



education

Department:
Education
PROVINCE OF KWAZULU-NATAL

PINETOWN DISTRICT

INFORMATION TECHNOLOGY P2

GRADE 11

JUNE 2019

MARKS: 100

TIME : 2 ½ hours

EXAMINERS: N Brijlal, Ms S Naicker, Ms EC Moodley

MODERATOR: Ms S Bramdaw

This question paper consists of 10 pages.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FIVE sections:

Question 1:	Multiple Choice & Terms	[15]
Question 2:	System Technologies	[20]
Question 3:	Networks & Communication Technologies	[20]
Question 4:	Solution Development	[24]
Question 5:	Integrated Scenario	[21]

2. Answer ALL the questions.

3. Read ALL the questions carefully.

4. The mark allocation generally gives an indication of the number of facts required in your answer.

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

6. Write neatly and legibly.

7. Rule off after each question.

SECTION C : COMMUNICATION AND NETWORK TECHNOLOGIES**QUESTION 3**

You have been tasked to set up a small network in the Science Lab. Whilst setting up the network, some questions emerged :

- 3.1 *A star topology is used to connect the computers.*
- 3.1.1 Explain the term **Topology** with reference to a computer network. (1)
- 3.1.2 Discuss any TWO advantages of using a **star topology**. (2)
- 3.1.3 Differentiate between a **Router** and a **Switch**. (2)
- 3.2 *Wired media consists of physical cables that connect devices and allow them to communicate.*
- 3.2.1 List TWO advantages of using fibre optic cables as opposed to UTP cables in a network. (2)
- 3.3 *WiFi is a method of connecting to an existing network wirelessly.*
- 3.3.1 Why are access points necessary in a wireless network? (2)
- 3.3.2 Discuss TWO physical limitations with regards to a Wireless LAN. (2)
- 3.4 *A wireless access point has been installed in the computer lab so that the learners can access and share the school's ADSL connection.*
- 3.4.1 VoIP will be used for video calls over the internet. Briefly discuss TWO possible problems that could be experienced when using VoIP. (2)
- 3.5 *Smart phones have become very popular in recent times.*
- 3.5.1 Explain why many people prefer the option of buying a smart phone to buying a laptop. (2)
- 3.6 *The operating system on mobile devices are designed to keep the device on and working at all times.*
- 3.6.1 Give TWO practical ways to reduce the amount of power consumed by the display on mobile devices. (2)
- 3.6.2 How does WiFi affect the power consumption on a phone? (1)
- 3.7 *The learners need to order pizza for their class. You were advised to download the **Debonair's** app on your phone.* (2)

- 3.7.1 Provide TWO reasons why well-known websites have developed apps to access the web-based data for mobile phones. (2)

TOTAL SECTION C: 20

SECTION D : SOFTWARE DEVELOPMENT

QUESTION 4

- 4.1 Define the term *Algorithm* and state why algorithms are universal. (2)
- 4.2 Text files are used to capture and store information.
- 4.2.1 Why is a WHILE loop used when reading from a file? (2)
- 4.2.2 Explain the following delphi commands when using text files:
- a) Reset (1)
 - b) Append (1)
 - c) Rewrite (2)
 - d) Assignfile (2)
- 4.3 An application to help you generate simple passwords is needed. A section of the program will have to remove vowels from the user’s full name. It is suggested that you create a parameterised function which receives the full name as a parameter and returns the full name **WITHOUT** vowels, instead of using a procedure.
- 4.3.1 Differentiate between a function and a procedure. (4)
- 4.3.2 Design an algorithm to **remove** the vowels from the full name. (6)
- 4.4 An array called **arrScores** is populated with the following five values:

8	5	3	12	2
[1]	[2]	[3]	[4]	[5]

Another array called **arrTemp** is an empty array that can store five values. The algorithm below extracts specific data from **arrScores** and stores the extracted data in **arrTemp**.

```

Loop x from 1 to length(arrScores)
    If arrScores[x] modulus 4 = 0
        arrTemp[x] = arrScores[x]
    
```

Redraw the trace table below in your answer book.

x	arrScores[x]	arrScores modulus 4 = 0?	arrTemp[x]

Complete the trace table above to show the contents of array **arrTemp**. (4)

TOTAL SECTION E : [24]

5.

