Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 12

SEPTEMBER 2014

INFORMATION TECHNOLOGY P2

MARKS: **150**

TIME: **3 hours**

INFTDM2

This question paper consists of 15 pages.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of SIX questions:

SECTION A:	Multiple-choice questions	(15)
SECTION B:	System Technology	(20)
SECTION C:	Communications Technologies and Network Technologies	(25)
SECTION D:	Data and Information Management	(20)
SECTION E:	Solution Development	(30)
SECTION F:	Integrated Scenario	(40)

2. Read ALL the questions carefully.

3. Answer ALL the questions.

4. The mark allocation generally gives an indication of the number of facts/reasons required.

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

6. Write neatly and legibly.

SECTION A: SHORT QUESTIONS AND TRUE OR FALSE

QUESTION 1: MULTIPLE-CHOICE QUESTIONS

Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question number (1.1–1.10) in the ANSWER BOOK.

1.1 A superfast connection technology that can support multiple connections is called …

- A a USB hub.
- B lightning bolt.
- C firewire.
- D thunderbolt. (1)

1.2 Which ONE of the following options is INCORRECT regarding caching?

- A Cache memory is a special type of high speed memory that is built into the motherboard.
- B Caching prevent a slower medium from slowing down the performances of a faster medium.
- C Caching makes sure the fast medium is not slowed down as much as it would be if it is only accessing the slower medium directly.
- D Caching never fetches just what is required – it fetches a larger block of data. (1)

1.3 A typical file system used by Windows is …

- A FATFS.
- B FSNT.
- C NTFS.
- D WINFS. (1)

1.4 … is an upgrade on WiFi.

- A Wii
- B WiMax
- C WiFii
- D WiFax (1)

1.5 Arrange the following bandwidth options from the highest to the lowest:

- A 4G, 3G, EDGE
- B EDGE, 3G, 4G
- C 3G, EDGE, 4G
- D EDGE, 4G, 3G (1)

1.6 … use radio signals to communicate with a transponder attached to a person, animal or object.

A Zipp
B RFID
C IrDA
D PDA (1)

1.7 … is a form of blog which uses video as the medium.

A Vblog
B Vlog
C Vidblog
D Blogging (1)

1.8 An interpreter …

A takes an entire program and translates it into machine language.
B creates an executable file.
C runs one line of a program at a time.
D examines the entire program and generates a list of errors that it encounters. (1)

1.9 A protocol used to transfer actual files between computers to save to storage is known as …

A FTP.
B POP3.
C SMTP.
D HTTP. (1)

1.10 What will the output of the *show message* in the following code be?

```
 arr2Num : array[1..4,1..4] of integer;
begin
  iCount := 0;
  for iRow := 1 to 4 do
   begin
    for iCol := 1 to 4 do
     begin
       inc(iCount);
       arr2Num[iRow,iCol] := iCount;
     end;
   end;
   for iRow := 1 to 4 do
    for iCol := 1 to 4 do
      stringGrid1.Cells[iCol, iRow] := IntToStr(arr2Num[iRow,iCol]);
  ShowMessage(IntToStr(arr2Num[3,2]));
```

A 2
B 7
C 3
D 10 (1)

Indicate whether the following statements are TRUE or FALSE. Where the statement is false, rewrite it by changing the underlined section to make it TRUE. (You may not simply use the word "NOT" to change the statement when you rewrite it.)

1.11 <u>Standard users</u> has full control over the computer system. (2)

1.12 BitTorrent is a <u>server</u> protocol used for the transfer and sharing of large files across a network of computers such as the Internet. (2)

1.13 A <u>service pack</u> is a release of corrections and new features since the release of the original software. (1)

TOTAL SECTION A: 15

SECTION B: SYSTEM TECHNOLOGIES

QUESTION 2

SCENARIO

Gerrie is the owner of Gerrie's Travel Agency. To travel became so easy and Gerrie's business is booming. To ensure his business keeps on growing, he has to be on the edge of technology.

Gerrie has to ensure that the computers of his employees are working optimally. Luckily computers nowadays support modular design, but he still needs to understand the purpose of the software and the different computer components.

2.1 What does the term *modular design* refer to? (1)

2.2 The CPU is one of the most important components on the motherboard as it is responsible for the machine cycle. Gerrie needs to choose between a Core 2 Duo and a Quad Core Intel processor.

2.2.1 List the FOUR steps of a machine cycle. (4)

2.2.2 Explain the difference between a Core 2 Duo processor compared to a Quad Core processor. (2)

2.2.3 Define each of the following processing techniques. Support each definition with a practical example.

(a) Multitasking (2)

(b) Multithreading (2)

2.3 One of the most important components of any computer's processing components is the memory.

2.3.1 Do you agree with the statement above? Support your answer by evaluating the role of memory. (2)

2.3.2 DDR is the latest memory used in computers and refers to *Double Data Rate*.

Which aspect of the performance of a computer will be improved by using DDR memory opposes to normal RAM? (1)

2.3.3 Briefly explain how data transfer in DDR works. (2)

Copyright reserved

2.3.4 When trying to run a program, Gerrie realises that the computer needs 3GB of RAM, but only has 2GB of RAM available.

