



Province of the  
**EASTERN CAPE**  
EDUCATION

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**CHIEF DIRECTORATE – CURRICULUM MANAGEMENT**

**GRADE 12 LEARNER SUPPORT  
PROGRAMME**

**REVISION AND REMEDIAL TEACHING  
INSTRUMENT:  
QUESTIONS AND ANSWERS**

**SUBJECT: INFORMATION TECHNOLOGY – SECOND PAPER**

**June 2009**

**This document consists of 13 pages.**

***Strictly not for test/examination purposes***

**INSTRUCTIONS AND INFORMATION**

1. This paper consists of SEVEN questions.
2. Answer ALL the questions.
3. Read ALL the questions carefully.

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

Various possible options are provided as 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, for example: 1.11 D.

- 1.1 Which one of the following terms does NOT logically belong with the others?
- A C#
  - B A+
  - C ICDL
  - D MCSE
- 1.2 Which one of the following terms refer to an OOP technique whereby two or more methods by the same name apply to a variable or object and the actual method called or used is determined by the type or class of the variable or object at run-time?
- A Inheritance
  - B Overloading
  - C Encapsulation
  - D Polymorphism
- 1.3 Which one of the following terms does NOT logically belong with the others?
- A North Bridge
  - B ALU
  - C Register
  - D AGP
- 1.4 Which one of the following terms refers to a technique whereby new content from websites can be automatically sent to your computer?
- A OCR
  - B RSS
  - C XHTML
  - D OSS
- 1.5 Which one of the following is NOT likely to be a trend in computing in future years?
- A Increasing numbers of SOHO businesses
  - B Extensive use of GPS technology
  - C Fewer transistors appearing on integrated circuits
  - D Interactive television

- 1.6 Which one of the following refers to an open-source multi-tasking operating system designed for smart phones?
- A Leopard
  - B Unix
  - C Windows Mobile
  - D Symbian
- 1.7 Which one of the following terms does NOT refer to a feature of a database specifically designed to reduce the GIGO affect?
- A Input Masks
  - B Validation Rules
  - C Mandatory fields
  - D Smart Tags
- 1.8 The infamous "Y2K" or so-called Millennium bug refers to ...
- A a worm that devastated global e-mail systems.
  - B a software error that was inadvertently built into computer systems.
  - C the first documented case of spyware.
  - D a hardware flaw inadvertently built into floating point units of some processors.
- 1.9 Which one of the following terms is NOT directly linked with 'green computing'?
- A Use of Energy Star compliant hardware
  - B Use of LCD monitors
  - C Paperless office
  - D Use of more powerful but quieter power supplies
- 1.10 Which one the following refers to an automated process used to scan and sort through data to identify patterns and establish relationships and associations that might be of value to an organisation?
- A Data integrity
  - B Data mining
  - C Data validation
  - D Data generation

**TOTAL SECTION A: (10 x 1): 10**

The scenario below must be used to answer the questions in SECTIONS B, C, D and E.

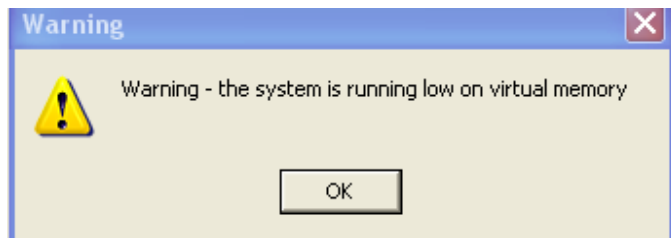
### SCENARIO

You recently stayed at a holiday resort and spa during the holidays. The owner asked you for your advice on how to use technology effectively. The resort consists of a number of chalets.