SECTION E : INTEGRATED SCENARIO**QUESTION 5**

The School computer lab will have internet facilities available for students to use, when doing research for projects, assignments and homework.

- 5.1 Being online exposes one to many threats, including malware
- 5.1.1 Spyware is a form of malware. What exactly is *spyware*? (1)
- 5.1.2 State TWO measures one should take to prevent threats from malware (2)
- 5.1.3 State TWO precautions you should adopt when you are *online* (2)
- 5.2 Some documents, pictures and videos will need to be compressed.
- 5.2.1 Explain why it is necessary to *compress files* (1)
- 5.2.3 Differentiate between **Lossy compression** and **Lossless compression**. (2)
- 5.3 You have been investigating how to use social media and you are being warned about social engineering tricks.
- 5.3.1 What is social engineering? (1)
- 5.3.2 Name and explain ONE example of social engineering. (2)
- 5.4 One way to protect data, during transmission, is encryption
- 5.4.1 What is encryption? (1)
- 5.4.2 Explain how encryption can protect data, during transmission (2)
- 5.4.3 What encryption protocol is used for sensitive data transmission over the Internet? (1)
- 5.4.4 Explain how you would be able to identify a website that uses this encryption protocol? (1)
- 5.5 E-mail remains a popular means of communication both on mobile devices and PCs.
- 5.5.1 State TWO other forms of mobile communication (2)
- 5.5.2 Differentiate between **notifications** and **push technology** in terms of the way e-mail is handled on a mobile device. (2)
- 5.5.3 Which protocol is used to download e-mail? (1)

TOTAL SECTION F : [21]

GRAND TOTAL 100

SECTION A : SHORT QUESTIONS**QUESTION 1**

1.1 **Various options are provided as possible answers to the following questions. Write down 1.1.1 – 1.1.5 and next to it the LETTER of the correct alternative.**

1.1.1 Which ONE of the following is an example of system software?

- A) Media player
- B) Game
- C) Driver
- D) Web browser

(1)

1.1.2 The name of an online digital currency

- A) BitDefender
- B) BitCoin
- C) BitTorrent
- D) BitMoney

(1)

1.1.3 Which technique allows the processor of a computer system to run at a speed faster than the motherboard normally supports?

- A) Pipelining
- B) Cache
- C) Hyper threading
- D) Clock Multiplication

(1)

1.1.4 The process whereby the existing contents of firmware is wiped and replaced with an updated version.

- A) Caching
- B) Flashing the ROM
- C) Clock Multiplication
- D) Pipelining

(1)

- 1.1.5 A network that allows users to log into a network from a remote location via the network with the same privacy and security as a LAN.
- A) Virtual memory
 - B) Virtual private network
 - C) Local Area Network
 - D) Wireless Local Area Network (1)
- 1.1.6 A set of electrical paths etched on a motherboard and used to transfer data between different parts.
- A) BIOS
 - B) CPU
 - C) BUS
 - D) RAM (1)
- 1.1.7 The ability of an operating system to allow *programs* to split themselves into multiple tasks/threads that can be run at the same time.
- A) Multiprocessing
 - B) Multitasking
 - C) Multithreading (1)
 - D) Multiprogrammin
- 1.1.8 A device that converts the data or signal from a computer to a format that can be transmitted over a communication channel.
- A) Wifi
 - B) Switch
 - C) Modem
 - D) Router (1)
- 1.1.9 Instructions in binary format (0's and 1's) that the CPU can directly execute.
- A) Interpreter
 - B) Machine Code
 - C) Compiler
 - D) Delphi Code (1)

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

A) Drivers

B) USB

C) Hot swappable

D) Plug and play

(1)

[10]

1.2 Give ONE word/term for each of the following descriptions. Write only the word/ term next to the question number.

1.2.1 A design tool used by a software developer to determine the output of an algorithm.

(1)

