU
- 1.4 ... is a processing technique where the computer contains more than one physical CPU and the operating system manages the processes in such a way that they are distributed between the CPUs.
... is 'n verwerkingstegniek waar die rekenaar meer as een fisiese SVE het en die bedryfstelsel die prosesse so bestuur dat hulle tussen die SVE's verdeel word.
- A Multitasking / *Multitaakverwerking*
 - B Formatting / *Formatering*
 - C Multiprocessing / *Multiverwerking*
 - D Multithreading / *Multidraadverwerking*
- 1.5 This type of cable consist of many very thin strands of glass or plastic each surrounded by cladding.
Die soort kabel bestaan uit baie stringe dun glas of plastiek elk omring met 'n omhulsel.
- A Fibre optic / *Optiese vesel*
 - B Unshielded Twisted Pair
 - C RJ45
 - D Coaxial cable / *Koaksiale kabel*
- 1.6 ... is a standard that allows computers, cellphones, PDAs and laptops to transmit data.
... is 'n standaard wat dataoordrag by rekenaars, selfone, PDA's en skootrekenaars toelaat.
- A LAN
 - B IrDA
 - C CDFS
 - D SMTP

- 1.7 Which one of these operating system is used with a mainframe?
Watter een van hierdie bedryfstelsels word met 'n hoofraam gebruik?
- A Linux
 - B Mac OSX
 - C Palm OS
 - D Unix
- 1.8 ... refers to the collection and analysis of large collections of data.
... verwys na die insameling en analise van groot hoeveelhede data.
- A research / *navorsing*
 - B pipelining / *pyplynverwerking*
 - C data mining / *data-ontginning*
 - D process design / *prosesontwerp*
- 1.9 ... use a unique physical characteristic of a person for the identification of the individual.
... gebruik 'n unieke fisiese eienskap van 'n persoon vir die identifikasie van die individu.
- A biometric devices / *biometriese toestelle*
 - B RFID
 - C peripheral devices / *randtoestelle*
 - D molecular devices / *molekulêre toestelle*
- 1.10 A ... is another term for an on-line journal.
'n ... is ander term vir 'n aanlyndagboek.
- A Blog
 - B IRC
 - C Wiki
 - D Podcast

[10]

SCENARIO – To be used with section B, C, D and E.
SCENARIO – Gebruik met afdeling B, C, D en E.

After the past elections the IEC (Independent Electoral Commission) has decided to upgrade the computers they use at polling stations. They require a network at the place where counting takes place and results need to be sent to a central location over the Internet. You have been asked to contribute by giving advice.

Na die afgelope verkiesings het die OVK (Onafhanklike Verkiesingskommissie) besluit om die rekenaars wat by stemlokale gebruik is, op te gradeer. Hulle vereis 'n netwerk by die plek waar stemme getel word en uitslae moet dan na 'n sentrale ligging gestuur word oor die Internet. Jy word gevra om te help deur raad te gee.

SECTION B : HARDWARE AND SOFTWARE
AFDELING B : HARDEWARE EN SAGTEWARE

QUESTION 2 / VRAAG 2

2.1 An official has asked what the importance of the CPU is; to explain this answer the following questions:

2.1 'n Amptenaar vra wat die belangrikheid van die SVE is; om te verduidelik beantwoord die volgende vrae:

2.1.1 Name the FIVE main components of the CPU and list their functions.
2.1.1 Noem die VYF hoofkomponente van die SVE and lys hul funksies. (10)

2.1.2 Describe the FOUR steps of the machine cycle.
2.1.2 Beskryf die VIER stappe van die masjiensiklus. (8)

2.1.3 Briefly explain what IRQs are.
2.1.3 Beskryf kortliks wat IRQ's is. (1)

- 2.1.4 What is the difference between dual-core and quad-core processors?
 2.1.4 *Wat is die verskil tussen dual-core- en quad-core-verwerkers?* (2)

2.2 The following questions relate to memory.
 2.2 *Die volgende vrae handel oor geheue.*

- 2.2.1 When the computer is switched on some things happen before you can actually use the computer. Briefly describe the computer startup or boot process.
 2.2.1 *As die rekenaar aangeskakel word, gebeur daar dinge voordat die rekenaar gebruik kan word. Beskryf die rekenaar aanskakel- of stelsellaiproses.* (4)

