**NOVEMBER EXAMINATIONS 2013  
INFORMATION TECHNOLOGY  
GRADE 11 : PAPER 02 : 2013  
DURATION: 3 HOURS MARKS:** **150**

**INSTRUCTIONS:**

1. ANSWER ALL QUESTIONS.
2. START EACH QUESTION ON A NEWPAGE.

**SECTION A**

**QUESTION ONE: MULTIPLE CHOICE QUESTIONS**

Various options are provided as possible answers to the following questions. Choose

the most appropriate answer and write only the letter (A – D) next to the question

number ( 1.1 – 1.15) in your ANSWER BOOK.

1.1 Which one of the following is **NOT** an example of system software:

A Unix

B Windows Vista

C Office 2007

D DirectX

1.2 A rootkit is ….

A Part of the systems software necessary for all computers to boot-up  
 correctly.

B a backdoor program

C Malicious software that activates when computer system boots-up

D a program that logs key presses

* 1. The encryption protocol using public key encryption for encoding data sent  
      over the internet is known as….

A HTML

B SSL

C TCP/IP

D FTP

1.4 Android is the operating system used on a …

A LAN server

B Desktop computer

C Net book  
 D Smartphone

1.5 Which ONE of the following refers to an encryption technology used to authenticate the identity of the sender of an e-mail message?

A Digital certificate

B Digital divide

C Digital signature

D Digital handshake

* 1. Which ONE of the following is **NOT** associated with green computing?

A Using Energy Star compliant hardware

B The ‘Paperless office’

C Using refillable toner cartridges

D Replacing computer equipment on a four-yearly basis

* 1. Which ONE of the following would least likely affect a computer’s performance

or speed?

A Increasing the number of applications running

B Increasing the amount of RAM installed.

C Using a high quality graphics card with lots of memory

D Installing a DVD drive

1.8 Fragmentation occurs when…

A you partition your hard drive

B the hard drive spins too fast and causes the computer to break into pieces

C files are broken up and scattered all over the screen and memory

D the file system cannot allocate enough contiguous space to store a file

1.9 Personal information is misused when someone else poses as you

electronically. This is known as......

A Data theft

B Phishing

C Identity theft

D Spyware

1.10 Open-source software is...

A Free ONLY if you are a registered company

B Software for which the source code is freely available

C Free for a trial period

D Software that cannot be affected by a virus

1.11 A device driver …

A is NOT required in plug and play.

B is optional in hot swapping.

C has to be used by every device attached to a personal computer.

D is not needed for older technologies.

1.12 A foreign key in a database table is …

A a field which identifies a link to a graphic object.

B an index to a Yes/No field.

C an alternative field that can be used as a primary key.

D a copy of a primary key which exists in another table.

1.13 … are text files containing information about web pages you have visited.

A Web browsers

B Style sheets

C Cookies

D RSS feeds

1.14 … is the name of a well-known and widely used open-source operating

system used on desktop computers.

A Windows Vista

B Linux

C Unix

D Symbian

1.15 Quad pumping is….

A Accessing RAM four times per clock cycle

B Using the CPU four times per clock cycle

C A technique used in pipelining

D A technique used to access four cores on the CPU

**[15]**

**SECTION B**

**QUESTION TWO: SYSTEM TECHNOLOGIES**

* 1. ***The motherboard is a very large circuit board found inside the computer casing:***
     1. Write down THREE main functions of a motherboard. (3)
     2. Write down ONE component that may be found on the motherboard. (1)
     3. Is it necessary for a computer system to have ROM? Motivate your   
        answer by referring to its function. (2)
  2. ***The use of DIMM slots contributes to the modular design of a computer  
     system.***

* + 1. What is a DIMM? (1)
    2. What is the advantage of having DIMM slots? (1)
    3. List **one other** advantage of modular design. (2)
    4. Expansion slots are seldom used these days. Name the **TWO** ways that  
        are currently used to connect most devices to a computer. (2)
  1. ***The faster we can move data to allow components of the computer to communicate with one another, the better. USB (Universal Serial Bus) is the most popular and frequently used connection option.***
     1. Name **ONE** other connection options (besides USB) that have evolved to provide fast data transfer to devices. (1)
     2. Briefly describe the concept of “plug n play”. (2)
  2. ***Storage provides a place where a computer can keep data and instructions permanently. This allows you to create files, save their contents and return to edit them at a later stage.***
     1. Give two differences between RAM (memory) and storage, besides their  
        function. (2)
     2. What does SSD stand for? (1)
     3. With which hardware device would you associate a SATA connector? (1)
     4. What is the advantage of a SSD when compared to a conventional hard

drive. (2)

