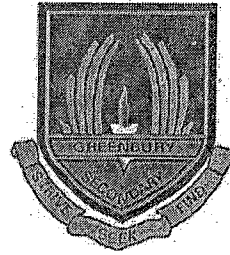




basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA



INFORMATION TECHNOLOGY

GRADE 10 - PAPER 2

Date: 18 – 06 – 2015

DURATION: 2 HOURS

MARKS: 100

EXAMINER: M PADAYACHEE

MODERATOR: S NAIDOO

INSTRUCTIONS:

1. Answer **ALL** Questions.
2. This paper consists of 7 questions and 10 pages including the cover page.
3. Number your answers exactly as the numbering in the question paper.
4. Read **ALL** the questions carefully. Do not do more than is required by the question.
5. Write clear and concise answers.
6. Answer Question 6.1. on the annexure provide with the answer booklet.

QUESTION ONE – { Multiple Choice }

Write down the letter of the alternative that best matches the statement or question above it.

- 1.1. _____ is non-volatile memory that can be used as secondary storage.
- A) SRAM
 - B) DRAM
 - C) Flash memory
 - D) Cache memory
- 1.2. Firewire is ...
- A) becoming the preferred method to connect almost any peripheral to a computer.
 - B) the best data connection to use for capturing a digital video.
 - C) a parallel communication standard which allows devices to transfer data at high speeds.
 - D) software that prevents unauthorised access to a network.
- 1.3. Physical wires on the motherboard that carries a signal from one point to the next.
- A) Integrated Circuits
 - B) Bus
 - C) Registers
 - D) Semiconductors
- 1.4. A software program that records what you type on the keyboard or the mouse clicks you make is called a...
- A) worm
 - B) honeypot
 - C) keylogger
 - D) cookie
- 1.5. This wireless technology requires line of sight for data transfer.
- A) Infrared
 - B) Bluetooth
 - C) Wi-Fi
 - D) 3G

1.6. Which one of the following Boolean expressions is correct?

	<u>EXPRESSION</u>	<u>RESULT</u>
A)	TRUE AND NOT FALSE	FALSE
B)	FALSE AND (TRUE OR NOT FALSE)	TRUE
C)	TRUE OR NOT (TRUE OR NOT FALSE)	FALSE
D)	TRUE AND NOT (TRUE AND FALSE)	TRUE

1.7. Which operating system has been designed specifically to work on a cellphone?

- A) Android
- B) Solaris
- C) Windows Vista
- D) Linux

1.8. A UPS ...

- A) is used to provide limited alternative power in the event of a power failure.
- B) stands for Universal Power Supply.
- C) is a type of connector that is used for keyboards.
- D) is used to connect two networks.

1.9. _____ is a type of control that serves as an 'on/off' or 'toggle' fashion. Selecting it again will clear the option.

- A) Combo box
- B) Check box
- C) Drop down list
- D) Radio button

1.10. A file that is sent via e-mail to its destination is called a/(an)_____.

- A) Cloned
- B) Inbox
- C) Attachment
- D) Carbon Copy

[10]

p.t.o. Page 4 of 10\... QUESTION TWO...

