

PINETOWN DISTRICT

**May/June
Examination
2024**

Grade 12

Information Technology P2

Marking Guideline

Marks: 150

Time: 3 hours

SECTION A

QUESTION 1

1.1.1. C✓

1.1.2. D✓

1.1.3. D✓

1.1.4. A✓

1.1.5. A✓

1.2.1. Cookie✓

1.2.2. Artificial intelligence✓

1.2.3. HTTPS/SSL✓

1.2.4. Power on self test/Post✓

1.2.5. File transfer protocol/Ftp/torrenting✓

1.3.1. False, Uri✓

1.3.2. False, advantage✓

1.3.3. True✓

1.3.4. False, machine cycle✓

1.3.5. False, garbage in garbage out/ Gigo✓

TOTAL SECTION A: 15

SECTION B**QUESTION 2**

2.1 Name the manufacturer of the processor.

(1)

AMD ✓

2.2 Give a reason why it is a good idea for Mr Cam to check if the computer has a FireWire or Thunderbolt port?

(1)

They are used for high speed data and video connections, so it will be useful in his business. ✓

2.3 Explain to Mr Cam how cache can improve the performance of a computer system. (1)

Cache improves performance by using a limited amount of faster media to speed up access to a slower medium by temporarily storing recently / frequently accessed data / instructions. ✓

2.4 Does the above laptop come with an integrated graphics controller or an external graphics card? Motivate your answer.

(2)

External graphics card. ✓ AMD Radeon Graphics ✓

2.5 State ONE advantage of having an external graphics card, aside from quality of graphics. (1)

A separate graphics card with lots of memory of its own will not share or use normal RAM and slow down processing. ✓

2.6 The laptop has a 1Tb SSD. Mr Cam has more than 2 TB of music and video files on his current HDD.

2.5.1 State ONE advantage that a solid-state drive has over a conventional hard drive. (1)

Any ONE: ✓

- Faster data access speed/ reading speed
- Does not need to be defragmented
- Greater reliability due to the absence of moving parts
- Uses less power / more energy efficient
- Smaller in physical size

2.5.2 State ONE disadvantage of a solid-state drive compared to a conventional hard drive. (1)

Any ONE: ✓

More expensive when compared to hard drives

The inability to recover old data

2.5.3 Suggest 2 ways Mr Cam can keep his files if he buys this laptop.

(2)

Any TWO suitable answers: ✓✓

Backup files on cloud

Backup files on external hard drive/flash drive

2.6 The operating system indicated that updates were available.

2.6.1 State ONE advantage of ensuring that the operating system is updated regularly. (1)

ANY ONE✓

- Always have latest functions/features
- Bugs and problems are resolved
- Security loopholes are fixed

2.6.2 State ONE disadvantage of allowing the operating system to update automatically. (1)

ANY ONE✓

- Unexpected/unplanned use of data
 - A hastily released update may cause more problems than it fixes.
 - Slows system down (due to background processes)
- Unwanted restart

2.6.3 Give 3 Functions of the operating system. (3)

ANY THREE✓✓✓

- Provides user interface
- Loads and runs application software
- Controls all hardware and software resources
- Memory management
- Process management

2.7 Name and discuss TWO processing techniques.

Any TWO: (4)

Multitasking✓, when the OS appears to run multiple programs at the same time, by splitting its time amongst different applications✓

Multithreading ✓, the ability of an operating system to allow programs to split themselves into multiple tasks/threads that can be run at the same time as if they were separate programs. ✓

Multiprocessing✓, When the processor has multiple cores fused into 1 enabling processes to run concurrently ✓

2.8 Mr Cam requires software for his business. You recommend that he use SaaS.

2.8.1 Explain how SaaS works. (1)

Regular, usually monthly, subscription fee is paid to use the software/rented software. ✓

2.8.2 List TWO advantages of the use of SaaS? (2)

Any TWO: ✓✓

User always gets the latest version of the software.

Only pay for what you use/ scalability of software

Processed in another place like cloud/ server/ another location

Saves storage space/ no need to install on hard drive

No need for backups

Accessibility on different devices/ locations

2.9 Mr Cam also uses a tablet for his business.

2.9.1 A mobile operating system is designed to be 'always on' and so is optimised for conserving power. Why is this feature essential for mobile technologies?