* 1. Caching is used in a variety of situations in a computer.
     1. What is cache memory? (2)
     2. Explain how web caching works and how it speeds up access to certain web pages. (2)

**[25]**

**QUESTION THREE: COMMUNICATION AND NETWORK TECHNOLOGIES**

* 1. ***A network is a collection of computers and other computing devices that are linked by some sort of communication medium.*** 
     1. List TWO reasons for having a network. (2)
     2. A Network Interface Card (NIC) plays a vital role in a network:
        1. Briefly explain the role performed by the NIC in terms of a network. (2)
        2. Many NICs are “on-board”. Briefly explain what this means and what benefits this provides. (2)
  2. ***Wired media consists of physical cables that connect devices and allow  
      devices to communicate. Two main options used is UTP and Fibre   
      Optic cables.*** 
     1. What are the TWO main advantages of fibre optic cables as opposed  
         to UTP cable. (2)
  3. ***Your school is installing a LAN and the IT technician has decided to use a star topology configuration, a switch and UTP cabling.***
     1. Briefly explain what a LAN is. (1)
     2. What is the difference between a LAN and WLAN? (2)
     3. What is meant by the term topology? (2)
     4. List TWO advantages of using a star topology. (2)
  4. ***Your friend has installed an ADSL line at home.***
     1. What does ADSL stand for? (2)
     2. Briefly describe the function of an ADSL modem. (2)
  5. Your friend accesses the school’s network from home. He has been   
     advised to use a “VPN”. Briefly explain what a “VPN” is. (2)
  6. ***Skype and VoIP are freely downloaded from the internet.***

* + 1. What does VoIP stand for? (1)
    2. Skype allows for video-calling. Explain video-calling. (2)
  1. ***Geotagging refers to the process whereby geographical locations are added as metadata to media such as photographs and videos.***

What type of technology would be used to generate the physical location of where a photograph was taken? (1)

**[25]**

**QUESTION FOUR: DATA & INFORMATION MANAGEMENT**

***4.1. Define the following terms with reference to an electronic database:***

4.1.1. database (2)

4.1.2. field (2)

4.1.3. record (2)

4.1.4. table (2)

***4.2. Your school secretary is currently updating the school database. Study the structure of the following database table and answer the questions that follow:***

|  |  |  |  |
| --- | --- | --- | --- |
| **Field Name** | **Data Type** |  |  |
| Admission\_Number | Text |  |  |
| Surname | Text |  |  |
| Firstname | Text |  |  |
| Date\_of\_Birth | Text |  |  |
| Cell\_number | Text |  |  |

4.2.1. Suggest a field that could be used as a primary key field. Give a reason for your answer. (2)

4.2.2. One of the above fields in the database has been assigned an   
 incorrect data type. Identify the field and suggest a more appropriate   
 data type. (2)

4.3.3. The ***Cell\_Number*** field has been declared as text field. Why is this is the

case? (2)

4.4. Data validation is one of the most important aspects of database design.

4.4.1. List TWO other characteristics of a well-designed database. (2)

4.4.2. Describe the difference between data validity and data integrity. (2)

4.5. List TWO roles of a database administrator. (2)

**[20]**

**QUESTION FIVE: SOLUTION DEVELOPMENT**

|  |
| --- |
| Mr Khuzwayo owns an air-conditioning business which he operates from his garage at home. Mr Khuzwayo is contracted to your school to maintain the air conditioners. Due to the recent extreme hot weather, the demand for air-conditioners from schools and the surrounding community grew unexpectedly. |

***Mr Khuzwayo has temporarily employed two assistants for installing the air conditioners.***

***Their income for the week is determined by multiplying hours worked by an hourly rate. The hours worked and the hourly rate is input via the keyboard.***

***Their deduction is determined as follows:***

* ***a fixed amount of R 18.60 towards an Unemployment Insurance Fund(UIF) and***
* ***13% tax(PAYE) if the gross weekly wage is R 2000 or more and 10% if it is less than a R 2000.***

***Each assistant’s wage is calculated by subtracting the deductions***

5.1. Write an algorithm to determine and output the weekly wage of a single assistant. (8)

5.2. In JAVA programming there are conditional and unconditional looping structures.

5.2.1. Name an example of an unconditional looping structure. (1)

5.2.2. Name an example of a conditional looping structure. (1)

***5.3. Mr Khuzwayo plans to extend his business by selling new air-conditioners in bulk to wholesalers. He has to have some knowledge about the average cost of an air- conditioner.***

