education

Department:
Education
PROVINCE OF KWAZULU-NATAL

INFORMATION TECHNOLOGY PAPER 2

GRADE 11

JUNE 2018 EXAMINATIONS

DATE OF EXAMINATION: 06 JUNE 2018

MARKS: 120 **TIME: 2½ hours**

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This question paper consists of 11 pages including this cover page.

INSTRUCTIONS:

Read the following instructions carefully before answering the questions.

1. This paper consists of ***SIX*** questions:

Question 1:	Multiple-choice questions	(10)
Question 2:	Matching Concepts	(5)
Question 3:	System Technologies - Hardware and Software	(27)
Question 4:	Communication and Network Technologies	(30)
Question 5:	Solution Development	(26)
: Question 6:	Integrated Scenario	(22)
		[120]

2. Answer ALL the questions.
3. Read ALL the questions carefully before answering.
4. Number the answers correctly according to the numbering system used in this question paper.
5. Write neatly and legibly.
6. Write on both sides of the answer booklet.

QUESTION 1 : Multiple Choice

Various options are given 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,*** for ***example 1.11 B.***

1.1 Socket in which you connect the CPU to the motherboard is called …

a) SATA connectors
b) DIMM slots
c) ZIF socket
d) VGA (1)

1.2 The protocol that defines how web pages and their content are transferred across the Web is known as …

a) FTP
b) SMTP
c) HTTP
d) VOIP (1)

1.3 POST refers to …

a) Power On Self-Test
b) Power On System Test
c) Post Online System Task
d) None of the above (1)

1.4 Currently the fastest connection technology which can support multiple devices.

a) Firewire
b) Thunderbolt
c) USB
d) Expansion slots (1)

1.5 The ability of a device to automatically configure its drivers and work immediately after it has been connected to the computer system.

a) USB
b) Drivers
c) Plug and Play
d) Hot swappable (1)

1.6 A dedicated communication channel whereby a device can request the immediate attention of the CPU in order to process a given function.

a) Bus
b) Router
c) Wireless hotspot
d) Hardware interrupt (1)

1.7 A small quartz crystal that used to regulate activity on the motherboard.

a) Bus
b) System clock
c) Point to point connection
d) Clock multiplication (1)

1.8 A wireless technology that allows devices such as mice, printers and cell phones to communicate over relatively short distance, typically less than 10 m.

a) Blutooth
b) Wifi
c) WiMax
d) File transfer protocol

(1)

1.9 internet based alternative to text messaging, in which multimedia content can be exchanged in real time.

a) SMS
b) MMS
c) Instant messaging
d) Social media

1.10 An audio blog broadcast live online made available via download or streaming.

a) Vlog
b) Youtube
c) Podcast
d) VLC media player (1)

TOTAL QUESTION 1: [10]

QUESTION 2: Matching Concepts

Choose a term/concept from **COLUMN B** that matches a description in **COLUMN A.** Write only the letter (A–G) next to the question number (2.1–2.5) in the **answer booklet** ***e.g.*** *2.6 H.*

COLUMN A		COLUMN B
2.1	Instructions in binary format (0 and 1's) that the CPU can directly execute	**A.** Virtualisation
2.2	A part of a program that runs independently but simultaneously with other parts of the same program	**B.** API
2.3	Method used to prevent a slow medium from bottlenecking (slowing down) a faster medium.	**C.** Interpreters
2.4	An interface between the operating system and the programming language or end user	**D.** Machine code
2.5	Creating an entity that only exists in software	**E.** Trojan
		F. Thread
		G. Caching

TOTAL QUESTION 2: [5]

SCENARIO

The winter Olympic games are being held in South Korea. You and your I.T. class have been invited to serve as an I.T. assistance team for the duration of the Winter Games. Computer systems and resources have been provided for your team. There are a host of problems with the systems at the games (hardware and software) that your team has to help troubleshoot and solve.

QUESTION 3 : System Technologies - Hardware and Software

3.1 List ***THREE*** main functions of the motherboard. (3)

3.2 Explain what is meant by the term ***modular design.*** (2)

3.3 ***Screens need to be connected in different parts of the stadium so broadcasters can view all codes of sports at once.***

Name the external hardware connection that is used for
A) standard definition graphics
B) high definition graphics (2)

3.4 ***High resolution video files are being modified on the computer systems provided. As a result, the performance of the computer seems to be very slow.***

3.4.1 List the ***FOUR*** steps of the *machine cycle* the CPU uses to carry out an instruction. (4)

3.4.2 Discuss the term *GPU* (2)

3.4.3 Briefly explain ***TWO*** benefits of having a *GPU.* (2)

3.5 ***The operating system makes it possible for a computer to process many tasks at the same time.***

3.5.1 Describe ***TWO*** functions of the *operating system.* (2)

3.5.2 Discuss ***TWO*** processing techniques. (4)

3.6 While looking into the performance problems mentioned above, you notice the computer systems each have an **8GB RAM** added inside but the computer is only showing **4GB of RAM** available for use.

3.6.1 Explain why RAM essential for the running of a computer system. (2)

3.6.2 Tabulate ***ONE*** difference between RAM and ROM. (2)

3.6.3 You have realised there are no malfunctions with the new memory and the memory has been correctly installed.
Explain what the ***problem*** could be and provide a ***solution***. (2)

TOTAL QUESTION 3: [27]

QUESTION 4: Communication And Network Technologies

South Africans would need a way of communicating with the contestants and to find out the results from the games in real time.

