PECANWOOD
COLLEGE
Prepared for Life

INFORMATION TECHNOLOGY THEORY EXAMINAITION.
GRADE 10

NAME: Memo. **GRADE:** _____

DATE: 12 JULY 2022 **MARKS: 130**
EXAMINER: MR SC EILERTSEN **TIME: 2 HOURS**
MODERATOR: MR C SEEWALD

INSTRUCTIONS:

1. This examination is made up of 12 pages. Please ensure that your paper iscomplete.
2. Reading time – It is suggested that you read question five during the reading time allowed.
3. It is in your own interests to write clearly with a dark-coloured pen.
4. You may use a non-programmable calculator.
5. Additional paper is provided at the end of this examination. If you use it, please label your answer clearly using the same numbering as the exam paper.

Question One **Data representation**

1.1) Fill in the following table which shows the same number represented in decimal, binary and hexadecimal. You can use the additional paper at the end of the exam paper for your workings (which will not be marked – only the answers here in the table below)

Question	Base 10	Base 2	Base 16
1.1	**25**	00011001 ✓	19 ✓
1.2	189 ✓	**10111101**	BD ✓
1.3	939 ✓✓	~~X~~	**3AB**

(6)

Question Two: **Overview of computers, hardware and software**

Within the computer environment we use many different terms.

Circle those words/terms that we associate with computer **hardware**.

Place a **rectangle** around those words/terms that could be called computer **software**.

Computer	printer	scanner	Microsoft Word	RAM
Hard drive	CPU	primary memory	application software	register
Java	SD card	QR code	sensors	source code
Server	peripherals	backup	archive	tablet
Malware	adware	mouse	smartphone	single board computer
Executable code	server	Freeware	information	Windows 10
drivers	screen	secondary memory	OS	mobile device
USB port	ALU	data	motherboard	SSD
Flash drive	GUI	ROM	biometric	HDMI
Control panel	IDE	user profile	file compression	Open-source license
Product key	3G card	file and folders	hot swappable	anti-malware
Command line interface		BIOS		

(57 marks divide by 3) = 19 marks

Question Three **Hardware and software, plus a few relevant questions on System Software**

3.1) We talk about "Data transfer and the synchronising of data between devices." Explain what is meant by this statement.

Synchronisation is when the data on different devices is automatically updated to the latest version

(3)

3.2) Explain the difference between Operation Systems (OS) (also called System Software) and Application software.

The OS makes the device work. Application software does a particular task for the user. Application software cannot work without the OS. (2)

3.3) List the three main functions of the operating system.

Provides a user interface ✓
Loads + runs programs ✓
Manages the computers resources ✓

(3)

3.4) What is a driver and how does it assist the OS? See Addendum A, the diagram for question 4

The driver is software that allows the OS to communicate with a specific piece of hardware

(2)

3.5) What is primary memory? RAM - memory used to process the results needed

(2)

3.6) What is secondary memory? Storage - where the OS and programs and files are stored before being loaded into primary memory

(2)

3.7) Primary memory and secondary memory. Which is volatile and which is non-volatile?

Primary - volatile ✓
Secondary - non volatile ✓

(2)

3.8) Give three examples of secondary memory hard drive, flash drive, SD card, cloud storage CD

(3)

3.9) Types of computers

3.9.1) Give a real-world example of where you would prefer to use a smartphone. mobility, portability, Lite versions of apps camera, social media, videos.

(1)

3.9.2) Give a real-world example of where you would prefer to use a tablet. As above, bigger screen, childrens educational games, limited keyboard input

(1)

3.9.3) Give a real-world example of where you would prefer to use a laptop. portability mobility but with bigger keyboard + bigger screen. With battery life (1)

3.9.4) Give a real-world example of where you would prefer to use a desktop. Maximum computing power needed in one place. Keyboard + monitor. Upgradability. (1)

3.9.5) Give a real-world example of where you would install a server. Computer to serve the resources needed by clients (1)

3.9.6) Give a real-world example of where you would expect to find an embedded computer. IoT (1)

3.10) Name the three parts of a typical CPU ALU CU registers (3)

3.11) **Explain** what is meant by ROM (read only memory). Mention the following in your answer.