QUESTION TWO

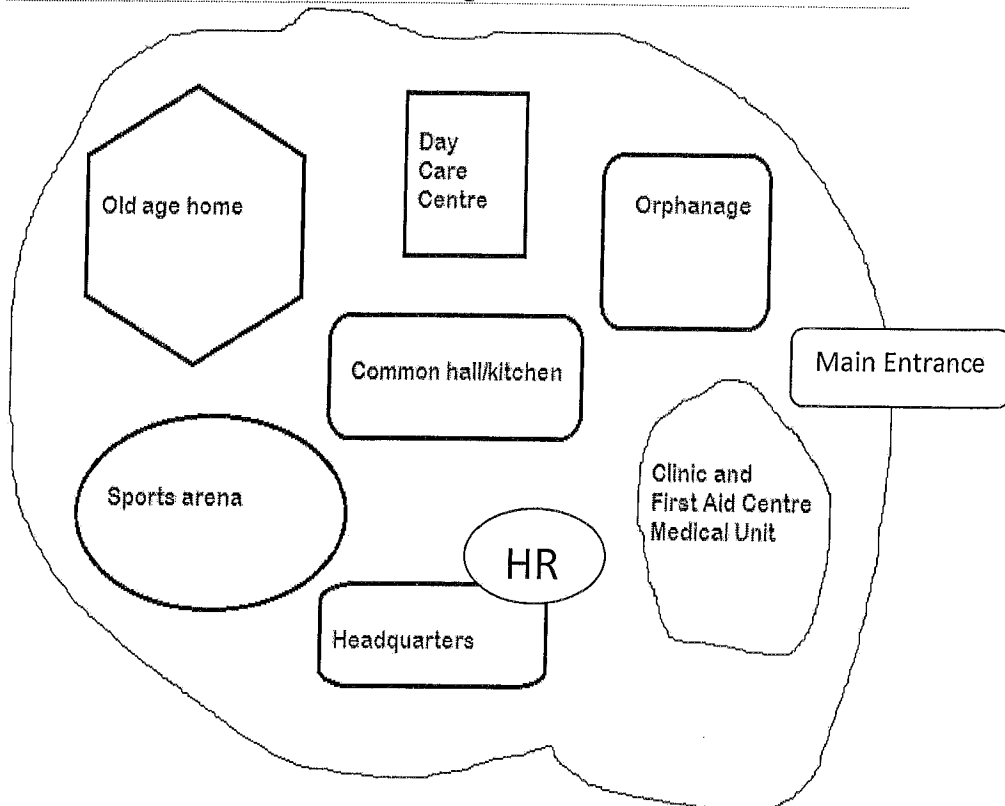
Column A		Column B	
2.1.	The smallest unit of storage in a computer.	A	OSS
2.2.	Provides emergency power during a power failure.	B	Pharming
2.3.	Splitting a HDD into two virtual drives.	C	Bluetooth
2.4.	Magnetic fields in two wires that interfere with each other.	D	EMI
2.5.	Wireless data transfer used over short distances with relatively small files.	E	SATA
2.6.	An electronic signal that interferes with a normal network.	F	Attenuation
2.7.	Software made available with source code to modify and to return without selling.	G	HTTP
2.8.	Cables that connect the HDD controller to the motherboard.	H	Binary Digit
2.9.	The loss of signal strength over a distance.	I	Firewall
2.10.	Software that hides your computers from other's and denies certain programs access to internet.	J	Crosstalk
		K	Partitioning
		L	Formatting
		M	Field
		N	RFID
		O	WiMAX
		P	UPS

[10]

p.t.o. Page 5 QUESTION THREE...

QUESTION THREE

HOC has many different centres that have been set up on a large mass of land that are some distance apart. All the computers in each of the centres are linked to a server in the head office, situated at the entrance of the organization.



Your expertise in I.T. is required to help the administration manager, Mr. Michael Mercy, to solve hardware software and network-related problems.

3.1. The computers they decided to buy has the following specifications. Answer the questions based on the specifications.

i7 4.6GHz 280 OC Gamer
Intel Core i7 4790K, 8mb Cache, 8xCores
MSI Z97 Gaming 7
Overclocked to 4.6GHz
8GB DDR3 1600MHz RAM
128 GB Solid State Drive

- 3.1.1. State the name, speed and manufacturer of the processor. (3)
- 3.1.2. State the size of the RAM. (1)
- 3.2. The performance of the CPU should be optimised to ensure a high performance computer system.
- 3.2.1. Explain the role of the ALU and the registers in the CPU (2)
- 3.2.2. What do you understand by the term “core”? (1)
- 3.3. Mr Mercy had an argument with his boss who said that the size of the HDD directly affected the speed of the computer. Mr Mercy stated that it was the RAM that increased processing speed. ()
- a) Who do you think is correct? Explain how the speed of the computer is affected by the argument you selected as corrected. (3)
- b) Tabulate three differences between RAM and Secondary storage? (3)
- c) How does ROM differ from RAM and Secondary memory? (2)
- 3.4. When Mr Mercy saw the price of the monitors, he suggested that they retain the old CRT monitors.
- 3.4.1. What does CRT stand for? (1)
- 3.4.2. State one health risk when using CRT screens. (1) ()
- 3.4.3. State the difference between LCD screens and CRT's. (2)
- 3.4.4. What does LCD and LED stand for? (2)
- 3.5. Mr Mercy also suggests that they buy a printer for the centre, to handle most of the office work.
- a) State two types of printers that they may possibly encounter while shopping. (2)
- b) Discuss each type and conclude which is the best one for this organisation. (3)

QUESTION FOUR

4.1. Mr Mercy wants to link the ten computers at headquarters which has five different offices. They chose to go with Ethernet LAN standard in a star topology using fibre optic cables.

