



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

INFORMATION TECHNOLOGY P2

NOVEMBER 2019

MARKING GUIDELINES

MARKS: 150

These marking guidelines consist of 15 pages.

SECTION A: SHORT QUESTIONS**QUESTION 1**

1.1	1.1.1	D ✓		(1)
	1.1.2	B ✓		(1)
	1.1.3	C ✓		(1)
	1.1.4	A or D ✓		(1)
	1.1.5	C ✓		(1)
1.2	1.2.1	J ✓	CSS	(1)
	1.2.2	F ✓	Driver	(1)
	1.2.3	D ✓	Topology	(1)
	1.2.4	N ✓	Firewall	(1)
	1.2.5	K ✓	Incremental backup	(1)
	1.2.6	A ✓	Client	(1)
	1.2.7	R ✓	DBA	(1)
	1.2.8	I ✓	Computer worm	(1)
	1.2.9	B ✓	Attenuation	(1)
	1.2.10	C ✓	AUP	(1)

TOTAL SECTION A: 15

SECTION B: SYSTEM TECHNOLOGIES**QUESTION 2**

- 2.1.1 8/ 2 x 4 GB ✓ (1)
- 2.1.2 HDD ✓ (2)
RPM/ spinning disk/ moving parts/ rotation speed. ✓
- 2.1.3 1500 - 1536 GB / gigabytes ✓ (1)
- 2.2.1 Fetch ✓instructions and data from memory (RAM).
Decode ✓the instructions. (2)
- 2.2.2 Programs are split into smaller tasks called threads. ✓
Threads can be run simultaneously as if they are separate independent programs. ✓ (2)
- 2.3.1 *Any TWO:* ✓✓ (2)
 - Speed of processing cores/ processing power/ clock speed.
 - Number of processing cores/ pipelining.
 - Amount of memory/ dedicated memory.
 - Type of RAM
 - GPU Cache
 - The speed of its communication with the motherboard/
Whether it is installed into a PCI-Express x 8 or PCI Express x 16 slot.
- 2.3.2 The built-in graphics adapter is used when performing tasks that don't require intense graphics processing ✓ to conserve battery power. ✓
When programs are executed that require more intense graphics processing, the laptop switches over to use the graphics card.
- ANY TWO* Concepts (2)
 - Improved graphics processing
 - Conserve battery power
 - Decrease the load of the CPU
 - Cannot Add/Upgrade the graphics card in the laptop
- 2.4.1 Power On Self Test ✓ (1)
- 2.4.2 POST checks/tests that all important hardware (RAM, HDD, etc.) is working ✓ (1)
- 2.5.1 Separate technologies and functions are combined into a single multi-purpose device. ✓ (1)
- 2.5.2 They can emulate/ test different smartphones/OS/platforms on a computer. ✓ (1)

- 2.6 *Any TWO: ✓✓*
- Close unnecessary programs to free up memory.
 - Add more RAM to your computer.
 - Ensure that you run a 64-bit operating system. Otherwise you can't use more than 4 GB.
 - Replace with a faster storage (SSD). (2)
 - The use of the cloud/server for storage/processing
- 2.7.1 To connect/house the CPU. ✓ (1)
- 2.7.2 Hardware can be added or removed while the computer is on. ✓ (1)
- 2.8.1 *Any TWO: ✓✓*
- Limited features / full version subject to time-limit.
 - License must be bought to use full version.
 - Available as a trial version/ try before buy (2)
- 2.8.2 (a) A regular (usually monthly) subscription fee is paid to use the software/ rented software. ✓ (1)
- (b) *Any ONE: ✓*
- 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 (1)
- 2.9 The scattering/ spreading of parts of a file ✓ to several sectors on the disk which slows down the disk's data access speed. (1)