What is read only memory - Volatile or non-volatile? - permanent, semi-permanent or temporary? - part of hardware, software or firmware? - mainly used during boot up or mainly used when running an application?

Software (firmware) semi-permanently burnt onto a chip mainly used during the boot up process of a computer or electronic device. Is non volatile (4)

3.12.1) Name a peripheral that is also an example of secondary storage. Any device that you can plug into a port that offers storage (2)

3.12.2) Give an example External hard drive (1)

3.13) List six peripherals that you can connect to your computer via a USB port scanners printers cameras flash drives keyboards mouse media players (3)

[38]

Question four **More on System Software**

4.1) Give two examples of operating systems – one for computers and one for smartphones. Ms Windows Linux Android iOS (2)

4.2) System software is responsible for resource management. Resource management includes input and output, file management and memory management.

4.2.1) Explain what is meant by input and output management (can also give examples) Offers management of keyboards, trackpads, monitors etc via the preferred driver (2)

4.2.2) Explain what is meant by file management. Give examples. file + folder creation, editing, renaming, moving (3)

4.2.3) Explain what is meant by memory management. Every program is allocated its own memory space that cannot be invaded by another program (2)

4.3) Study the diagram on Addendum A and answer the questions that follow

4.4.1) The user is at the top of the structure. "Every user has their own profile." Explain what is meant by this statement. As part of your answer also include "themes" and "desktop" and perhaps "wallpaper".

Every user has their own personalised settings including hadware and software. Also their own desktop (with wallpaper) and personal private disk space to save their work. (3)

4.4.2) Why is one user not able to interfere with the programs and files of another user? Their disk space is private (Documat, desktop folders etc) Protection via username and password. Mayor may not be able * (2)

4.5) The user interacts with the application programs. Name three application programs. ms Word ms Excel ms PowerPoint etc etc (3)

* to use the software loaded on the PC depending on rights + permissions

4.6) System utilities are not part of the operating system but are shipped **with** the operating system for the use and convenience of the user to "manage, analyse, maintain, optimise, and control their computer."

From the list below place a large tick next to the words/phrases that relate to system **utilities.**

Note negative marking may be used for this question so only tick those choices you are sure about.

install and uninstall software ✓	word processing	email
backing up your documents folder ✓	file compression of a large file ✓	Excel spreadsheet
anti-malware ✓	defragmentation of harddrive (HDD) ✓	streaming a video
showing a PowerPoint presentation	Choosing a high contrast theme for people who are visually impaired ✓	changing the format of your date from MM/dd/yyyy to dd/MM/yyyy ✓
adding a new printer ✓	an online lesson on Ms Teams	Using Wikipedia

(8)

4.7) Would jGRASP be considered a utility program? Explain. No. It is an IDE — a programming tool

(2)

4.8) Pecanwood is required to keep the grade 12 PAT projects files from previous years. Therefore at the end of every year they are moved and compressed to a different location on the network. Is this an example of a backup or an archive?

Archive (1)

4.9) When setting exams teachers have more than one copy on their hard drive; they work on one while the other is kept in case the current one gets corrupted during loadshedding. Is this an example of a backup or an archive?

Backup. (1)

[29]

Question Five **Social Implications and introduction to scenarios**

Computers, smartphones, the internet, and the lockdowns of Covid-19 have dramatically changed our world, our society, education, and the workplace. Growing up and being a teenager now is completely different to the world of 50 years ago.

Below is a list of some of these changes.

Online shopping - Cyberbullying – Spyware - Scams and online fraud - Being able to make information available to a lot of people quickly and easily - Fast access to data - Social media - Less travelling - Unauthorised access to private data - Toxic waste is generated by the dumping of old computer equipment - Injuries and health problems due to poor working conditions (poor ergonomics) - Convenient access to services (banking, pension, vehicle licensing, passports etc) - Exposure to inappropriate/illegal material and resources - Being able to work from home - Communication software like email, WhatsApp, Twitter, and Instagram – Wikipedia –The Dark Web - Sitting all day and not getting exercise - Sharing of resources regardless of where you live or work - Potential isolation because of addicted to various social media platforms and computer games - Malware - Being able to collaboratively work together on the same project - Being able to store data, information, and resources easily and conveniently - Fake news that uses digitally manipulated images for propaganda purposes - Identity theft -Software develops quickly and so your hardware becomes obsolete.