(a) How can this problem be solved without buying new RAM? (1)

(b) Briefly explain how your solution in QUESTION 2.3.4 (a) works. (2)

2.4 For safekeeping of data, they need passwords to log on to the system. Create a strong password that Gerrie can use. (1)

TOTAL SECTION B: 20

SECTION C: COMMUNICATION TECHNOLOGIES AND NETWORKS

Gerrie has many employees. Those who are responsible for the admin and pre-bookings are stationed in the office. The others are taking groups on tours, so they are working in and outside the office.
To make the transmission of data and files easier, Gerrie is considering connecting all the computing devices in the office to a wired network.

QUESTION 3

3.1 With setting up the network, some questions emerged.

3.1.1 What is a network? (3)

3.1.2 Apparently they need a router as well as a switch for the network. Explain why they need both by describing the purpose of these two devices. (2)

3.1.3 Name the device that can function as a router, switch and a modem. (1)

3.2 3.2.1 Choose the best cabling to use in Gerrie's situation. (1)

3.2.2 All communication media have specific strengths and weaknesses. Name and discuss TWO weaknesses that can occur when the cable in QUESTION 3.2.1 is used. (4)

3.3 The employees working mostly outside the office make use of mobile technology and wireless connection.

3.3.1 If the device in QUESTION 3.1.3 does not allow wireless access to computing devices, outline a possible solution to connect wireless devices. (1)

3.3.2 State the main disadvantage of a wireless LAN compared to a cabled LAN. (1)

3.4 When a computer is connected to a network, it needs an IP address.

Explain what an IP address is. (2)

3.5 Gerrie needs to work from home, the office and sometimes in other remote places. He is advised to make use of a Virtual Private Network (VPN). Briefly explain how a VPN works. (2)

3.6 Gerrie developed an Internet site where clients can make credit card payments.

3.6.1 Name TWO safety features that must be visible on this site for the clients to be sure that their transactions are secure. (2)

3.6.2 Briefly explain how secure socket layer (SSL) can ensure that private electronic communication takes place. (2)

3.6.3 Identity theft can easily occur with unsecure URLs. Distinguish between *phishing* and *pharming* attacks. (4)

TOTAL SECTION C: 25

SECTION D: DATA AND INFORMATION MANAGEMENT

Gerrie's Travel Agency grew very quickly and the data and information got too complex to continue with their current system. They decided to switch over to a database management system.

QUESTION 4

4.1 What is the difference between *data* and *information*? Make use of an example to demonstrate your answer. (3)

4.2 Malware is malicious software that is designed to install itself without the user's knowledge, to negatively affect or harm a computer system.

As malware is a huge threat to data, Gerrie needs to be aware of malware and the protection against it.

4.2.1 Identify the threats that a *Trojan horse* and a *Rootkit* respectively can be to Gerrie. (2)

4.2.2 List THREE examples of precautions that Gerrie can follow to reduce malware threats. (3)

4.3 To capture all the data of the agency's clients, they have to make use of a database management system (DBMS).

4.3.1 List TWO functions of what DBMS software allows a user to do. (2)

4.3.2 Gerrie's Travel Agency is now using *Microsoft Access*. In which DBMS category does it fall? (1)

4.4 A database table has been set up with all the information needed for all the school children that are going on a tour with the agency. Examine the **TourData** table below and answer the questions that follow.

TourData

ChildName	C_Surname	ParentName	P_Surname	P_Cellphone	Grade	Child Email	TourName	Cost	StartDate	Paid	AmountDue
Johan	Blom	Charlize	Blom	0832282738	10	blommie@gmail.com	Euro South	R 35 000	2015/06/26	R 2 000	R 33 000
Elsabe	Duvenage	Susan	Duvenage	0847329282	11	Ella@yahoo.com	Euro South	R 35 000	2015/06/26	R 17 000	R 18 000
Esther	Joubert	Danie	Du Toit	0724049489	10	joubert.Es@mweb.co.za	Far East	R 15 000	2014/12/05	R 15 000	R 0
Ansa	Blom	Charlize	Blom	0832282738	12	Ansie@gmail.com	Namibia	R 3 200	2015/04/09	R 3 000	R 200
Peter	Sameuls	Jan	Sameuls	0712873748	11	Sampete@gmail.com	Far East	R 15 000	2014/12/05	R 8 000	R 7 000
Jonothan	Roux	Amanda	Roux	0738292833	11	Jonty@yahoo.co.za	Coast 2 Coast	R 2 800	2014/12/04	R 2 000	R 800
Maria	Claassens	Susan	Duvenage	0847329282	12	Prinsess@gmail.com	Euro South	R 35 000	2015/06/26	R 35 000	R 0

4.4.1 The table is clearly not normalised. What is the general aim of normalisation in a database? (2)

4.4.2 Which ONE of the fields above would you see as redundant? Give a reason for your answer. (2)

4.4.3 Show, via a diagram, how the database can be reorganised by splitting the table into THREE tables, using principles of normalisation. Clearly indicate the primary and foreign keys for each table as well as the relationship between the tables.
(10 ÷ 2) (5)

TOTAL SECTION D: 20

SECTION E: SOLUTION DEVELOPMENT

QUESTION 5

An object-orientated (OOP) program, that is using a class, has been written to keep record of the children that are going on tour as well as the costs they owe the agency.

Analyse the following class diagram and answer the questions that follow.