- 2.2.2 List FIVE differences between DRAM and SRAM.
 2.2.2 *Lys VYF verskille tussen DRAM en SRAM.* (2x5=10)

- 2.2.3 An IEC official is amazed at the rapid developments of computers. Clarify this further by explaining what Moore's law refers to.
 2.2.3 *'n OVK-beampte is verbaas oor die vinnige ontwikkelings by rekenaars. Brei verder hieroor uit deur te verduidelik waarna Moore se wet verwys.* (1)

2.3 Define and describe RAID using sketches and by referring to how it works and what it is used for.
 2.3 *Definieer en beskryf RAID met behulp van sketse en deur te verwys na hoe dit werk en waarvoor dit gebruik word.* (14)

2.4 The IEC has some old computers and would like to improve the existing CPUs. List FIVE techniques that can be used to improve the performance of the CPU.
 2.4 *Die OVK het enkele ou rekenaars en sal hulle sal graag die bestaande SVE's wil verbeter. Lys VYF tegnieke wat gebruik kan word om die SVE se werkverrigting te verbeter.* (5)

[55]

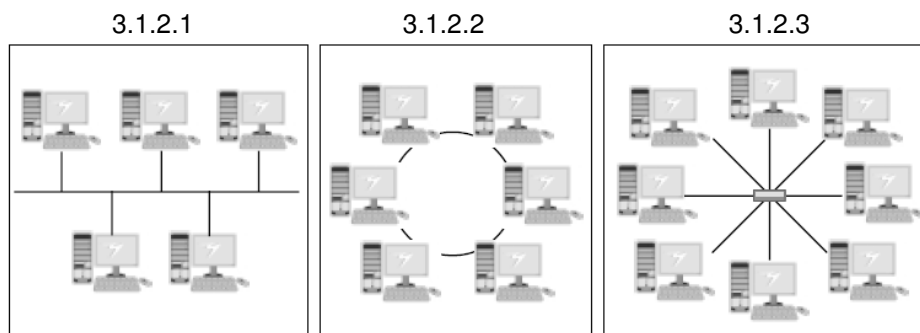
SECTION C : E-COMMUNICATION, SOCIAL AND ETHICAL ISSUES AFDELING C : E-KOMMUNIKASIE, SOSIALE EN ETIESE SAKE

QUESTION 3 / VRAAG 3

3.1 It might be necessary to install a network for the polling station. The following questions will determine whether a network will be used.
 3.1 *Dit mag dalk nodig wees om 'n netwerk by die stemlokaal te installeer. Die volgende vrae sal bepaal watter soort netwerk gebruik sal word.*

- 3.1.1 Give FOUR reasons why a network could be used.
 3.1.1 *Gee VIER redes hoekom 'n netwerk gebruik kan word.* (4)

- 3.1.2 Identify the following topologies:
 3.1.2 *Identifiseer die volgende topologieë:* (3)



(Taken from: Computers, part of your life - Part 2; A textbook for Information Technology; Study Opportunities)

- 3.1.3 List FOUR advantages of a WLAN for the IEC.
 3.1.3 *Lys VIER voordele van 'n WLAN vir die OVK.* (4)

- 3.2 Which Internet connection method would you suggest for the IEC. Give a reason why.
 3.2 Watter Internetverbindingsmetode sal jy vir die OVK aanbeveel. Gee 'n rede hoekom. (2)

QUESTION 4 / VRAAG 4

- 4.1 Define the term digital divide.
 4.1 Definieer die term digitale kloof. (1)