(1)

Does not require the device to be powered on✓ before use

2.9.2 Give TWO ways to preserve the battery life of the tablet.

(2)

Any TWO ✓✓

Turn on power saving mode

Reduce screen brightness

Switch off background apps

TOTAL SECTION B: 25

SECTION C**QUESTION 3**

3.1 A network is formed when connecting two or more devices to make communication between devices possible.

3.1.1 Sharing of resources is an important benefit of using networks.

State TWO other benefits of having a computer network in a company.

Any TWO advantages ✓✓

- Fast and efficient communication
- Centralisation of data/data always up to date
- Transfer of files between devices
- Leisure/LAN computing games/Watching movies
- Increased control and security

(2)

3.1.2 Name the type of cable is commonly used in a wired LAN.

Any ONE type of cable used in wired LAN:✓

- UTP/Ethernet cable (CAT 5/6/7)
- Fibre

(1)

3.1.3 Network bandwidth is measured in Mbps.

(1)

a) Describe bandwidth in this context.

Bandwidth is the total amount of data that can be sent and received/transferred in a network in a given period of time.✓

b) Expand the abbreviation Mbps.

(1)

Mega bits per second✓

3.2 In laptops NICs are used to provide both WiFi connection and an Ethernet port.

3.2.1 Expand the acronym NIC.

Network Interface Controller✓

(1)

3.2.2 Explain the function of an NIC when providing network connectivity.

An NIC is used to encode or 'convert' the data so that the data can be transmitted over a specific medium and it decodes the data that is received.

Concepts:

Decode/Encode✓

Making communication between devices possible over a network ✓ (2)

3.2.3 What medium is used to send to send and receive data in a WiFi network?

Radio waves✓ (1)

3.3 Communication performance in cabled and wireless networks is often compared.

3.3.1 Name TWO benefits of a wireless network.

Any TWO: ✓✓

- Easy to set up a wireless network
- It is easy to add new / more devices.
- Lower setup cost.
- Increased mobility/ Provides flexible layout to users of wireless/mobile devices.
- Provides a connection where cabling is not possible.

Any answer related to no cables needed (2)

3.3.2 Access points are wireless networks are essential.

Explain what an *access point* is.

It is a sender and receiver with an antenna ✓ to send and/or receive radio waves. ✓

Any TWO concepts

- Connection to the Internet/network/wifi
- Send and receive signals
- Uses radio waves

(2)

- 3.3.3 Give TWO reasons why companies providing wireless internet access prefer to use WIMAX instead of WiFi.
Any TWO: ✓✓
• Provides higher bandwidth
• Better security
• Greater range (2)
- 3.4 Networks makes it possible to transfer data, information and software.
- 3.4.1 What is BitTorrent?
BitTorrent is a peer-to-peer protocol used to transfer and share large files✓ across a network such as the Internet.✓ (2)
- 3.4.2 Someone suggested that BitTorrent should be avoided as it is illegal to use.
Briefly comment on this statement.

BitTorrent itself is merely a file sharing method and is not illegal to use as such. ✓You just need to be careful to avoid using BitTorrent to download material that has copyright restrictions.✓ (2)
- 3.4.3 What is the term given to a service in which a video can be watched in real-time over the internet?
Streaming✓ (1)
- 3.5 How does a standard user on a network differ from an administrator?
Standard users have limited rights.✓ They are permitted to log on to the system, run programs, customise their accounts and work with files in folders for which they have been given permission. Administrators have full control over the whole system.✓ (2)
- 3.6. Give TWO reasons why having digital records stolen can present more of a problem than the theft of physical records (hard copies).
Any TWO reasons:✓✓
• You are never entirely sure of what has been stolen, as copies of the originals are being made.
• It's often quite difficult to figure out how or when the theft took place.
• You can't even be sure if theft was all that took place – what if data was changed?
• Spyware could have been installed and everything you do on your computer could be being monitored. (2)

TOTAL SECTION C: 24

SECTION D**QUESTION 4**

4.1

4.1.1 Relational database is a database that has more than one table✓ (2)
which are linked with relationships. ✓

4.1.2 Any ONE: ✓✓

- To prevent changes made from being lost
- Only one user allowed to make changes to a record at a time
- Access to the same record can corrupt data
- Anomalies may occur – data must stay consistent (2)

4.1.3 Any TWO: ✓✓ (exclude planning and creating)

- Setup user accounts and user rights
- Setup backup strategy for database
- Create queries for the database
- Monitor the working of the database (2)

4.2

4.2.1 AdminNo field in both tables are not the same data type. ✓ Data type must either both be Number or both must be Short Text. ✓ (2)

4.2.2 A record in tblLearners (the one side) cannot be deleted if it is linked to records in tblClubs (the many side) ✓✓
OR