TTourInfo
- fID, fName, fSurname : String - fAmount Paid : Real
+ <<constructor>> Create(sID, sName, sSurname : String) + SetAmountPaid(rAmountpaid : Real) + CalcAge : Integer *// Age the person will become during the year* + CalcAmountOwe + GetDOB : String *//Date Of Birth* + GetAmountOwe : Real + GetAge : String + ToString : String

5.1 Supply the name of:

5.1.1 ONE accessor method (1)

5.1.2 ONE mutator method (1)

5.1.3 ONE auxiliary method (1)

5.2 What will the ToString method be used for? (2)

5.3 Explain the concept of *parameter passing* by referring to the constructor

5.4 When the school children pay their money before a specific date, they receive 10% of their money paid back. A program is written to help the travel agency to calculate how much money each child should receive back.

Example of the visual representation of the arrays:

arrNames	Maria	Jesse	Sven	Dean	Wikus	Chris
arrMoney	1100	1300	1030	1130	1000	3900
	[1]	[2]	[3]	[4]	[5]	

5.4.1 Write down the statement that will calculate the 10% of money each child will receive back. You can write it either in Delphi, OR Java, OR in Pseudo Code.

The values of arrMoney should be overwritten. (4)

5.4.2 What will the value of arrMoney[2] be after the statement in QUESTION 5.4.1 is executed? (2)

Copyright reserved

5.5 Examine the following code written in Delphi and answer the questions that follow.

```
Private
iNumber,k,l,iRooms,iLeft, iTel : integer;
 arrRoom1 : array[0..10] of string;
 arrRoom2 : array[0..10] of string;
 arrRoom3 : array[0..10] of string;

begin
  iRooms := 3;
  iLeft := 0;
  iNumber := iCount Div iRooms;
  if iCount MOD iRooms > 0
    then
      begin
        iLeft := iCount MOD iRooms;
        Case ileft of
        1 : arrRoomr1[0] := arrNames[1];
        2 : Begin
              arrRoom1[0] := arrNames[1];
              arrRoom2[0] := arrNames[2];
            end;
        end;
      end;
  k := 0;
  l := 0;
  while k <= iCount do
  begin
     arrRoom1[l] := arrNames[k+1];
     arrRoom2[l] := arrNames[k+2];
     arrRoom3[l] := arrNames[k+3];
     inc(k,3);
     inc(l);
  end;
```

5.5.1 Related to the scenario, what do you think is the purpose of this piece of coding? (2)

5.5.2 Suppose arrNames looks as follow:

```
arrNames : array[1..MAX] of string = (‘Ulrich’, ‘Armand’, ‘Gorden-Dean’,
                                       ‘Gareth’, ‘Jacques’, ‘Wiam’, ‘Tristan’,
                                       ‘Delarey’);
```

What wil the output of the following segment be after the above coding is executed?

```
for k := 0 to iNumber do
 begin
   redOutput.Lines.Add(arrRoom1[k]);
end;
```

(3)

5.5.3 What is it called when we assign a start value to a variable? (iLeft : = 0) (1)

Copyright reserved

5.6 A database called **TourClient** contains the following fields: ChildID, ChildName, DaysOnTour, TotalPaid

5.6.1 Formulate an SQL statement that will display all the names of the children that will be on tour for more than 5 days. (3)

5.6.2 Formulate an SQL statement to calculate the cost per Child if the daily tour cost is R1034,50. Display the name and calculated cost (correct to 2 decimal places), in a field called Cost. (7)

TOTAL SECTION E: 30

SECTION F: INTEGRATED SCENARIO

QUESTION 6

Gerrie needs to buy a computing device for his tour leader, Karli. It is her responsibility to lead tour groups traveling all around the world. He received two deals with exactly the same price. They are now discussing the pros and cons.

Study the following two deals for computing devices and answer the questions that follow.

A

HP Pavilion 15 i5 Notebook

R8 999, 99

- Intel® Core i5-3210M Processor 2.60GHz
- Windows 8
- WLAN 802.11, Ethernet and Bluetooth connectivity
- AMD Radeon 8670M 2GB dedicated graphics
- DVD writer
- 15.6" HD Brightview display
- 6GB RAM
- 1TB HDD

B

iPad WiFi 128GB Black (ME392)

R8 999, 99

- FaceTime HD camera
- 128GB internal storgage
- 9.7" retina display
- 1.2MP photos
- 720p HD video
- FaceTime video calling over
- WiFi
- Face detection
- Backside illumination
- Tap to focus while recording
- Video stabilization
- Face detection
- Backside illumination
- 1 Year warranty

6.1 6.1.1 Give a broad definition of an *operating system*. (3)

6.1.2 Name the operating systems used by device A **and** device B respectively. (2)

6.2 Battery life of mobile devices is crucial. Referring to device B, list AND explain TWO ways how power consumption can be reduced. (4)

6.3 6.3.1 Which ONE of the two devices has the largest storage capacity? (1)

6.3.2 What is the storage capacity of the device mentioned in QUESTION 6.3.1? (1)

6.4 According to the specifications of device A, there are 2 GB dedicated graphics available.

6.4.1 Differentiate between **dedicated** graphics and **integrated** graphics. (4)

6.4.2 Keeping the kind of work Gerrie does in mind, do you think he needs dedicated graphics? Supply a reason for your answer. (2)