1.2.2 Software that compiles and executes one line of programming code at a time.

(1)

1.2.3 Software that is stored on a ROM chip and used to control the basic operation of a device.

(1)

1.2.4 A set of rules for encoding and decoding data for transmission across a network or the Internet.

(1)

1.2.5 The type of compression that sacrifices insignificant/redundant portions of the data.

(1)

TOTAL [5]

TOTAL SECTION A: 15

SECTION B : SYSTEM TECHNOLOGIES

QUESTION 2

The principal and SGB of your school have decided to upgrade the computer facilities at school .Your assistance as an IT student is required in making decisions and recommendations.

- 2.1 You suggest that the admin computer be upgraded, to improve it’s performance.
 - 2.1.1 Explain what a computer *upgrade* is. (1)
 - 2.1.2 Discuss how the design of a computer makes upgrading possible. (2)
 - 2.1.3 Suggest TWO cost-effective hardware upgrades that can be made to this computer. (2)
- 2.2 What is the main difference between a *bus* and a *point-to-point* connection (2)
- 2.3 The principal has been told that the computer system uses caching as a technique to speed up its operations.
 - 2.3.1 Describe the term *caching* in a computer system. (1)
 - 2.3.2 State TWO types of caching found on a computer (2)
- 2.4 A new printer is purchased for the admin clerk in the office
 - 2.4.1 Explain why a printer can’t really be described as a plug and play device? (2)
 - 2.4.2 How would the printer indicate to the operating system that it has a paper jam? (1)
- 2.5 A new operating system will also have to be purchased for the new computers
 - 2.5.1 What is the main purpose of an operating system in a device? (1)
 - 2.5.2 Explain how the operating system supports *multitasking* in a computer (2)
- 2.6 The computer in the library is running slow, and the teacher suggests increasing the virtual memory.
 - 2.6.1 What is *virtual* memory? (2)
 - 2.6.2 Explain why this is not a good solution to the problem (1)
 - 2.6.3 State ONE way to address the problem (1)

TOTAL SECTION B : 20



JUNE EXAMINATIONS - 2019
INFORMATION TECHNOLOGY P2
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MARKING MEMORANDUM

QUESTION 1

1.1.1 C ✓

1.1.2 B ✓

1.1.3 D ✓

1.1.4 B ✓

1.1.5 B ✓

1.1.6 C ✓

1.1.7 C ✓

1.1.8 C ✓

1.1.9 B ✓

1.1.10 D ✓

(10)

1.2.1 Trace table ✓

1.2.2 Interpreter ✓

1.2.3 BIOS ✓

1.2.4 Protocol ✓

1.2.5 Lossy Compression ✓

(5)

[15]

QUESTION 2

2.1.1 A replacement of a hardware or software with a newer or more improved version ✓

(1)

2.1.2 The computer has a modular design, which is made up of separate ✓ replaceable parts. As a result when it needs to be upgraded, the component is merely replaced ✓ with the newer component

(2)

2.1.3 Can replace/add any TWO of : ✓✓

- HDD
 - SSD
 - RAM
 - CPU
 - Motherboard
 - Optical Drive
- (2)

Accept any other reasonable answers !

2.2 A point-to-point connection is dedicated. This means that the wires or paths used to transfer the data are not shared✓ between multiple components. The wires or paths in a bus are shared between components ✓ (2)

2.3.1 Caching is a method to compensate for loss of efficiency/bottleneck ✓ when a faster medium tries to communicate with a slower medium (1)

2.3.2 Any TWO of : ✓✓

- CPU caching
 - Hard-drive caching
 - Web caching
- (2)

2.4.1 In most instances the drivers for the printer will have to initially be manually✓ installed, the automated process of loading a driver in most plug and play devices does not occur ✓ (2)

2.4.2 It would send an IRQ ✓ / hardware interrupt message (1)

2.5.1 An operating system controls all the activities✓ that takes place in a computer (1)

2.5.2 The OS splits the CPU time✓ between the active programs and gives each program a fraction✓ of access time to the CPU(s) (2)