4.1.1. Briefly describe the terms below:

- a) WAN (1)
- b) Topology (1)

4.1.2. State two advantages of having a network of computers to the organisation. (2)

4.1.3. Explain to Mr Mercy why fibre optic cables are not feasible in this situation. State two reasons. (2)

4.1.4. Would you recommend wireless networking(WLAN). Give two reasons for your answer. (3)

4.1.5. There are two possible network types that may be used to establish the LAN environment. They are classified into client-server and peer to peer. Tabulate two differences between the two types. (4)

4.2. Mr Mercy wants the centre to have internet. State two reasons why this centre would need internet access? (2)

4.3. Mr Mercy is not too familiar with a lot of the computer and internet jargon. Explain the terms below to the best of your knowledge.

- 4.3.1. Weblogs (1)
- 4.3.2. Bandwidth (1)
- 4.3.3. Protocol (1)

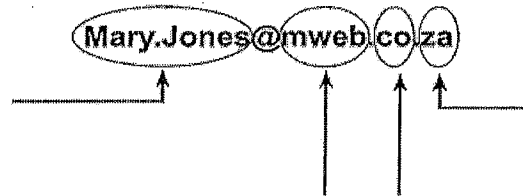
P.t.o. Page 8... QUESTION FIVE

[20]

QUESTION FIVE - INTEGRATED SCENARIO

Mr Mercy wants to create an interactive web site where visitors can view all activities in the entire organisation online during the day.

- 5.1. Mr Mercy has heard about VOIP and thinks this is something he could use as it is free. Explain the meaning of VOIP to him. (2)
- 5.2. State two tasks of an ISP. (2)
- 5.3. State the difference between a URL and an IP address. Give one example of each. (4)
- 5.4. Identify the different parts of the e-mail address below. (4)



- 5.5. What is the difference between SPAM and ADWARE. (2)
- 5.6. What is the distinct difference between a website and a webpage. (2)
- 5.7. Mr Mercy wants to connect cameras to his computer. What port is required for this connection. (1)
- 5.8. What is a search engine? State two examples of search engines. (3)

[20]

P.t.o. Page 9...QUESTION SIX...\

QUESTION SIX – Programming and Algorithms

Study the algorithm below and answer the questions based on it.

1. Start
2. $C \leftarrow 1$
3. $F \leftarrow 0$
4. Input a whole number(N).
5. if $(N \% C = 0)$ then let $F \leftarrow F+C$
6. $C \leftarrow C+1$
7. if $(C \leq N)$ then go to line number 5
8. if $(F = 2*N)$ print (“_____”) else print(“_____”)
9. END.

- 6.1. Complete the trace table for the input value **6** in the annexure 1. (6)
- 6.2. Fill in the blanks for the missing outputs in line 8. (2)
- 6.3. Draw the corresponding flowchart for the algorithm above. (8)
- 6.4. What would be the output for the input values: (3)
 - a) 9
 - b) 28
 - c) 14
- 6.5. State the purpose of the flowchart. (2)

[21]

QUESTION SEVEN

7.1. Convert the numbers to the specified bases:

7.1.1. 104 to B_{16} (2)

7.1.2. 1000111_2 to B_8 (2)

7.2. Compute the calculations show all working:

7.2.1. $5463_8 + 267_8$ (2)

7.2.2. $1000_5 - 434_5$ (2)

7.3. Find the value of x in each equation shown below: (Show all working)

7.3.1. $1011101_2 = 11x11_4$ (2)

7.3.2. $143_x = 80$ (3)

[13]