6.5 Which ONE of the two devices would you suggest Gerrie to buy for Karli? Supply a reason for your answer. (2)

6.6 Karli still uses her personal computer. There are documents and files that she would like to use on both devices.

6.6.1 Instead of connecting the two devices to a personal network, what online service can she make use of to avoid the hassle of using portable/removable storage devices? (1)

6.6.2 List TWO advantages of using the service mentioned in QUESTION 6.6.1. (2)

6.7 Device B specifies the support of *FaceTime*.

6.7.1 What can Karli download so that she has a program that works similar to *FaceTime*? (1)

6.7.2 What is a *network protocol*? (2)

6.7.3 Identify the network protocol that will be used so that the program in QUESTION 6.7.1 can work. (1)

6.8 What is implied by 'retina display' (device B)? (2)

6.9 Karli is crazy about technology and has the ability to work with it.

6.9.1 What do we call the gap that occurs between people like Karli and those who do not have the ability to make use of technology? (1)

6.9.2 Identify THREE factors that can cause this gap identified in QUESTION 6.9.1. (3)

Copyright reserved

6.10 6.10.1 In Karli's situation, do you think she is making use of a *mobile office* or a *virtual office*? (1)

6.10.2 Prove your answer in QUESTION 6.10.1 by explaining the difference between a *mobile office* and a *virtual office.* *A*ssess what is Karli's need in this situation. (3)

6.11 Karli wants her computer to make use of virtual machine software.

Assess her choice by listing TWO reasons why you think she would want to make use of it. (2)

6.12 Gerrie also gave Karli a smartwatch to use during one her trips. Apart from normal watch functions, name TWO ways in which she can benefit using such a watch. (2)

TOTAL SECTION F: 40
GRAND TOTAL: 150

6.10 6.10.1 Dink jy Karli maak in haar situasie gebruik van ŉ *mobiele kantoor* of ŉ *virtuele kantoor*? (1)

6.10.2 Bewys jou antwoord in VRAAG 6.10.1 deur die verskil tussen ŉ *mobiele kantoor* of ŉ *virtuele kantoor* te verduidelik. Assesseer ook wat Karli se behoefte in hierdie situasie is. (3)

6.11 Karli wil hê dat haar rekenaar van virtuele masjienprogrammatuur gebruik moet maak.

Assesseer haar keuse deur TWEE redes te noem waarom jy dink sy daarvan gebruik sal wil maak. (2)

6.12 Gerrie het ook vir Karli ŉ slimhorlosie (*smartwatch*) gegee om tydens een van haar toere te gebruik. Behalwe vir die normale horlosie-funksies, noem TWEE maniere hoe sy kan baat vind met so ŉ horlosie. (2)

TOTAAL AFDELING F: 40
GROOTTOTAAL: 150

Kopiereg voorbehou

6.3 6.3.1 Watter EEN van die twee toestelle het die grootste stoorkapasiteit? (1)

6.3.2 Wat is die stoorkapasiteit van die toestel wat in VRAAG 6.3.1 genoem is? (1)

6.4 Volgens die spesifikasies van toestel A, is daar 2GB *dedicated graphics* (toegewyde grafika) beskikbaar.

6.4.1 Onderskei tussen **dedicated** graphics en **integrated** graphics (**toegewyde** grafika en **geïntegreerde** grafika). (4)

6.4.2 Deur die tipe werk wat Gerrie doen in gedagte te hou, dink jy hy het toegewyde grafika nodig? Gee ŉ rede vir jou antwoord. (2)

6.5 Watter EEN van die twee toestelle sal jy voorstel moet Gerrie vir Karli koop? Gee ŉ rede vir jou antwoord. (2)

6.6 Karli gebruik nog steeds haar persoonlike rekenaar. Daar is dokumente en lêers wat sy graag op albei toestelle sal wil gebruik.

6.6.1 In plaas daarvan om die twee toestelle aan ŉ persoonlike rekenaar te koppel, van watter aanlyndiens kan sy gebruik maak om die moeite te vermy deur van draagbare of verafgeleë (*remote*) bergingstoestelle gebruik te maak? (1)

6.6.2 Lys TWEE voordele vir die gebruik van die diens wat in VRAAG 6.6.1 genoem is. (2)

6.7 Toestel B spesifiseer die ondersteuning van *FaceTime*.

6.7.1 Wat kan Karli aflaai sodat sy ŉ program het wat soortgelyk soos *FaceTime* werk? (1)

6.7.2 Wat is ŉ *netwerkprotokol*? (2)

6.7.3 Identifiseer die netwerkprotokol wat gebruik sal word sodat die program in VRAAG 6.7.1 kan werk. (1)

6.8 Wat word met '*retina display*' (toestel B), geïmpliseer? (1)

6.9 Karli is mal oor tegnologie en het die vermoë om daarmee te werk.

6.9.1 Wat word die gaping wat voorkom tussen mense soos Karli en diegene wat nie die vermoë het om met tegnologie te werk nie genoem? (1)

6.9.2 Identifiseer DRIE faktore wat hierdie gaping wat in VRAAG 6.9.1 geïdentifiseer is, kan veroorsaak. (3)

AFDELING F: GEÏNTEGREERDE SCENARIO

VRAAG 6

Gerrie moet 'n rekenaartoestel vir sy toerleidster, Karli koop. Dit is haar verantwoordelikheid om toergroepe wat regoor die wêreld reis, te lei. Hy het twee aanbiedinge wat presies dieselfde kos, ontvang. Hulle bespreek nou die voor- en nadele.