A new record cannot exist in tblClubs (the many side) if there is no corresponding record in tblLearners (the one side). ✓✓ (2)

4.2.3 DateJoined ✓ - Date/Time ✓ (2)

4.2.4 To uniquely identify a record. ✓ (1)

4.2.5 Foreign key ✓ (1)

4.2.6 (a) When more than one field can be used as a primary key. ✓ (1)

(b) The same club can consist of multiple members. ✓ (1)

4.3 Keeping identical copies of a database. ✓ (1)

4.4 Any TWO: ✓✓

- Use different passwords for different accounts
- Make passwords long in length
- Avoid using words that can be found in a dictionary
- Avoid using personal information about yourself or your family
- Change passwords on a regular basis
- Include a combination of special characters, numbers, lowercase and uppercase characters

- Avoid keyboard patterns

(2)

4.5 The capturing of private/unrelated information ✓ without the user's knowledge. ✓

(2)

4.6 (a) A huge collection of data, often accumulated from a range of sources such as separate databases within a company. ✓

(1)

(b) The use of complex algorithms to group and arrange 'big data' so that interesting and previously unknown patterns emerge – and new information is discovered. ✓

OR

The practice of examining large data sets in existing databases in order to generate new information /finding patterns or trends in existing data. ✓

(1)

4.7 Keeps track of record changes ✓ in the database and who made the changes /when the changes were made ✓

(2)

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SECTION E**QUESTION 5**

- 5.1. Software developers program using a defensive programming technique.
Explain what defensive programming means? (2)

Defensive programming uses code to avoid/handle errors ✓ that will prevent the normal execution of a program ✓

- 5.2. Software developers make use of a modular design when programming.
5.2.1. What does the term modular design mean in programming context? (1)

Refers to an application that is made up of different parts of code that can be reused. ✓

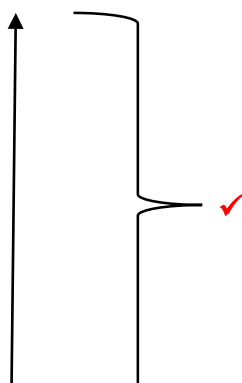
(U.O.D)

- 5.2.2. What can programmers use in order to achieve this design? (1)

Programmers make use of methods in programming/ Object Orientated Programming ✓

- 5.3. Binary and Hexadecimal systems are used in computing.
5.3.1. Convert 97 from decimal to binary. Show all working. (2)

$97 \div 2 = 1$
 $48 \div 2 = 0$
 $24 \div 2 = 0$
 $12 \div 2 = 0$
 $6 \div 2 = 0$
 $3 \div 2 = 1$
 $1 \div 2 = 1$



=1100001₂ ✓

- 5.3.2. Write down all the characters/digits that are in the hexadecimal system. (2)

0123456789✓(10 digits) ABCDEF ✓ (6 Alphabets)

- 5.4. Text files are used to store small amounts of unformatted data. Study the pseudocode below and answer the questions that follow. Use Data.txt as the text file name.

myFile : TextFile;

sLine : String;

sLine $\leftarrow$ edtUsername.text + ',' + edtPassword.text;

(a)

Append(myFile);

WriteLn(myFile, sLine);

(b)

- 5.4.1. What is this pseudocode designed to do? (1)

Add a username and password to a text file. ✓

- 5.4.2. Fill in the missing steps namely (a) and (b). (2)

(a) AssignFile(myFile, 'Data.txt'); ✓

(b) CloseFile(myFile); ✓

- 5.4.3. Identify the delimiter used in this text file. (1)

A comma OR , ✓

- 5.4.4. Explain the purpose for steps (a) and (b). (2)

(a) Creates the link between the physical file and the logical file name. ✓

(b) Closes the link between the physical file and the logical file name. ✓

- 5.4.5. Write the required pseudocode to ensure that the text file exists. (2)

If NOT FileExists('Data.txt') then ✓

begin

ShowMessage('File not found'); } **✓ (for message and exiting the procedure)**

Exit;

end;

- 5.5. Study the algorithm below that tests a number if it's prime or not prime.