2.6.1 Virtual memory is a section of storage✓ that the OS reserves, to act as RAM when RAM falls short✓ (2)

2.6.2 Your computer will become noticeably slower✓ or unresponsive, since access from HDD is slower (1)

2.6.3 Any ONE of : ✓

- Close any unnecessary programs
 - Increase the RAM
 - Use the 64-bit version of the OS
- (1)

QUESTION 3

3.1.1 It is the physical layout of the way in which the computers and other devices are connected in a network. ✓ (1)

3.1.2 Any TWO of : ✓✓
• If one device fails, it won't affect the network.
• Computers can be easily added to the network
• Improved security (2)

3.1.3 Switch – a hardware device that is used to connect the computers to a central point. It regenerates and amplifies the signal and directs✓ the traffic on all the devices on the network.

Router – is a hardware device that provides communication between networks✓ over the internet through relaying data to the correct destination. It routes data from a LAN to another network connection. (2)

3.2.1 Any TWO of : ✓✓
• Data transfer speeds are very high with fibre as compared to UTP
• Fibre has little loss of signal strength.
• Greater bandwidth
• Fibre is immune to eavesdropping (2)
• Cover a larger distance

3.3.1 It allows wireless devices✓ to connect✓ to a network. (2)

3.3.2 Any TWO of : ✓✓
• File sharing transfer speeds are normally slower than a wired LAN
• Wireless connections can be obstructed by structures such as walls, ceilings and furniture
• Wireless networks are generally less secure
• The general speed decreases the further you are from the router (2)

3.4.1 Any TWO of : ✓✓
• Data is expensive
• Bandwidth of connection is very low
• Poor video quality if you have a slow connection (2)

3.5.1 • Ease of access to the device ✓
• The need to always be connected ✓ (2)

3.6.1 Any TWO of : ✓✓

- Do not set the display to the highest setting
- Do not leave the display on for a long period of time
- Set the device to automatically turn the display off (2)

(any other suitable answers)

3.6.2 Having your Wi-Fi on if you are not using it drains✓ your battery as your phone is continuously searching for a Wi-Fi signal (1)

3.7 Any TWO of : ✓✓

- Mobile apps offer better personalization – tailored to the users interests, location, etc
- The ability to send instant notifications to the users
- The ability to work offline
- Apps can work faster than websites – they store data locally on mobile devices. (2)

[20]

QUESTION 4

4.1.1 StockID ✓ (1)

4.1.2 It is the only field from the given list in the table that will be unique✓ for every entry/record (1)

4.1.3.1 text ✓

4.1.3.2 date/time ✓

4.1.3.3 currency ✓ (3)

4.1.4 Accept any field size value between 4 and 10 ✓ (1)

4.2.1 Any THREE of : ✓✓✓

- Accuracy
- Correctness
- Currency
- Completeness
- Relevance (3)

4.2.2 Any ONE of :

- **Format Check** – Used to check that data matches a particular format , such as date format
- **Data Type check** – used to ensure that inputted data is of the expected/ relevant data type

- **Range check** - used to ensure that the inputted value is within range of a set of expected values
- **Presence check** - used to check that values are entered into relevant components
- **Check Digit** - a digit, in a particular sequence of digits, that is generated through a mathematical formula, so as to validate it's authenticity

(type ✓ and explanation ✓) (2)

4.3.1 A query ✓ (1)

4.3.2 Any TWO of : ✓✓

- Structures to create and edit structure of a database/table
- Ability to add/edit and delete data in the database
- Ability to process / filter data to extract data
- A form
- A report

(2)

4.3.3 Any ONE of : ✓

- Ms Access
- Base
- MySQL
- Microsoft SQL Server
- Blackfish
- FileMaker Pro
- Oracle
- PostgreSQL

(1)

4.4.1 Server ✓

4.4.2 Desktop / Server ✓

4.4.3 Distributed ✓

(3)