GRAND TOTAL = 120/12*10



Paper 2 – Theory - MEMORANDUM
JUNE 2015

Section A

Question 1: MULTIPLE-CHOICE QUESTIONS

- 1.1 C ✓
- 1.2 B ✓
- 1.3 A ✓
- 1.4 B ✓
- 1.5 A ✓
- 1.6 D ✓
- 1.7 B ✓
- 1.8 D ✓
- 1.9 A ✓
- 1.10 C ✓

Question 2: MATCHING COLUMNS

- 2.1 M ✓
- 2.2 H ✓
- 2.3 I ✓
- 2.4 C ✓
- 2.5 Q ✓
- 2.6 J ✓
- 2.7 E ✓
- 2.8 N ✓
- 2.9 F ✓
- 2.10 P ✓

Question 3: TRUE or FALSE

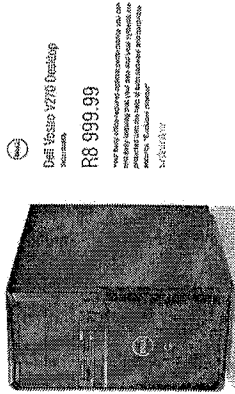
- 3.1 True ✓
- 3.2 False, In Scratch a variable can sometimes be accessed by all the sprites. ✓
- 3.3 False, A driver is the little program that allows a computer to communicate with an external device. ✓
- 3.4 True ✓
- 3.5 False, Data mining is the processing and analysis of large amounts of data looking for valuable information. ✓

[5]

Section B – System Technologies

Question 4:

The school has bought the following computer to be used for the administration at athletics meetings.



[10]

- 4.1 Comment on the suitability of this computer for use next to the athletics field. (2)
Not suitable ✓
Not very mobile – separate screen, mouse & keyboard with lots of cable, needs to be plugged into a power source ✓
- 4.2 When using this computer, will the user be using a command line interface or a graphical user interface? Give a reason based on the information given above for your answer. (2)
Graphical User Interface ✓
Windows 8 is a GUI style OS ✓
- 4.3 Write down the size of the hard disk in this computer. (1)
1 TB ✓

[10]

- 4.4. A kilobyte contains 1024 bytes. Briefly explain why this is not 1 000 bytes. (2)
 Data is stored as binary numbers, works in powers of 2, not possible to get to 1 000, 1024 is the closest ✓
- 4.5 Explain the difference between a bit and a byte. (2)
 Bit = binary value (either 0 or 1) ✓
 1 Byte = 8 bits ✓ a byte represents single character
- 4.6 Can this computer be connected to a network without any further hardware being added to it? Substantiate your answer by referring to the specifications shown on the previous page. (2)
 Yes ✓
 WLAN 802.11 and Ethernet connectivity ✓
- 4.7 This computer comes with Windows 8 as its operating system. (1)
 4.7.1 What type of software is an operating system classified as? (1)
 System software ✓
- 4.7.2 Name one a possible open source operating system that could be installed on a desktop computer. (1)
 Linux ✓
- 4.7.3 Name TWO possible disadvantages of using open source software. (2)
 No one to hold responsible for problems with the software ✓
 Risk of poor support ✓
 Higher skills needed to use this kind of software to its full potential
 Various versions of the same software can exist because people are able to adapt the software
- 4.8 The teacher in charge of athletics at the school was busy entering the data for an upcoming athletics meeting when there was a power failure. She was furious to discover that the file contained the original content from when she first started working and not her latest work when the power was restored. Explain to her how and why this happened. (4)
 Data files are loaded into the RAM to be worked on ✓
 RAM is volatile – data is lost when power lost ✓
 Need to press save ✓ to save the changes to the storage medium permanently ✓

[19]

Section C – Communications & Network Technologies
Question 5:

The computer labs at your school have computers that are all linked using a wired LAN in a server-based network. At home you have three computers linked together in a Peer-to-Peer network in a WLAN.