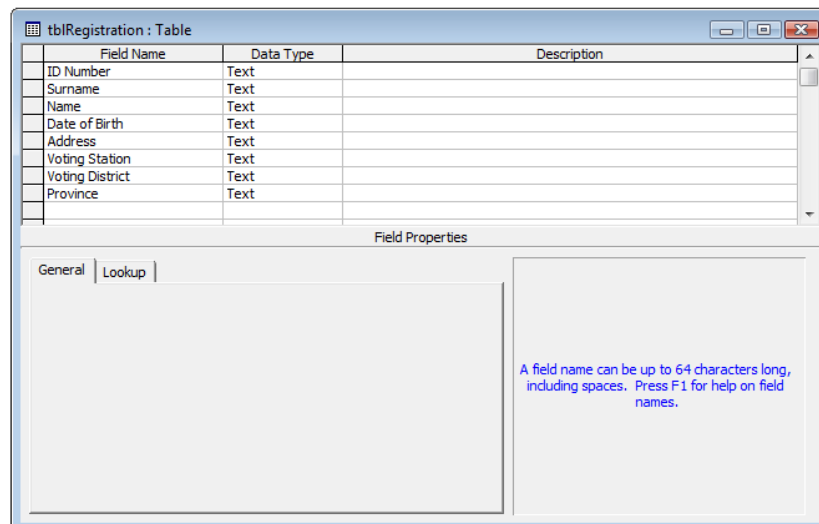
- 4.2 Describe what e-government refers to.
 4.2 Beskryf waarna e-regering verwys. (4)

- 4.3 How could e-learning be employed in voter education at local resource centres?
 4.3 Hoe kan e-leer gebruik word in kieseropvoeding by plaaslike hulpbronsentrums? (2)
[20]

SECTION D : PROGRAMMING AND SOFTWARE DEVELOPMENT AFDELING D : PROGRAMMERING EN SAGTEWARE ONTWIKKELING

QUESTION 5 / VRAAG 5

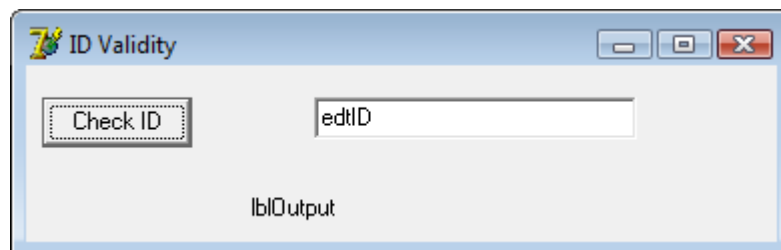
- 5.1 Use this screenshot from the database of registered voters as reference when answering the questions that follow.
 5.1 Gebruik die skermvoorbeeld van die databasis van geregistreerde kiesers as verwysing as die vrae beantwoord word.



Field Name	Data Type	Description
ID Number	Text	
Surname	Text	
Name	Text	
Date of Birth	Text	
Address	Text	
Voting Station	Text	
Voting District	Text	
Province	Text	

- 5.1.1 Which data type could be used for the 'Date of Birth' field?
 5.1.1 Watter datatipe kan vir die 'Date of Birth' (Geboortedatum) veld gebruik word? (1)
- 5.1.2 Why is having a separate field for 'Date of Birth' be obsolete?
 5.1.2 Hoekom is die afsonderlike veld vir 'Date of Birth' (Geboortedatum) onnodig? (1)
- 5.1.3 Which field could be used as primary key? Why?
 5.1.3 Watter veld kan as primêre sleutel gebruik word? Hoekom? (2)
- 5.2 Write down the following SQL queries for tblRegistration shown on the previous page:
 5.2 Skryf die volgende SQL-navrae neer vir tblRegistration soos op die vorige bladsy vertoon:
- 5.2.1 Show all records and fields of tblRegistration.
 5.2.1 Wys al die records en velde van tblRegistrasie. (2)
- 5.2.2 Show all records, but only display the 'ID Number' field of tblRegistration.
 5.2.2 Wys al die rekords, maar vertoon slegs die 'ID Number'-veld van tblRegistration. (3)
- 5.2.3 Show all the records of tblRegistration from the Mangaung voting station.
 5.2.3 Wys al die rekords van tblRegistration van die Mangaung-stemlokaal. (3)