Choose a number of these topics (suggestion - any five that are related) and answer the following question.

Using the topics that you have chosen make a strong argument whether being a teenager has become better, easier or whether being a teenager has become more challenging and more difficult. Note: you must make a choice – better or worse – you cannot say a bit of both.

Like a debate there is no right or wrong answer. Evaluation of your answer will be based on your understanding of hardware, software, technology, social media and its positive or negative impact on your life (and perhaps the life of your family) Answer using examples, product names, using your own experiences or examples from the lives and experiences of others that you may have heard or read about. Note the mark allocation. Also note that choosing a whole bunch of unrelated topics will probably result in a lower mark because you will not be showing insight into the topics.

Various answers.

more space on next page

(10)

[10]

Question Six **Computer Networks**

These days every member of a household has a computing device. These days computing devices not only need to connect to each other but also need to connect to the internet.

The Scenario

The Tsebe family is made up of five members . . .

1. Dad Tsebe works at his desk in his study. He often has online meetings that involve file sharing and videos. The family printer is in his office – the printer is connected to a RaspberryPi print server – the RaspberryPi supports Wi-Fi and connects to the router via Wi-Fi.
2. Mom Tsebe is a reader and only reads hardcopy books. She uses her device for leisure only. She loves cooking and streams movies and takes WhatsApp calls in her kitchen.
3. Son Tsebe who is 8 years old roams the house playing various computer games, both locally and on the internet.
4. Daughter Tsebe is 19 years old and is studying at university. She seldom leaves her room. She often has online tutorials that involve file sharing and videos.
5. Granny Tsebe loves social media especially Facebook and keeps touch with the extended family. She has a granny flat at the far end of their large property.

6.1) What is the term we would use to describe a network within a single home? PAN (1)

6.2) To enhance reliability and performance copper cabling is going to be used where most needed. UTP cabling is the obvious choice.

6.2.1) Explain three advantages of UTP cabling.

Inexpensive + easy to install
Supports fast transmission rates
Widely used + tested
Used in many different types of networks (3)

6.2.2) Explain three disadvantages of UTP cabling.

Susceptible to interference
Crosstalk can corrupt the data
Distance limitations (100m)
(attenuation)

(3)

6.2.3) Having read the scenario where would you use copper cabling? Dad Tsebe's office. Daughter Tsebes room

(2)

6.3) The family house is connected to the internet via a fibre cable. What are the advantages of fibre over copper?

Faster than copper
More secure
No distance limitations
Not susceptable to interference & crosstalk
Immune to lightening + electrical surges

(4)

6.4) The town they live in is connect to Johannesburg via a **fibre optic backbone**. What does this mean?

A high performance, high traffic link that connects LAN's together.

(2)

6.5.1) The family has a router in Dad Tsebe's office. What is the role of the router? Connects nodes together. Connects the network to the internet. Supports bounded and unbounded media.

(2)

6.5.2) Considering the scenario why did the family choose a router that supports Wi-Fi? Explain using the members of the family and why it serves their needs

Some members of the family are not in one place. They therefore need a wireless connect eg Son and Mom and Granny when she visits. Wifi also supports their printing needs.

(3)

6.6) Explain why everybody and anybody can print from anywhere in the house, from any device. Why is this possible?

Because via WiFi they can send their files to the print server. The print server sends the job WiFi to the printer.

(2)

6.7) Granny Tsebe says she can access Facebook from the house but not from her flat. What is the problem and how would you suggest this problem be solved?

WiFi signal cannot reach. Either lay a UTP cable or install a WiFi booster (repeater) to enable to signal to reach the flat

(3)

6.8) The family is using a RaspberryPi as a print server. Explain the concept of "client-server" in this scenario.