## SECTION B: HARDWARE AND SOFTWARE

### QUESTION 2: HARDWARE AND SOFTWARE

2.1 Many of the computers frequently display the following message:



- 2.1.1 Explain what this message means by briefly explaining how virtual memory works and what its function is. (5)
- 2.1.2 Give TWO solutions for the problem mentioned in QUESTION 2.1.1. Explain why each of these proposed solutions will solve the problem. (4)
- 2.1.3 Will the solutions you gave in QUESTION 2.1.2 permanently solve the problem? Briefly motivate your answer. (2)
- 2.1.4 What is the main problem associated with virtual memory? (1)
- 2.2 It seems that most of the computers at the spa need to be upgraded:
- 2.2.1 Give THREE broad reasons why one would decide to upgrade a computer. (3)
- 2.2.2 Give TWO common hardware upgrades that one would commonly perform on older computers. This excludes peripheral devices. Briefly refer to the reason for the upgrade in each case. (4)
- 2.3 A consultant also recommended that you 'flash the BIOS' on some of the older computers.
- 2.3.1 Describe the function of the BIOS in a computer. (2)
- 2.3.2 Explain what it means to flash a BIOS and why it is necessary. (3)

- 2.4 Your want to see if you can add some older network cards to the existing computers. You have been looking through the motherboard manual as these older network cards need to be manually configured as they are not Plug-and-Play compatible!
- 2.4.1 Explain why you would not have to purchase a network card for a brand new computer. (2)
- 2.4.2 Explain clearly what the term Plug-and-Play refers to. (2)
- 2.4.3 What is the difference between the terms Plug-and-Play and hot-swappable? (2)
- 2.4.4 One of the things you will need to configure is the IRQ setting. Briefly explain what an IRQ is. (2)
- 2.4.5 You are struggling to find device drivers for the old network cards. Explain clearly what a driver is by referring to its function (2)
- 2.5 It has been decided to rather investigate purchasing new PCs as the cost of upgrading is too expensive. You need to examine various specifications and prices.
- 2.5.1 Motherboards are listed with a specific chipset. Explain what a chipset is and the role it plays in the functioning of your PC. (2)
- 2.5.2 A common motherboard specification is the speed of the Front Side Bus (FSB). What is the function of the FSB? (2)
- 2.5.3 What is the difference between the FSB and the external bus? (2)
- 2.5.4 Most of the computers are listed as dual-core or quad-core. What does this mean? (2)
- 2.5.5 One of the motherboards lists as part of its specifications that it '*supports DDR2 800*'. Clearly explain what this means by referring to DDR2 and 800 specifications. (2)
- 2.5.6 Another specification you spotted refers to '*supporting Athlon 64*'. What component is this referring to and which company manufactures this component? (2)
- 2.6 One of the specifications of the motherboard you finally chose for the new computers was: *1 Parallel, 1 1394a, 2 EIDE, 6 Serial ATA II, 2 PS/2, 6 USB2.0*
- 2.6.1 What do all these specifications all have in common? (1)

- 2.6.2 Clearly explain the difference between serial and parallel data transmission. (4)
- 2.6.3 What is the 1394 specification more commonly referred to as? (1)
- 2.6.4 Name ONE typical device associated with Serial ATA. (1)
- 2.6.5 Name ONE typical device associated with PS/2. (1)
- 2.6.6 Which of the specifications/terms would be of the most significance for a digital video camera? (1)
- 2.7 It has been decided to keep the older PCs, so you have decided to defrag them to try and speed up hard drive access.
- 2.7.1 Name and explain the problem that you trying to overcome and why it occurs. (3)
- 2.7.2 How will defragging the computers solve the problem you described? (2)
- [60]**

**TOTAL SECTION B: 60**

## **SECTION C: APPLICATIONS AND IMPLICATIONS**

### **QUESTION 3: e-COMMUNICATION**

- 3.1 The new computers have all been linked into a wireless LAN (WLAN).
- 3.1.1 What are TWO of the main benefits that can be derived by linking computer equipment in a LAN? (2)
- 3.1.2 Give TWO advantages of using wireless to connect the LAN. (2)
- 3.1.3 Give TWO potential disadvantages of using wireless to connect the LAN. (2)
- 3.2 One of the most important components of the LAN is the switch.
- 3.2.1 Describe what the general function of a switch is. (2)
- 3.2.2 Briefly explain the technical reason why switches have replaced hubs as a network component. (2)
- [10]**

**QUESTION 4: SOCIAL AND ETHICAL ISSUES**

- 4.1 The owner has been browsing computer technology sites on the web and sees frequent reference to *social engineering* and *social networking*. Briefly explain what each of these terms refers to (4)
- 4.2 The owner is considering placing a site on the web to promote the resort and take on-line bookings. Give TWO potential benefits and TWO potential drawbacks of participating in e-commerce in this fashion. (4)
- 4.3 The owner has registered for an online course to teach herself more about website development and management. Give TWO advantages of e-learning over traditional classroom-based learning. (2)