- 5.2.4 Show all the records of tblRegistration for voting stations that start with "Sa".
 5.2.4 Wys al die rekords van tblRegistration van stemlokale wat met "Sa" begin. (4)
- 5.2.5 Show all the records of tblRegistration for voters residing in the Free State.
 5.2.5 Wys al die rekords van tblRegistration vir kiesers wat in die Vrystaat woon. (3)
- 5.2.6 Show all the provinces included in the table tblRegistration.
 5.2.6 Wys al die provinsies wat by die tabel tblRegistration ingesluit is. (2)
- 5.2.7 Show the 'ID Number' and 'Date of Birth' fields sorted alphabetically by the Surname
 5.2.7 Wys die 'ID Number' en 'Date of Birth' velde alfabeties gesorteer volgens die van. (3)
- 5.3 What FIVE goals should designing a database have?
 5.3 Watter VYF doelwitte moet die ontwerp van 'n databasis hê? (5)
- 5.4 What does normalisation refer to?
 5.4 Waarna verwys normalisering? (1)
- 5.5 If the ID numbers are exported from the database to an array they must be sorted using a particular sorting algorithm. Help the IEC's main programmer and write down the algorithm for bubblesorting. Do not use programming code.
 5.5 As die ID-nommers uitgevoer word van die databasis na 'n skikking moet dit gesorteer word volgens 'n sortering algoritme. Help die OVK se hoofprogrammeerder en skryf die algoritme vir borrelsortering neer. Moenie programkode gebruik nie. (9)
- 5.6 The IEC is also considering applying OOP in their programming. Define what inheritance refers to.
 5.6 Die OVK oorweeg ook om OOP in hul programmering toe te pas. Definieer waarna oorerwing verwys. (1)
- 5.7 Complete the Delphi coding for the following program that checks whether an entered ID number is valid (13 digits long and the month is less than 13) or not.
 5.7 Voltooi die Delphi-programkode vir die volgende program wat nagaan of 'n ingesleutelde ID-nommer geldig (13 getalle lank en die maand minder as 13) is of nie. (10)



- 5.7.1 Use variables iLength (length of ID number) and iMonth (month of birth) to test whether the ID number is valid or not.
 5.7.1 Gebruik die veranderlikes iLength (lengte van die ID-nommer) en iMonth (geboortemaand) om te toets of die ID-nommer geldig is of nie.
- 5.7.2 Use Edit box edtID for input and Label lblOutput for output.
 5.7.2 Gebruik die Edit-kassie edtID vir toevoer en die Label lblOutput vir afvoer.
- 5.7.3 Display 'ID valid' or 'ID not valid' as necessary.
 5.7.3 Vertoon 'ID geldig' of 'ID nie geldig nie' soos nodig.

```

procedure TfrmValidID.btnCheckIDClick(Sender: TObject);
var
  ...
begin
  ...
end;
  
```

SECTION E : INTEGRATED SCENARIO
AFDELING E : GEÏNTEGREERDE SCENARIO

QUESTION 6 / VRAAG 6

The results are compiled in a central location and are then distributed nationally through different forms of media. The aim of the IEC is to be transparent and to reach as many people as possible. To help with the planning of distributing the results answer the following questions.

Die uitslae word saamgestel by 'n sentrale plek en word dan nasionaal versprei deur verskillende vorme van media. Die doel van die OVK is om deursigtig te wees en soveel mense moontlik te bereik. Om te help met die beplanning en verspreiding van die uitslae moet die volgende vrae beantwoord word.

6.1 The computers that will be used to collate the results will also be placed in a network. Help the IEC decide on whether to use a peer-to-peer or client/server network by listing THREE advantages and THREE disadvantages for BOTH.