Every member of the family is a potential client. The print server offers them a resource eg being able to receive their print jobs and send them on to the printer

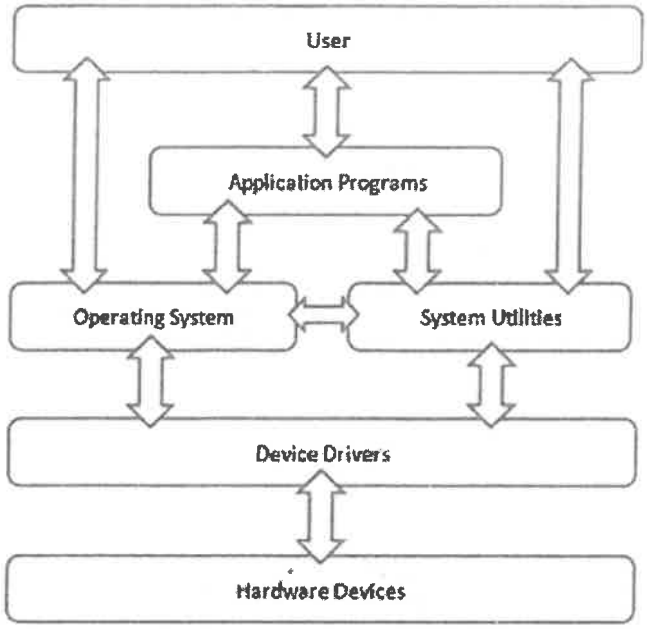
(3)

[28]

GRAND TOTAL: 130

Addendum A

Question Four.



http://cs.sru.edu/~mullins/cpsc100book/module05_SoftwareAndAdmin/module05-02_softwareAndAdmin.html

Additional Paper

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Information Technology: Moderation Sheet

Question Paper

Name of exam: FT Theory Grade: 10 Date: 27/7/2022

Branding and layout	Satisfactory	Not satisfactory
Question numbering	Satisfactory	Not satisfactory
Page numbering	Satisfactory	Not satisfactory
Mark allocation	Satisfactory	Not satisfactory
Variety of question styles	Satisfactory	Not satisfactory
Enrichment source material	Satisfactory	Not satisfactory
Analysis grid	Satisfactory	Not satisfactory
Detailed memo with mark allocation	Satisfactory	Not satisfactory

Learners answer papers

Name: Ethan Bell 88%

Name: Unanne 56%

Name: Kgalagadi 43%

Fully marked	Yes	No
Follow up comments present	Yes	No
Totals	Yes	No
Mark transcription	Yes	No

Comments: _____

Reinald Reinald 1/8/22

Name of moderator: **Signature:** **Date:**

(Load shedding version :( )

Analysis Grid . Gr 10 Theory July 2022
xx/130

Recall questions —

Q1	6	Q 4.5	3
Q2	19 *	Q 4.8	1
Q3.3	3	Q 4.9	1
Q3.5	2	Q 6.1	1
Q3.6	2	Q 6.2.1	3
Q3.7	2	Q 6.2.2	3
Q3.10	3	Q 6.2.3	2
Q 3.12.2	1		
Q 4.1	2		

54
42%

Application —

Q 3.1	3	Q 6.5.1	2
Q 3.2	2		
Q 3.4	2		
Q 3.8	3		
Q 3.11	4		
Q 3.12.1	2		
Q 3.13	3		
Q 4.2.1	2		
Q 4.2.2	3		
Q 4.2.3	2		
Q 4.4.1	3		
Q 4.4.2	2		
Q 4.6	8		
Q 4.7	2		
Q 6.3	4		
Q 6.4	2		

49
38%

Advanced

Q	3.9.1 → 3.9.6	6
Q	5	10
Q	6.5.2	3
Q	6.6	2
Q	6.7	3
Q	6.8	3

27

21%.

Happy with the spread as this is their first IT theory exam

* Q2 is more difficult than it looks despite being one word answers.