- 5.1 What do each of the following acronyms stand for? (2)
 5.1.1 WLAN
 Wireless LAN (Local Area Network) ✓
- 5.1.2 LAN
 Local area network ✓
- 5.2 The LAN at school used UTP cable. (1)
 5.2.1 What does UTP stand for? (1)
 Unshielded Twisted Pair ✓
- 5.2.2 Briefly describe the structure of UTP cable. (2)
 Pairs of cable ✓ twisted around each other ✓
- 5.3 UTP cable has several weaknesses. Explain what each of the following means and what their implications are for the successful transfer of data. (2)
 5.3.1 EMI
 Electromagnetic interference – caused by electrical installations/heavy machinery ✓ disrupts or corrupts data in the cable ✓
- 5.3.2 Attenuation
 Weakening of the data signal ✓ over distance ✓
- 5.4 It would not be a good idea to install a peer-to-peer network in a school that has more than 100 networked work stations. (2)
 5.4.1 Explain in broad outlines how a peer-to-peer network differs from a server-based network. (3)
 All computers equal ✓ (no server)
 All provide and receive network services ✓
 Locally set security per computer ✓
 Computers all have to have relatively high specifications
- 5.4.2 List three advantages that a peer-to-peer network has for use in a home over a server-based network. (3)
 Cheaper software as you do not need special server software ✓
 Can be set up relatively easily without calling in the experts ✓
 Machines can easily run as stand-alone machines ✓
 Does not need a specialist network administrator

[15]

Question 6:

The PTSA at our school is very active and run a carnival as an annual fund-raising event. They need to set up a special e-mail account to deal with the carnival communications.

- 6.1 A decision needs to be made as to what ISP to use to set up an Internet account. List three criteria you could use to decide which ISP to use besides cost. (3)
- Type of connectivity on offer ✓
Are they local ✓
- What kind of technical support do they provide ✓
Reputation for service delivery
- 6.2 It is possible to use a free web-based e-mail service such as Hotmail or Gmail that is accessible from any place that has Internet access. (2)
- List two disadvantages of using a web-based e-mail service as opposed to an ISP based e-mail account. (2)
- Does not look very professional to have such a generic email ✓
Need to be connected to the Internet to read your mail ✓
- 6.3 The PTSA was referred to the following URL for the regulations dealing with public events. (2)
- <http://www.capetown.org.za/uploads/EventRulesandRegulations2013.pdf>
- 6.3.1 What significance does the .org.za part of the URL have? (2)
- Shows that this is an organization (org) – usually non-profit ✓
Resides in South Africa (za) ✓
- 6.3.2 The document referred to is a PDF document. What is a PDF document and what software would you need to open this file? (2)
- A document that can be read irrespective of which application it was created in ✓
Acrobat reader ✓
- 6.4 One of the downsides of being connected to the Internet and using e-mail, besides viruses, is that of spam, phishing and spyware. (1)
- 6.4.1 What is spam? (1)
- Unwanted email messages – usually advertising ✓
- 6.4.2 Give two typical symptoms that might alert you to the presence of spyware on your computer. (2)
- Unusual Internet activity when you are not surfing the net ✓
Slower performance ✓

[12]

Section D – Data and Information Management

Question 7:

- 7.1 Explain how a binary number differs from the normal decimal number system we use every day. (2)
- Base 2 ✓
Only 2 values – 0 and 1 to make up the more complex numbers ✓
- 7.2 Convert the following binary number to a decimal number showing all the steps required for the conversion: 10001011₂ (4)
- $$1 \times 2^7 + 0 \times 2^6 + 0 \times 2^5 + 0 \times 2^4 + 1 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 1 \times 2^0 \quad \checkmark$$
- $$= 1 \times 128 + 0 \times 64 + 0 \times 32 + 0 \times 16 + 1 \times 8 + 0 \times 4 + 1 \times 2 + 1 \times 1 \quad \checkmark$$
- $$= 128 + 8 + 2 + 1 \quad \checkmark$$
- $$= 139_{10} \quad \checkmark$$
- 7.3 Computers are also able to work with hexadecimal numbers. Convert the following decimal number into its hexadecimal equivalent showing all the steps required to do the conversion: 4395₁₀ (4)
- $$4395 \div 16 = 274 \text{ remainder } 11 \text{ (B)} \quad \checkmark \text{ (successive CORRECT divisions by 16)}$$
- $$274 \div 16 = 17 \text{ remainder } 2 \text{ (Determines successive remainders correctly)}$$
- $$17 \div 16 = 1 \text{ remainder } 1$$
- $$1 \div 16 = 0 \text{ remainder } 1$$
- Answer = 112B₁₆ ✓ (correct answer) ✓ (shows base 16)

[10]

Section E – Solution Development

Question 8:

8.1 In many sporting events, the toss of a coin determines the order of the events. The coin will be tossed a number of times. Each time the coin lands a 0 is recorded if heads is uppermost and a 1 is recorded if tails is uppermost. Write a pseudo code algorithm for a program that will keep track of the number of times that the coin is tossed and to calculate and output the percentage of times that heads is uppermost.