Bestudeer die volgende twee aanbiedings vir rekenaartoestelle en beantwoord die vrae wat volg.

A

HP Pavilion 15 i5 Notebook

R8 999, 99

- Intel® Core i5-3210M Processor 2.60GHz
- Windows 8
- WLAN 802.11, Ethernet and Bluetooth connectivity
- AMD Radeon 8670M 2GB dedicated graphics
- DVD writer
- 15.6" HD Brightview display
- 6GB RAM
- 1TB HDD

B

iPad WiFi 128GB Black (ME392)

R8 999, 99

- FaceTime HD camera
- 128GB internal storgage
- 9.7" retina display
- 1.2MP photos
- 720p HD video
- FaceTime video calling over
- WiFi
- Face detection
- Backside illumination
- Tap to focus while recording
- Video stabilization
- Face detection
- Backside illumination
- 1 Year warranty

6.1 6.1.1 Gee 'n breedvoerige definisie van 'n *bedryfstelsel*. (3)

6.1.2 Benoem die bedryfstelsels wat onderskeidelik in toestel A **en** toestel B gebruik word. (2)

6.2 Batteryleeftyd van mobiele toestelle is uiters belangrik. Met verwysing na toestel B, noem EN verduidelik TWEE maniere hoe kraggebruik verminder kan word. (4)

5.6 ŉ Databasis met die naam **ToerKlient** bevat die volgende velde: LeerderID, LeerderNaam, DaeOpToer, TotaalBetaal.

5.6.1 Formuleer ŉ SQL-stelling wat die name van die leerders wat vir langer as 5 dae op toer sal wees, vertoon. (3)

5.6.2 Formuleer ŉ SQL-stelling om die koste per leerder te bereken as die daaglikste toerkoste R1034,50 per dag is. Vertoon die naam en berekende koste (korrek tot 2 desimale plekke) in ŉ veld met die naam Koste. (7)

TOTAAL AFDELING E: 30

Kopiereg voorbehou
Blaai om asseblief

5.5 Bestudeer die volgende kode wat in Delphi geskryf is en beantwoord die vrae wat volg.

```
Private
iNommer,k,l,iKamerss,iRes, iTel : integer;
 arrKamer1 : array[0..10] of string;
 arrKamer2 : array[0..10] of string;
 arrKamer3 : array[0..10] of string;

begin
  iKamers := 3;
  iRes := 0;
  iNommer := iTel Div iKamers;
  if iTel MOD iKamers > 0
    then
      begin
        iRes := iTel MOD iKamers;
        Case iRes of
        1 : arrKamer1[0] := arrName[1];
        2 : Begin
              arrKamer1[0] := arrName[1];
              arrKamer2[0] := arrName[2];
            end;
        end;
      end;
  k := 0;
  l := 0;
  while k <= iTel do
  begin
     arrKamer1[l] := arrKamers[k+1];
     arrKamer2[l] := arrName[k+2];
     arrKamer3[l] := arrName[k+3];
     inc(k,3);
     inc(l);
  end;
```

5.5.1 Na aanleiding van die scenario, wat dink jy is die doel van hierdie kode? (2)

5.5.2 Veronderstel arrName lyk soos volg:

```
arrName : array[1..MAX] of string = (‘Ulrich’, ‘Armand’, ‘Gorden-Dean’,
                                      ‘Gareth’, ‘Jacques’, ‘Wiam’, ‘Tristan’,
                                      ‘Delarey’, ‘Miche-Lee’);
```

Wat sal die afvoer van die volgende segment wees nadat bogenoemde kode uitgevoer is?

```
for k := 0 to iNommer do
 begin
   redOutput.Lines.Add(arrKamer1[k]);
end;
```

(3)

5.5.3 Wat word dit genoem wanneer ’n beginwaarde aan ’n veranderlike toegeken word?
(iLeft := 0) (1)

AFDELING E: OPLOSSINGSONTWIKKELING

VRAAG 5

ʼn Objekgeoriënteerd (OOP) program, wat van ʼn klas gebruik maak, is geskryf om rekord te hou van die leerders wat op die toer gaan sowel as die uitstaande gelde wat elkeen aan die agentskap skuld.

Analiseer die volgende klasdiagram en beantwoord die vrae wat volg.

```
TTourInfo
-   fID, fNaam, fVan : String
-   fBedragBetaal : Real
+   <<constructor>> Create(sID, sNaam, sVan : String)
+   SetBedragBetaal(rBedragBetaal : Real)
+   CalcOuderdom : Integer  // Ouderdom wat die persoon gedurende
                               die jaar sal word
+   CalcBedragVerskuldig
+   GetDOB : String            //Date Of Birth - Geboortejaar
+   GetBedragVerskuldig : Real
+   GetOuderdom : String
+   ToString : String
```

5.1 Verskaf die naam van:

5.1.1 EEN *accessor*-metode (1)

5.1.2 EEN *mutator*-metode (1)

5.1.3 EEN *auxiliary*-metode (1)

5.2 Waarvoor sal die *ToString*-metode gebruik word? (2)

5.3 Verduidelik die konsep van *parameteroordrag* deur na die *constructor* te verwys. (3)

5.4 Indien die skoolleerders hul geld voor ʼn spesifieke datum betaal, ontvang hulle 10% van hul gelde terug. ʼn Program is geskryf wat die reisagentskap help om te bereken hoeveel geld elke leerder terug moet ontvang.