**[10]****TOTAL SECTION C: 20****SECTION D: PROGRAMMING AND SOFTWARE DEVELOPMENT****QUESTION 5: ALGORITHMS AND PLANNING**

- 5.1 A booking system needs to be developed for the resort. A choice needs to be made whether to use a non-programming approach and use an Access database to implement the system or whether to get a firm to write a programmed solution.
- 5.1.1 Give TWO advantages of using a database such as Access to implement the system. (2)
- 5.1.2 Give TWO advantages of using a programmed solution to implement the system. (2)
- 5.2 Consider the following algorithm which determines the minimum value stored in a text file which contains temperatures taken at the resort over the last 40 years.

```
Min ← 0
Open text file
Repeat
    Read line of text from text file
    Convert text to numerical value and store in variable Temp
    If Temp > Min Then Min = Temp
Until end of text file
Output value of Min
```

- 5.2.1 Explain why the specific loop structure that was used to read the text file might cause an error to occur in the program. (2)
- 5.2.2 Briefly mention how you would solve the problem you mentioned in QUESTION 5.2.1 (1)
- 5.2.3 Give TWO reasons why this algorithm would give the incorrect output. (2)

5.3 The owner designed a database table to keep track of guests that have visited the resort and the chalet they were booked into. An extract of this table is shown below:

Customer	Surname	Name	Title	Address	Duration	Chalet	Beds	Internet
1672	Smith	Ian	Mr	1 Main Road Berea Durban	7 - 12 July 2008	12	3	No
4321	Plaatjies	Ursula	Ms	9 Smith Street Walmer PE	1 - 9 March 2008	10	2	Yes
6514	Sokupa	Mtetele	Mr	3 Doe Avenue Hillside CT	9 May - 6 June 2008	12	3	No
8716	Ramnath	Lily	Mrs	5 Left Road Central PE	9 - 18 July 2008	10	2	Yes
7260	De Beer	Sam	Mr	2 Nixon Road Cotswold PE	4 - 11 August 2008	8	1	Yes

- 5.3.1 Give TWO reasons why it is not a good idea to have the whole address stored in one field. (2)
- 5.3.2 The table is clearly not normalised. What is the general aim of normalisation in a database? (2)
- 5.3.3 Show via a diagram how the database can be reorganised by splitting the table into three tables, using principles of normalisation. Clearly indicate the key fields you would use in each of the tables. (7)

**[20]**

### QUESTION 6: OBJECT ORIENTATED PROGRAMMING

An object-orientated program has been written to keep record of all the guests. There are two types of guests, namely *normal guests* and *loyal guests*. Loyal guests are guests who have stayed at the resort on at least three occasions. An extract of the class definitions of these types of guests is shown below. The line numbers are there simply for reference purposes.

1	<b>Type</b>
2	<i>tNormalGuest</i> = class
3	<b>Private</b>
4	<i>Code</i> : Integer;
5	<i>Surname</i> : String;
6	<i>Name</i> : String;
7	<i>Address</i> : String;
8	<i>Balance</i> : Real;
9	<b>Public</b>
10	Constructor Create ; overload;
11	Constructor Create( <i>Code</i> : Integer; <i>Surname</i> , <i>Name</i> , <i>Address</i> : String ; <i>Balance</i> : Real); overload;
12	Procedure Display; virtual ;
13	end;
14	<i>tLoyalGuest</i> = Class( <i>tNormalGuest</i> )
15	<b>Private</b>
16	<i>Points</i> : Integer;
17	<i>DiscountRate</i> : Real;
18	<b>Public</b>
19	Constructor Create;
20	Procedure SetDiscountRate ( <i>Rate</i> : real);
21	Function GetPoints: Integer;
22	Procedure Display; overload;
23	end;

- 6.1 Explain what a *constructor* is in terms of object orientated programming. (2)
- 6.2 Why is it necessary to add the word *overload* in lines 10 and 11? (2)
- 6.3 Explain why the class declaration in line 4 has the identifier *tNormalGuest* in brackets whereas the one in line 2 is does not. (2)
- 6.4 The private section of each class is directly associated with *encapsulation*. What does *encapsulation* refer to in object orientated programming? (2)
- 6.5 There are TWO 'versions' of the constructor for the *tNormalGuest* class in lines 10 and 11. How would the compiler know which constructor to use if either of these were used in the program? (2)