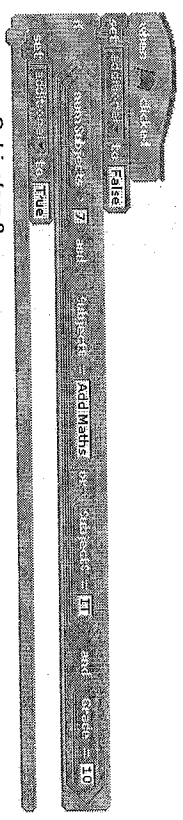


(6)

```

counter ← 0
numHeads ← 0 ✓
while tossing true ✓
  if heads showing ✓ (End if must be in correct place)
    numHeads + 1 ✓
  End if
  Counter + 1 ✓
End while (End while must be in the correct place)
percentage ← numheads ÷ counter x 100 ✓
  
```

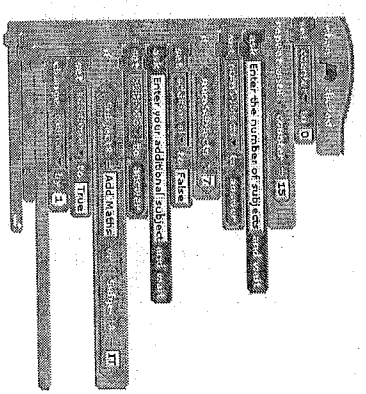
8.2 Look at the section of Scratch code and evaluate what the value in the *additional* variable will be if the information input is as follows:



numSubjects = 8
 Subject8 = Business Studies
 Grade = 10
 False ✓ ✓

(2)

8.3 Draw a flowchart to represent the following section of Scratch code:



(14)
 [20]

Section F – Social & Ethical Issues

Question 9:

Scenario:

- 9.1 List three ways that using the Internet will improve the life of your family at home. ✓
Internet banking ✓ (3)
Research for homework ✓
Online bookings etc... ✓
9.2 Your sister reads her email and is overjoyed to find out that she has won the UK lottery of one million pounds. Explain why this email is not true and why she was sent it in the first place. ✓
Cannot win if you did not enter ✓ (2)
In order to scam money from her – there will be fees to pay at some point ✓
9.3 Explain the difference between a pop up and a cookie. ✓ (2)
Pop-up can be advertising or it can be an active part of a website required for you to enter info – can be harmful ✓
Cookie is a small text file on your computer that stores certain browsing info ✓
9.4 You are experiencing blurry eyes and back ache from using your computer. Give three reasons why you could be experiencing such problems. ✓ (3)
Bad posture ✓
Poor screen quality ✓
Too long without a rest and a stretch ✓
Poor lighting in the room ✓
9.5 Your mother has said that your room is untidy and wants to throw your old computer in the dustbin, printer and all. Give her two reasons why this is not environmentally friendly. ✓ (2)
Plastics and other materials are not bio-degradable ✓
Contains harmful substances that can poison the environment ✓
9.6 Digital Divide
9.6.1 What is the digital divide? (2)
Difference between those that have access ✓ to technology and those who don't ✓
9.6.2 Give two ways in which the digital divide can be alleviated in South Africa. (2)
Put computers into community centres ✓, continued computer education programs for free in all areas ✓ (Any other reasonable proposals)

9.6.3 Would it be possible to use Social Networking as a means to educate South Africans who do not have access to schools? Justify your answer. (3)

No ✓

Not everybody has access to computers and the Internet ✓ and thus the very people you want to educate will not have access to social media ✓
(or a Yes argument that is backed up – e.g. through the use of mobile phones etc)

[19]

PAPER TOTAL = 120 (Converted to 150)