TOTAL SECTION B: 25

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

- 3.1 3.1.1 UTP / STP/ Ethernet cable/ Fibre ✓ (1)
- 3.1.2 The router directs/redirects/sends data over a network✓ and chooses the best route to the destination ✓
- Concepts
- Transferring data between networks/ Internet
 - Finding the correct destination/redirecting (2)
- 3.2 3.2.1 *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)
- 3.2.2 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 3.3.1 Gaining access to and using someone else’s Internet connection unlawfully/ without permission. ✓ (1)
- 3.3.2 *Any TWO: ✓✓*
- Don’t keep the default password – replace it with a good original password.
 - Change the password on a regular basis/ good password policy
 - Don’t leave your Wi-Fi connection open – secure it with a password/ use a password
 - Limit the amount of data/devices/list of users
 - Make the hotspot invisible
 - Verification of the Mac address
 - Limit the range
 - Switch off when not in use (2)

- 3.4 3.4.1 The website uses the saved preferences of a user to generate the site/ It will differ for every user/ This personalizes the user experience of your business. ✓
Interactivity ✓
Easy updates ✓
- Any 3 concepts
- Personalisation/ Differs for all users
 - Generated on the server
 - Based on parameters
 - Interactivity
 - Easy to manage content (3)
- 3.4.2 Make use of search engine optimisation(SEO) (1)
- 3.4.3(a) A set of rules ✓ for encoding and decoding of data for transfer ✓ (2)
- 3.4.3(b) It is a secure ✓ protocol for transactions (1)
- 3.5 3.5.1 PAN: has a range of a few metres/ limited/ small range ✓ (1)
- 3.5.2 VPN: virtual private network – uses the Internet / public network ✓ ,
Sign in with same privacy/ same security as a LAN ✓ (2)
- 3.6 3.6.1 Web application ✓ with functions and properties of traditional applications / software. ✓ (2)
- 3.6.2 *Any ONE:* ✓
- Google Docs
 - Microsoft Office Live
 - Office 365
 - Microsoft Office 365 (1)
- 3.7 *Any TWO:* ✓✓
- Ease of use/ convenience
 - Accessibility
 - Marketing of business by app stores
 - Notifications
 - Using extra sensors/ functions/ properties in mobile device (2)
- 3.8 3.8.1 Processing, where the physical location ✓ of objects /devices / persons is used. (1)
- 3.8.2 GPS ✓ (1)

- 3.9 3.9.1 A podcast is an audio file/recording ✓ available on the internet/network for download ✓ (2)
- 3.9.2 *Any ONE:* ✓
- Real-time delivery of media content to a receiving device.
 - Playing a file from an online source where the file is not permanently saved on the receiving device. (1)

TOTAL SECTION C: 30

SECTION D: DATA AND INFORMATION MANAGEMENT**QUESTION 4**

- 4.1 Value must be unique/ no duplicates. ✓ (1)
- 4.2 Range check/ Validation rule ✓ (1)
- 4.3 4.3.1 ClientSAID and ClientSAID_Ref ✓ (1)
- 4.3.2 One-to-Many relationship ✓
On the One side: tblClients table
On the Many side: tblOrders table ✓
- Concepts
- Correct type of relationship
 - Correct table indicated for one and for many side (2)
- 4.4 Adding the ClientAge field will result in data redundancy as the age can be derived from the ID field. ✓ (1)
- 4.5 Desktop DBMS ✓
Desktop DBMS will be sufficient as the business is small and operates from a single building. ✓
- OR
- Server DBMS
Server DBMS will be more scalable/better accessibility.
- Learner suggest desktop/server DBMS with suitable motivation for two marks (2)
- 4.6 4.6.1 Run-time error ✓ (1)
- 4.6.2 Referential integrity/ relational tables ✓ (1)
- 4.7 Keeping identical copies ✓ of a database (1)
- 4.8 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, uppercase and lowercase characters and numbers.
 - Avoid keyboard patterns (2)

- 4.9 The capturing of private/ unrelated information ✓ without the users' knowledge. ✓ (2)
- 4.10 The practice of examining large datasets in existing databases (and data warehouses) in order to generate new information/finding patterns/trends ✓ in data. (1)
- 4.11 Keeps track of / records ✓ changes ✓ in the database
- OR
- Who made the changes.
When the changes were made. (2)
- 4.12 When a record is open for editing / inserting, the record is flagged as 'in use' ✓
No other entity can make changes to that specific record until 'in use' flag/lock is removed. ✓ (2)