Voorbeeld van die visuele voorstelling van die skikkings:

arrName	Maria	Jesse	Sven	Dean	Wikus	Chris
ArrGeld	1100	1300	1030	1130	1000	3900
	[1]	[2]	[3]	[4]	[5]	…

5.4.1 Skryf die stelling neer wat die 10% wat elke kind terug sal kry sal bereken. Maak gebruik van *Delphi,* OF Java, OF *Pseudo*-kode.

Die waardes van *ArrGeld* moet oorgeskryf word (*overwritten*). (4)

5.4.2 Wat sal die waarde van *arrGeld[2]* wees na die stelling in VRAAG 5.4.1 uitgevoer is? (2)

AFDELING D: DATA- EN INLIGTINGSBESTUUR

Gerrie's Travel Agency het baie vinnig gegroei en die data en inligting het te kompleks geraak om met hul huidige sisteem voort te gaan. Hulle het besluit om na 'n databasisbestuurstelsel oor te skakel.

VRAAG 4

4.1 Wat is die verskil tussen *data* en *inligting*? Maak gebruik van 'n voorbeeld om jou antwoord te demonstreer. (3)

4.2 *Malware* is kwaadwillige apparatuur wat ontwerp is om hulself, sonder die eienaar se medewete, te installeer om die rekenaarsisteem te beskadig of negatief te affekteer.

Aangesien *malware* 'n groot bedreiging vir data inhou, moet Gerrie bewus wees van *malware* asook die beskerming daarteen.

4.2.1 Identifiseer die bedreigings wat 'n *Trojan horse* and a *Rootkit* onderskeidelik vir Gerrie kan inhou. (2)

4.2.2 Lys DRIE voorbeelde van voorsorgmaatreëls wat Gerrie kan volg om *malware* bedreigings te verminder. (3)

4.3 Om al die data van die agentskap se kliënte vas te lê, moet hulle van 'n databasisbestuurstelsel (DBMS) gebruik maak.

4.3.1 Lys TWEE funksies wat DBMS-programmatuur 'n gebruiker toelaat om te doen. (2)

4.3.2 *Gerrie's Travel Agency* maak nou gebruik van *Microsoft Access*. In watter DBMS-kategorie val dit? (1)

4.4 'n Databasistabel is opgestel met al die nodige inligting van al die skoolleerders wat saam met die agentskap op 'n toer gaan. Bestudeer die onderstaande **TourData**-tabel en beantwoord die vrae wat volg.

TourData

ChildName	C_Surname	ParentName	P_Surname	P_Cellphone	Grade	Child Email	TourName	Cost	StartDate	Paid	AmountDue
Johan	Blom	Charlize	Blom	0832282738	10	blommie@gmail.com	Euro South	R 35 000	2015/06/26	R 2 000	R 33 000
Elsabe	Duvenage	Susan	Duvenage	0847329282	11	Ella@yahoo.com	Euro South	R 35 000	2015/06/26	R 17 000	R 18 000
Esther	Joubert	Danie	Du Toit	0724049489	10	joubert.Es@mweb.co.za	Far East	R 15 000	2014/12/05	R 15 000	R 0
Ansa	Blom	Charlize	Blom	0832282738	12	Ansie@gmail.com	Namibia	R 3 200	2015/04/09	R 3 000	R 200
Peter	Sameuls	Jan	Sameuls	0712873748	11	Sampete@gmail.com	Far East	R 15 000	2014/12/05	R 8 000	R 7 000
Jonothan	Roux	Amanda	Roux	0738292833	11	Jonty@yahoo.co.za	Coast 2 Coast	R 2 800	2014/12/04	R 2 000	R 800
Maria	Claassens	Susan	Duvenage	0847329282	12	Prinsess@gmail.com	Euro South	R 35 000	2015/06/26	R 35 000	R 0

4.4.1 Die tabel is duidelik nie genormaliseer nie. Wat is die algemene doel van normalisering in 'n databasis? (2)

4.4.2 Watter EEN van die bostaande velde sal jy as oorbodig sien? Gee 'n rede vir jou antwoord. (2)

4.4.3 Gebruik 'n diagram om aan te toon hoe die databasis herorganiseer kan word deur die tabel in DRIE tabelle te verdeel deur gebruik te maak van normaliseringsbeginsels. Toon duidelik die primêre- en vreemde sleutels vir elke tabel aan, asook die verwantskappe tussen die tabelle. (10 ÷ 2) (5)

TOTAAL AFDELING D: 20

AFDELING C: KOMMUNIKASIETEGNOLOGIE EN NETWERKTEGNOLOGIE

Gerrie het baie werknemers. Diegene wat vir die administrasie en vooraf-besprekings verantwoordelik is, is in die kantoor gestasioneer. Die ander neem groepe op toere, gevolglik werk hulle binne en buite die kantoor. Om die oordrag van data en lêers te vergemaklik oorweeg Gerrie dit om al die rekenaartoestelle in die kantoor aan 'n bekabelde netwerk te verbind.