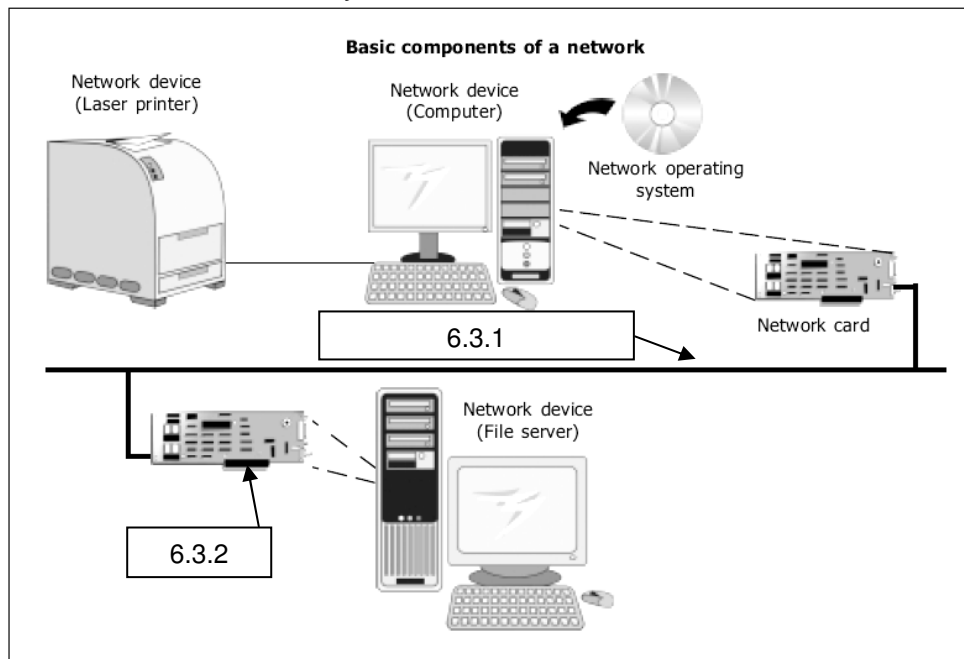
6.1 Die rekenaars wat gebruik gaan word om die uitslae saam te voeg sal ook as 'n network verbind word. Help die OVK om tussen 'n ewekniennetwerk- of kliënt/bediennetwerk te kies deur DRIE voordele en DRIE nadele van BEIDE te lys. (12)

6.2 What two kinds of servers could be used at this venue? Indicate why.

6.2 Watter twee soorte bedieners kan by die plek gebruik word? Dui aan hoekom. (4)

6.3 Name the two missing parts of this network.

6.3 Noem die twee ontbrekende dele by hierdie netwerk. (2)



(Taken from: Computers, part of your life - Part 2; A textbook for Information Technology; Study Opportunities)

6.4 What is the difference between a client computer and a server?

6.4 Wat is die verskil tussen 'n kliëntrekenaar en 'n bediener? (2)

6.5 VoIP can also be used during the collection of data. Answer the following relevant questions:

6.5 VoIP kan ook gebruik word met die insameling van data. Beantwoord die volgende relevante vrae:

6.5.1 Define VoIP.

6.5.1 Definieer VoIP. (1)

6.5.2 How does it work?

6.5.2 Hoe werk dit? (2)

6.5.3 Give an example of VoIP software.

6.5.3 Gee 'n voorbeeld van VoIP-sagteware. (1)

6.6 This network will require a network administrator. Briefly provide a job description for this person by mentioning the necessary qualifications, experience, work requirements and basic tasks.

6.6 Hierdie netwerk sal 'n netwerkadmiistrateur benodig. Gee 'n kort werksbeskrywing van hierdie persoon deur die nodige kwalifikasies, ondervinding, werkvereistes en basiese take te noem. (4)

6.7 Different communication mediums will be used during announcement of the results. Discuss microwave towers as a connection medium.

6.7 Verskillende kommunikasiemediums sal gebruik word tydens die bekendmaking van die uitslae. Bespreek mikrogolftorings as 'n verbindingsmedium. (4)

6.8 The IEC has to decide between using a Diginet and ADSL connection for the results centre. Help them by briefly describing both.

6.8 Die OVK moet kies tussen 'n Diginet en ADSL-verbinding vir die uitslagsentrum. Help hulle deur beide te beskryf. (3x2=6)

6.9 What does communication protocol refer to?

6.9 Waarna verwys kommunikasieprotokol? (2)

6.10 Briefly explain how the following could be used to distribute the results:

6.10 Beskryf kortliks hoe die volgende gebruik kan word om die uitslae te versprei: (5)

6.10.1 Websites / *Webwerwe*

6.10.2 Wikis / *Wiki's*

6.10.3 Mailing lists / *Poslyste*

6.10.4 Blogs

6.10.5 Podcasts

[45]

TOTAL / TOTAAL : 180