Determine the output for the following algorithm using the given data:

**Data: R3500 ; R 4350 ; R4500 ; R6500 , -1, R 2600**

***NB. Use a trace table to show your output.***

Algorithm CalculateAverageCost

Begin

count 🡸 0

total 🡸 0

vat 🡸 0

finalCost 🡸 0

Ask for price of air-conditioner

Read price

While price is not equal -1

count 🡸 count + 1

total 🡸 total + price

Ask for price of air-conditioner

Read price

end While

vat 🡸 total \* 14/100

finalCost 🡸 total + vat

aveCost 🡸 finalCost/count

Display total

Display vat

Display finalCost

Display count

Display aveCost

End

(12)

***1.4. The temporary staff gets paid weekly a rate of R200 per air-conditioner they repair. The software developer has compiled the following algorithm to calculate and display the payment of each staff.***

1 Algorithm TempStaff

2 pay 🡸 0

3 loop for each of the seven days

4 total 🡸 0

5 number 🡸 Input number of air-conditioners repaired

6 total 🡸 total + number

7 pay 🡸 number \* 100

8 endLoop

9 Display the name of employee, number of air-conditioners cleaned and the payment each staff member receives

10 End

***5.4.1. In line 5 the user is required to enter a number which is saved into the integer variable number. The user enters the number -2 (negative two) when prompted to enter the number of air-conditioners repaired.***

a) What effect will this input be on the above algorithm? (2)

b) When the program for the above algorithm is executed the user enters

“**FIVE**” when prompted to enter the number of air-conditioners repaired. What type of error (Syntax/Runtime/Logical) will occur? (2)

c) When the program for the above algorithm is executed, the user enters a

valid number when prompted to enter the number of air-conditioners repaired, and payments are calculated and displayed incorrectly. This is as a result of **TWO** logical errors in the algorithm.

Explain how each of the two logical errors may be corrected in the given

algorithm. In your answer make use of the line numbers to refer to the

statements in the algorithm.

(4)

**[30]**

**QUESTION SIX: INTEGRATED SCENARIO**

***E-learning is rapidly increasing. In order to keep in touch with latest e-learning technologies your school has decided to launch a website. The website includes an online learning management system.***

6.1. Why is it important for your school to have a website? (2)

6.2. Describe TWO requirements for a well-designed website. (2)

***6.3. A website is search-engine friendly when it is displayed high up in search results for relevant keywords.***

6.3.1. What is a search engine? (2)

6.3.2. Why is it important for your school to have a search-engine friendly  
 website? (1)

6.3.3. The library, admin block and the IT centre all have access to the internet.

Your school will need an ISP. What service does an ISP provide? (2)

6.3.4. What piece of hardware will be needed to connect the network to the   
 Internet? (2)

6.3.5. Another essential piece of equipment is a firewall. Name TWO ways in which a

firewall protects your computer/network (2)

***6.4. The admin building, the library and the IT centre are connected via a wireless network***

6.4.1. List TWO advantages of using a wireless network. (2)

6.4.2. List ONE disadvantage of using a wireless network. (1)

6.4.3. Name TWO wireless media that can be used to connect the computers. (2)

***6.5. Your principal is very conscious of green-computing and is always encouraging the staff and learners to make use of email to communicate.***

6.5.1. What is green-computing? (2)

6.5.3. List TWO other ways your school may contribute positively to

green-computing. (2)

***6.5.4. The increased use of computers throughout the world has resulted in the increase of E-waste, such as old computers which contains toxic elements.***

6.5.4.1 Suggest TWO ways in which e-waste can be dealt with more   
 effectively in order to avoid pollution. (2)

6.5.4.2 List TWO rules for email netiquette. (2)

***6.6. The RCL president has created a page on Facebook on behalf of the school. He has entered all his personal details there, including his name, address, phone number, e-mail, ID number and information about his likes, dislikes, hobbies and activities.***

6.6.1. The RCL president has been advised that he runs the risk of falling victim to identity theft.

Describe TWO ways in which an identity thief can use this information. (2)

6.6.2. Name ONE other social networking site. (1)

6.6.2. List ONE advantage of your school having a Facebook page. (1)

6.6.3. List ONE disadvantage of your school having a Facebook page. (1)

***6.7. The staff and learners often have to spend long hours working on their computers.***

6.7.1. Name TWO possible ill-effects that working long hours on a computer

could have on a person's health. (2)

6.7.2. When designing computer hardware ergonomics needs to be considered.  
 Explain what *ergonomics* is. (2) **[35]**

**TOTAL = 150**