- 6.6 Consider the following declarations in a unit that makes use of the class definitions from the previous page:

```
Var Guest : tGuest;

    Loyal : tLoyalGuest;
```

- 6.6.1 Explain clearly why the following assignment statement will cause a compiler error:

*Loyal := Guest;* (2)

- 6.6.2 Clearly explain what the following line of code does:

*Guest.Create;* (2)

- 6.6.3 Clearly explain why the following line of code might be used:

*Guest.Free;* (2)

- 6.6.4 Explain clearly why the following assignment statement will cause a compiler error:

*Guest.Code:= 1921;* (2)

- 6.6.5 Briefly describe how you could implement the code in QUESTION 6.6.4 without producing a compiler error.

(2)  
**[20]**

**TOTAL SECTION D: 40**

## SECTION E: INTEGRATED SCENARIO

### QUESTION 7

- 7.1 The owner wants to dispose of the old computers instead of just throwing them away. Someone suggested she use a search engine to search for non-profit organisations by searching the .ORG domain.

7.1.1 Explain clearly what a search engine is by referring to how it functions. (4)

7.1.2 What is meant by the term ‘.ORG domain’? (2)

7.1.3 Give THREE reasons why the same search using another search engine might not necessarily produce the same results. (3)

- 7.1.4 Suggest THREE other ways she could refine the search to produce fewer, but more accurate results. (3)
- 7.2 After finding no suitable organisations in the vicinity, the owner decided to try and donate the old equipment to a local disadvantaged school. She asked the local IT guru for some advice as to how to effectively use the equipment in a network at the school. He suggested that a *client-server* network was not suitable and that a *peer-to-peer* network should rather be used.
- 7.2.1 What is the basic difference between a peer-to-peer and a client-server network? (2)
- 7.2.2 Give TWO possible reasons why the IT guru may have suggested that a peer-to-peer network should rather be used as opposed to a client-server network. (2)
- 7.2.3 Give TWO examples of servers that one might find on a network. Refer to the basic function of each one in your answer. (4)
- 7.2.4 Another long term option might be to make use of a *thin-client* network. Briefly explain what this means and why this might be an option in this situation. (3)
- 7.3 The owner has been advised to install anti-spyware software. Briefly explain how anti-spyware software functions. (2)
- 7.4 The owner also wants to ‘update’ the anti-virus software on her PC. She could not find the site on the Internet so a friend e-mailed the latest update contained in a file called *200800901.exe* but her anti-virus software refuses her access to the file.
- 7.4.1 Explain clearly why it is necessary to ‘update’ the anti-virus software by explaining how anti-virus software generally works. (2)
- 7.4.2 Motivate the possible reasons why the anti-virus software rejected the file. (2)
- 7.4.3 Give TWO ways in which she might be able to get around this problem. (2)
- 7.5 There are concerns about security in terms of employees getting access to confidential files on the network.
- Give THREE measures, besides the use of usernames and user passwords for accessing the network, to ensure that that the contents of these files cannot be accessed by unauthorised employees. (3)

- 7.6 The network has now been connected to the Internet using a *broadband* connection. The router can evidentially provide some protection as a *firewall*. In addition the *proxy server* shields local *IP addresses* from the 'outside'.
- 7.6.1 Besides cost, give TWO parameters or factors you would take into account when choosing a broadband connection. (2)
- 7.6.2 What is the main function of a router? (2)
- 7.6.3 What is an IP address? (2)
- 7.6.4 Explain how a proxy server can speed up Internet access. (2)
- 7.6.5 Explain what is meant by the fact that the *proxy server shields local IP addresses from the 'outside'*? (2)
- 7.7 The owner has been doing some research into *VoIP*. She has come across two conflicting articles on the Internet – one claiming that VoIP can only be used in South Africa within an organisation's own network and another saying it can be used legally anywhere in South Africa.
- 7.7.1 Briefly explain what VoIP is. (2)
- 7.7.2 Give FOUR measures she could take to verify the accuracy and reliability of the information given on these websites. (4)

**[50]****TOTAL SECTION E: 50****GRAND TOTAL: 180**