VRAAG 3

3.1 Met die opstel van die netwerk, het 'n paar vrae opgeduik.

3.1.1 Wat is 'n netwerk? (3)

3.1.2 Blykbaar het hulle 'n *router* en 'n *switch* vir die netwerk nodig. Verduidelik waarom hulle beide nodig het deur die doel van hierdie twee toestelle te beskryf. (2)

3.1.3 Gee die naam van die toestel wat as 'n roteerder (*router*), *switch* en modem kan dien. (1)

3.2 3.2.1 Kies die beste bekabeling om in Gerrie se situasie te gebruik. (1)

3.2.2 Alle kommunikasiemedia het spesifieke sterkpunte en swakpunte. Noem en bespreek TWEE swakpunte wat kan voorkom wanneer die kabel in VRAAG 3.2.1 gebruik word. (4)

3.3 Die werknemers wat meestal buite die kantoor werk, maak van mobiele tegnologie en koordlose konneksie gebruik.

3.3.1 Indien die toestel genoem in VRAAG 3.1.3 nie koordlose toegang tot rekenaartoestelle toelaat nie, voorsien 'n moontlike oplossing om koordlose toestelle te koppel. (1)

3.3.2 Noem die belangrikste nadeel van 'n koordlose LAN teenoor 'n bekabelde LAN. (1)

3.4 Wanneer 'n rekenaar aan 'n netwerk verbind word, benodig dit 'n IP-adres.

Verduidelik wat 'n IP-adres is. (2)

3.5 Dit is vir Gerrie nodig om vanaf die huis, die kantoor en somtyds in ander verafgelëe plekke te werk. Hy is aangeraai om van 'n *Virtuele Privaatnetwerk* (VPN) gebruik te maak. Verduidelik kortliks hoe 'n VPN werk. (2)

3.6 Gerrie het 'n Internetwebwerf ontwerp waar kliënte kredietkaartbetalings kan maak.

3.6.1 Noem TWEE veiligheidsmaatreëls wat op die webtuiste vir die kliënte sigbaar moet wees om seker te maak dat hul transaksies veilig is. (2)

3.6.2 Verduidelik kortliks hoe *Secure Socket Layer* (SSL) kan verseker dat private elektroniese kommunikasie plaasvind. (2)

3.6.3 Identiteitsdiefstal kan maklik met onveilige URL's voorkom. Onderskei tussen *uitvissingsbedrog* (*phishing*) en *pharming*-aanvalle. (4)

TOTAAL AFDELING C: 25

2.3.4 Toe Gerrie 'n program wou uitvoer, kom hy agter dat die rekenaar 3GB RAM benodig, maar net 2GB RAM beskikbaar het.

(a) Hoe kan hierdie probleem opgelos word sonder om nog RAM te koop? (1)

(b) Verduidelik kortliks hoe jou oplossing in VRAAG 2.3.4(a) werk. (2)

2.4 Vir die beveiliging van data het hulle wagwoorde nodig om op die sisteem in te teken. Skep 'n sterk wagwoord wat Gerrie kan gebruik. (1)

TOTAAL AFDELING B: 20

AFDELING B: STELSELTEGNOLOGIES

VRAAG 2

SCENARIO

Gerrie is die eienaar van *Gerrie's Travel Agency*. Om te reis het so maklik geword en Gerrie se besigheid floreer. Om te verseker dat sy besigheid aanhou groei, moet hy op die voorpunt van tegnologiese ontwikkeling wees.

Gerrie moet seker maak dat sy werknemers se rekenaars optimaal funksioneer. Gelukkig ondersteun rekenaars deesdae modulêre ontwerp, maar hy moet nog steeds die doel van die programmatuur en die verskillende rekenaarkomponente verstaan.

2.1 Waarna verwys die term *modulêre ontwerp*? (1)

2.2 Aangesien die SVE verantwoordelik is vir die masjiensiklus, is dit een van die belangrikste komponente op die moederbord. Gerrie moet tussen 'n *Core 2 Duo* en 'n *Quad Core Intel*-verwerker kies.

2.2.1 Lys die VIER stappe van 'n masjiensiklus. (4)

2.2.2 Verduidelik die verskil tussen 'n *Core 2 Duo* verwerker teenoor 'n *Quad Core* verwerker. (2)

2.2.3 Definieer elk van die volgende verwerkingstegnieke. Ondersteun elke definisie met 'n praktiese voorbeeld.

(a) Multitaakverwerking (2)

(b) Multidraadverwerking (*Multithreading)* (2)

2.3 Een van die belangrikste komponente van enige rekenaar se verwerkingskomponente is die geheue.

2.3.1 Stem jy saam met die bogenoemde stelling? Motiveer jou antwoord deur die rol van geheue te evalueer. (2)

2.3.2 DDR is die nuutste geheue wat deur rekenaars gebruik word en staan vir *Double Data Rate*.

Watter aspek van die rekenaar se werkverrigting sal verbeter word deur gebruik te maak van DDR-geheue in plaas van normale RAM? (1)

2.3.3 Verduidelik kortliks hoe dataoordrag in DDR werk. (2)

Dui aan of die volgende stellings WAAR OF ONWAAR is. Waar die stelling ONWAAR is, herskryf die onderstreepte gedeelte om dit WAAR te maak. (Jy mag nie slegs die woord "NIE" gebruik ten einde die stelling te verander wanneer jy dit oorskryf nie.)