4.1 Networks will play a major role in communications.

4.1.1 Give ***TWO*** aims or benefits of *networks*. (2)

4.1.2 List ***TWO*** advantages of using fibre optic cables as opposed to UTP cabling in a network. (2)

4.1.3 What is the difference between a *LAN* and a *WLAN*? (2)

4.2 A modem is a key component in data communications.

4.2.1 Briefly explain the function of a *modem*. (2)

4.2.2 Indicate the type of network that would make use of a *3G modem*? (1)

4.3 ***The contestants use the WiFi hotspot in their hotel rooms to connect to the Internet.***

Briefly explain what a *hotspot* is. (2)

4.4 Family members of contestants from South Africa want to use Skype for video calling.

4.4.1 Identify the *protocol* that Skype uses. (1)

4.4.2 Give ***TWO*** advantages of using Skype. (2)

4.4.3 Describe ***TWO*** challenges of using Skype in South Africa. (2)

4.5 Mobile technology is the most convenient way to communicate and access the Internet.

4.5.1 Give ***TWO*** practical ways to reduce the power consumed by the display on a mobile device. (2)

4.5.2 Explain why an increased degree of *multitasking* can reduce the battery life of a mobile device. (2)

4.5.3 How would you determine if an URL belongs to a *mobile site*? (1)

4.6 Podcasts can be used to keep people updated with the latest results from the Olympic games.

Explain what a *podcast* is. (2)

4.7 The contestants would like to do some site seeing when they have some free time. They use GPS devices to help them find their way around South Korea.

4.7.1 Briefly explain how a *GPS device* can pinpoint your physical location. (2)

4.7.2 Name ***TWO*** apps on mobile devices that use GPS technology. (2)

4.8 Instant messaging is often used as an alternative to SMS messages.

4.8.1 What are ***TWO*** benefits of using *Instant Messaging*. (2)

4.8.2 Give ***ONE*** example of an Instant Messaging application. (1)

QUESTION 4 TOTAL: [30]

QUESTION 5: Solution Development

The software department of the Winter Games has now approached your team to help with software bugs. The software they are developing is expected to record athletes' names', scores' and provide highest average scores based on this information. Thereafter, they have to assign Olympic medals based on certain criteria.

Consider the algorithm below and answer the questions that follow:

```
1.  HighestAvg ←10
2.  Input Name
3.  While Name not equal to 'DONE'
    Begin while loop
4.              Total ← HighestAvg
5.              Loop from 1 to 3
                Begin loop
6.                      Input Score
7.                      Total← Total + Score
                End loop
8.              Avg← Total/3
9.              If Avg > HighestAvg
10.                     HighestAvg← Avg
11.                     HighestName← Name
    End While loop
12. Input Name
13. Output Highest
14. Output HighestName
```

5.1 ***Line 1*** and ***Line 2*** show variables that have been assigned initial values.

Are these values correct? Motivate your answer with reference to ***Line 1*** and ***Line 2*** (3)

5.2 *Besides* ***Lines 1 and 2*** there is another error with the pseudocode above.

Write the line number and explain how to correct the error. (2)

5.3 What type of error is explained in question 5.3? (1)

5.4 ***ITC*** is the principle a while loop must follow.

Identify the line numbers, in the above algorithm, that correspond to this principle.

Write down the line number and indicate, Initialise, Test and Change. (6)

5.5 Line 3 - Write out Delphi code to make sure, regardless of whether the user inputs in uppercase or lowercase, the loop terminates successfully. (2)

5.6 ***An athlete will receive a gold medal if he/she has the highest average score, a silver medal for the 2nd highest average score and a bronze medal for the 3rd highest average score.***

Write a pseudocode that will sort the average scores calculated in the previous algorithm in ascending order. The average scores are now stored in an Array called ***AverageArray***. For the first 3 positions of the array display the average score and a message indicating which medal was achieved. (12)

QUESTION 5 TOTAL: [26]

QUESTION 6: Integrated Scenario

Your team has been informed that a network connection will be provided within the winter games stadium facilities. Athletes as well as spectators will be able to access this connection at LANs that have been set up at each facility. Your team has been asked to attend to certain problems that have occurred when making use of this network. Answer the questions that follow.

6.1 Explain why Policies, Restrictions and Firewalls are needed to maintain a network (6)

6.2 Identify ***TWO*** items that are usually included in an AUP (2)

6.3 Give an example of how fans can use ICT services to influence / become involved in the winter games. (1)

6.4 The term ***'Globalisation'*** can be used when taking into consideration that e-communication will be made use of during the winter games.

Explain the term ***'Globalisation'*** in terms of e- communication. (2)

6.5 A secure connection will be needed for communication over the internet.

6.5.1 Explain the term ***protocol.*** (2)

6.5.2 What protocol will be used to achieve a secure internet connection? (1)

6.6 ***There are potential malware threats due to data being sent over a network.***

Name ***TWO*** types of malware threats and briefly explain each one, (4)

6.7 ***Social networking site will allow athletes as well as spectators to share their experiences at the winter games. It can be said that social networking sites are prone to social engineering.***

6.7.1 Discuss the term social engineering. (2)

6.7.2 Briefly explain ***TWO*** reasons why social networking sites are prone to *social engineering*. (2)

QUESTION 6 TOTAL: [22]

TOTAL: 120