1 Input Num

2 Factor $\leftarrow$ 0

3 for iCount $\leftarrow$ 2 to Num

4 if Num mod iCount = 0

5 Factor $\leftarrow$ Factor + 1

6 if Factor = 1

7 Output Num + ' is a prime number '

8 Else

9 Output Num + ' is NOT a prime number '

Redraw the trace table below in your answer books and trace the code using an input value of 7. Note use the headings and add more rows when needed

Num	Factor	iCount	Num mod iCount = 0	Factor = 1	Output
7					
	0				
		2			
			False		
		3			
			False		
		4			
			False		
		5			
			False		
		6			
			False		
		7			
			True		
	1				
				True	
					7 is a prime number
	✓	✓	✓	✓	✓

(5)

5.6. Study the 2D array below and answer the questions that follow:

X		X		X
		X	X	X
	X		X	
	X	X		

X marks a seat taken in the array.

5.6.1. Write the line of code to declare this 2D array called arrSeats. (2)

arrSeats : array [1..4,1..5] ✓ of Char/String ✓;

5.6.2. Provide the line of code that will access the block in colour. (1)

arrSeats[3,4] ✓

5.6.3. What is the size of the array above? (1)

20 ✓

TOTAL SECTION E: 25

SECTION F**QUESTION 6**

6.1

6.1.1 Acceptable Use Policy ✓ (1)

6.1.2 To provide the user of a network with the rights and responsibilities✓
when using the network. ✓ (2)6.1.3 Any TWO of: ✓✓

- Save paper
- Save ink/cartridges
- Easier to distribute/can send via e-mail or drop box
- Cheaper to send to many people
- Easier to store/backup/save

(2)

6.1.4 Indicates that the computer is energy efficient without sacrificing performance. ✓

OR

Device has been designed in order to use less electricity. (1)

6.1.5 Any TWO of: ✓✓

- Recycle
- Use for spare parts
- Make use of companies that dispose of e-waste

(2)

6.2

6.2.1 Any ONE of: ✓

- Theft of data
- Theft of hardware
- Accidental damage / deleting while working with data

(1)6.2.2 Any TWO examples with explanations:

- RAID ✓ – uses multiple disks to be able to prevent/repair data loss ✓
- Backup ✓ – provides an extra copy of data to be used after data loss ✓
- Anti-malware software - protects against malicious programs that may
- damage data
- Firewall – prevents unauthorized access to local network to prevent access to, and theft of, data
- Training of personnel – teaching people how to identify risks like phishing and spoofing

(4)

6.3

6.3.1 It is a small text file that is stored on your computer when you visit a website✓that records your use and preferences for the specific site. ✓ (2)

- 6.3.2 Any TWO of: ✓✓
- Cookies are not stored.
 - Personal details not accessible.
 - No record of browser history/browser history not saved
 - Makes tracking of browsing patterns more difficult
- (2)
- 6.4
- 6.4.1 Any THREE functions of an operating system: ✓✓✓
- Provides an interface
 - Manages processes and tasks
 - Manages memory
 - Manages input and output
 - Manages the disk/s
- (3)
- 6.4.2 Any ONE advantage: ✓
- Formal support in terms of help is available
 - Patches/services packs are released with updates available to everyone
- (1)
- 6.5
- 6.5.1 Radio Frequency Identification ✓
- (1)
- 6.5.2 Passive tags receive all their power from the RFID reader ✓ and can only interact with the reader when they enter the electromagnetic field generated by the reader✓. Active tags receive their power from on-board batteries allowing them to work over larger distances. ✓
- (3)
- 6.5.3 Any TWO: ✓✓
- Prone to mistakes
 - Time-consuming
 - Cost incurred with hiring of personnel
- (2)
- 6.6 (a) Social engineering refers to conning or tricking ✓ a person into giving out personal/confidential information ✓.
- (2)
- (b) Confidential information can be used to commit identity theft ✓
Accept any other sensible/realistic answer.
- (1)
- 6.7 (a) Any TWO: ✓✓
- Anti-virus/anti-malware
 - Firewall
 - Operating System/System Software
 - Firmware/BIOS
 - Web browser
 - Product specific updates
- (2)
- (b) Anti-malware/anti-virus – allows newer forms of malware to be detected ✓
- (2)

All other software – malware exploits bugs and weaknesses in the security of software that is not updated. ✓

6.8 Any ONE of: ✓

- Creates immersive experiences
- Experiential learning that simulates a variety of environments
- Personalised learning
- Accessibility (can benefit from experiences not available locally)
- Safe learning environment

Accept any sensible/realistic answer.

(1)

6.9 Any ONE of: ✓

- Over-reliance on AI-driven tools, leading to a decline in critical thinking and problem-solving skills
- Increase in plagiarism
- Biased results based on information available to AI tools
- Privacy concerns

Accept any sensible/realistic answer.

(1)

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