1.11 <u>Standaard gebruikers</u> het volle beheer oor die rekenaarstelsel. (2)

1.12 BitTorrent is 'n <u>bediener</u>-protokol wat vir die oordrag en deel van groot lêers oor 'n netwerk van rekenaars, soos die Internet, gebruik word. (2)

1.13 'n <u>*Service pack*</u> is 'n vrystelling van korreksies en nuwe eienskappe sedert die vrystelling van die oorspronklike programmatuur. (1)

TOTAAL AFDELING A: 15

Kopiereg voorbehou

1.6 … maak gebruik van radioseine om met ŉ transponder, wat aan ŉ persoon, dier of objek gekoppel is, te kommunikeer.

A Zipp
B RFID
C IrDA
D PDA (1)

1.7 … is ŉ vorm van joernaal wat video as medium gebruik.

A Vblog
B Vlog
C Vidblog
D Blogging (1)

1.8 ŉ Interpreteerder …

A neem ŉ hele program en vertaal dit na masjienkode.
B skep ŉ uitvoerbare lêer.
C voer een lyn van ŉ program op ŉ slag uit.
D ondersoek die hele program en skep ŉ lys van foute wat hy teëgekom het. (1)

1.9 ŉ Protokol wat gebruik word om lêers tussen rekenaars oor te dra sodat dit na die berging gestoor kan word, staan as ... bekend.

A FTP
B POP3
C SMTP
D HTTP (1)

1.10 Wat sal die afvoer van die *showmessage* in die volgende kode wees?

```
  arr2Nom  :  array[1..4,1..4] of integer;
begin
  iTel := 0;
  for iRy := 1 to 4 do
   begin
    for iKol := 1 to 4 do
     begin
       inc(iTel);
       arr2Nom[iRy,iKol] := iTel;
     end;
   end;
   for iRy := 1 to 4 do
    for iKol := 1 to 4 do
      stringGrid1.Cells[iKol,iRy] := IntToStr(arr2Nom[iRy,iKol]);
  ShowMessage(IntToStr(arr2Nom[3,2]));
```

A 2
B 7
C 3
D 10 (1)

AFDELING A: MEERVOUDIGEKEUSE-VRAE EN WAAR OF ONWAAR

VRAAG 1: MEERVOUDIGEKEUSE-VRAE

Verskeie opsies word as moontlike antwoorde op die volgende vrae gegee. Kies die korrekte antwoord en skryf slegs die letter (A–D) langs die vraagnommer (1.1–1.10) in die ANTWOORDEBOEK neer.

1.1 ŉ Super vinnige konneksietegnologie wat veelvuldige konneksies kan ondersteun word ŉ … genoem.

A USB-hub
B *lightning bolt*
C *firewire*
D *thunderbolt* (1)

1.2 Watter EEN van die volgende opsies is VERKEERD aangaande kasberging?

A Kasgeheue is ŉ spesiale tipe hoëspoedgeheue wat op die moederbord ingebou is.
B Kasberging voorkom ŉ stadiger medium om die werkverrigting van ŉ vinniger medium te vertraag.
C Kasberging verseker dat die vinniger medium nie so stadig gemaak word as wat dit sou wees in die geval wanneer toegang direk vanaf die stadige medium verkry sou word nie.
D Kasberging gaan haal nooit net wat nodig is nie – dit gaan haal ŉ groter blok data. (1)

1.3 ŉ Tipiese lêersisteem wat deur Windows gebruik word, is ...

A FATFS.
B FSNT.
C NTFS.
D WINFS. (1)

1.4 … is ŉ opgradering van WiFi.

A Wii
B WiMax
C WiFi
D WiFax (1)

1.5 Rangskik die volgende bandwydte-opsies van groot na klein:

A 4G, 3G, EDGE
B EDGE, 3G, 4G
C 3G, EDGE, 4G
D EDGE, 4G, 3G (1)

Kopiereg voorbehou

INSTRUKSIES EN INLIGTING

1. Hierdie vraestel bestaan uit SES afdelings:

AFDELING A:	Meervoudigekeuse-vrae	(15)
AFDELING B:	Stelseltegnologie	(20)
AFDELING C:	Kommunikasietegnologie en Netwerktegnologie	(25)
AFDELING D:	Data- en Inligtingsbestuur	(20)
AFDELING E:	Oplossingsontwikkeling	(30)
AFDELING F:	Geïntegreerde Scenario	(40)

2. Lees AL die vrae aandagtig deur.

3. Beantwoord AL die vrae.

4. Die puntetoekenning gee oor die algemeen ŉ aanduiding van die hoeveelheid feite/redes wat vereis word.

5. Nommer die antwoorde korrek volgens die nommeringstelsel wat in hierdie vraestel gebruik word.

6. Skryf netjies en leesbaar.

Kopiereg voorbehou

Province of the
EASTERN CAPE
EDUCATION

NASIONALE
SENIOR SERTIFIKAAT

GRAAD 12

SEPTEMBER 2014

INLIGTINGSTEGNOLOGIE V2

PUNTE: **150**

TYD: **3 uur**

INFTDM2

Hierdie vraestel bestaan uit 15 bladsye.