4.5 Any TWO of : ✓✓

- Manages the database
- Assign access rights to users
- Routine maintenance of the database
- Updates the database/ ensures that database is regularly updated
- Implementing a backup policy

(2)

[20]

QUESTION 5

5.1 An algorithm is a step by step point form solution to a given problem. ✓

Algorithms are Universal i.e. it does not contain programming specific jargon and therefore can be used by any programmer ✓ using any programming language. (2)

5.2.1 The while loop is used because the length ✓ of the text file is not initially known. ✓ (2)

5.2.2 a) the reset procedure opens a file given by FileHandle for read / moves the file-pointer to the beginning of the text-file ✓ (1)

b) The Append procedure opens a file given by FileHandle to allow subsequent writes to add lines to the end of the file / moves file-pointer to end of text-file and prepares to write data to the file ✓ (1)

c) Opens a file and allows contents of existing file to be replaced ✓ or allows for the creation of new text file ✓ / clears the contents of an existing text-file (2)

d) Links the logical file to the Physical File / Creates a link between the external file ✓ on storage and file processing variable ✓ in the program / assigns a value to FileHandle for a FileName in preparation for reading or writing to the text-file (2)

5.3.1 A function returns a value ✓

A procedure does not return a value ✓✓

A function has the data type of the returning value in its header whereas a procedure does not ✓ (4)

5.3.2

sFullname ← Get Fullname ✓

sPwd ← "" (blank string) ✓

i ← length of sFullname ✓

Loop from 1 to i ✓

If sFullname[i] is NOT a vowel ✓

 sPwd ← sPwd + sFullname[i] ✓

end Loop (6)

5.4

x	arrScores[x]	arrScores modulus 4 = 0?	arrTemp[x]
1	8	T	8
2	5	F	
3	3	F	
4	12	T	12
5	2	F	
✓	✓	✓	✓

(4)
[24]

QUESTION 6

6.1.1 Spyware redirects you to websites you do not intend going to OR records your keystrokes and sends it back to it's creator ✓ (1)

6.1.2 Any TWO of : ✓✓

- Create regular backups (offsite)
- Install anti-malware software
- Update software regularly
- Install / activate a firewall (2)

6.1.3 Any TWO of : ✓✓

- Be aware of potential dangers and threats such as phishing
- Don't give out personal information unnecessarily
- Be cautious about clicking on links from e-mails/spam
- Be circumspect about the people you encounter online
- Use secure sites for transfer of sensitive/financial data transactions
- Do not respond to phishing e-mails
- Use security/privacy features of web-browsers for additional protection
- Use security features of social networking sites (2)

6.2.1 Multimedia files consumes a lot of storage space✓, and reducing it's size will enable files to be shared or broadcast (1)

6.2.3 **Lossy compression** - The file size is reduced by sacrificing✓ some insignificant data, which would not tremendously compromise the quality of the file
LossLess compression - compresses the file without✓ losing any data (2)

6.3.1 An attempt to manipulate or trick someone into willingly giving out sensitive personal information✓/data or installing malware. (1)

6.3.2 Spoofing ✓ - Using electronic technologies to fool people into believing that the communication is coming from another legitimate person or institution ✓

OR

Phishing Attempts from people, generally employing e-mails to direct people to fake websites, where they are tricked into releasing personal information (2)

6.4.1 A way of scrambling text/ data ✓ into a new format using a specified set of rules (1)

6.4.2 Un-authorized individuals ✓ won't be able to read and interpret ✓ the encoded data (2)

6.4.3 SSL / Secure Socket Layer ✓ (1)

6.4.4 - The address bar will contain a https ✓

OR

- The address bar will contain a (green) padlock (1)

6.5.1 Any TWO of : ✓✓

- Blogging
- Micro-blogging
- SMS
- Instant messaging
- VoIP (2)

6.5.2 - Notification - user is notified by a sound or message ✓ that a new e-mail has arrived

- Push Technology - The user is notified and the e-mail is automatically ✓ downloaded to the device (2)

6.5.3 POP3 ✓ (1)

[21]

TOTAL = 120