TOTAL SECTION D: 20

SECTION E: SOLUTION DEVELOPMENT**QUESTION 5**

5.1

5.1.1 String/ Text ✓ (1)

5.1.2 Integer/ Number ✓ (1)

5.2

5.2.1 *Any ONE:* ✓
NOT((10 > 5.0) OR (False))
NOT(True OR False)The final answer
False ✓

(2)

5.2.2 *Any ONE:* ✓
(False = NOT True) AND (5.0 = 10 / 2)
True AND TrueThe final answer
True ✓

(2)

5.3

5.3.1 2 ✓ (1)

5.3.2 5 times ✓ (1)

5.3.3 4 ✓✓ (the contents of the loop has not been executed) (2)

5.4

Minimum: 5 ✓
Maximum: 12 ✓ (2)

5.5

Ceil() ✓ (1)

5.6

Any ONE: ✓

- Every single element needs to be compared / checked.
- In large datasets this can take a long time to perform.

(1)

5.7

```
1 Display 'Please enter a string of digits'
2 sInput ← input
3 Loop i from 1 to length(sInput) ✓
4     sLine ← '' ✓
5     n ← sInput[i] ✓
6     Loop j from 1 to n ✓
7         sLine ← sLine + '*' ✓
8     Display sLine ✓
```

Concepts

Correct outer loop (1)

Initialize output variable before inner loop (1)

Inner loop (1) from 1 to character at outer loop position (1)

Add '*' to output variable (1) in inner loop

Display output variable (1)

TOTAL SECTION E: (6)
20

SECTION F: INTEGRATED SCENARIO**QUESTION 6**

- 6.1 6.1.1 *A mobile office* refers to a situation where you can carry/have with your portable tools essential for your business and the communication equipment ✓ that makes you reachable✓.
- Concepts
- A description of mobility
 - Office equipment (2)
- 6.1.2 *Any ONE:* ✓
- Can work from anywhere
 - A freelance worker avoids the expense of paying rent
 - Resources and equipment are always on hand
 - Working hours not dependant on access to office (1)
- 6.2 6.2.1 Cloud / Internet / Cyberspace/ Web✓ (1)
- 6.2.2 *Any TWO* correct examples of cloud storage services: ✓✓
- Google Drive
 - DropBox
 - OneDrive
 - MediaFire
 - MEGA
 - iCloud
 - NextCloud
 - SkyDrive (2)
- 6.2.3 *Any TWO:* ✓✓
- Image files
 - Video files
 - Sound files
 - Text
 - Media file (2)
- 6.2.4 *Any ONE:* ✓
- Media platform for professionals with the same interest
 - Create a work/ experience profile/ job search
 - Marketing platform for professionals (1)

- 6.2.5 *Any TWO: ✓✓*
- Do not provide personal/their details such as cell phone numbers or ID/ Do not provide passwords/Social engineering
 - Enable privacy settings
 - Disable share location settings/whereabouts
 - Block unwanted users
 - Disable cookies
 - Limit third party applications
 - Do not befriend strangers (2)
- 6.3 The process of getting two or more sets of data across multiple devices/ locations ✓ updated with the latest/same versions ✓ of the data. (2)
- 6.4
- 6.4.1 *Any TWO: ✓✓*
- Easy to upgrade outdated hardware.
 - Easy to repair/replace broken/defective hardware.
 - Allows for customisation (2)
- 6.4.2 *Any ONE: ✓*
- Webcam/ camera/ smartphone
 - Speakers/ ear phone/ head phone
 - Microphone
 - Wireless headset (1)
- 6.5
- 6.5.1 Distributed computing is a system whereby the resources of different computers are shared/combined✓ and used at the same time to solve a single problem✓.
- Concepts
- More than one computer
 - Perform a specific/one task (2)
- 6.5.2 By downloading and installing software on their computers✓, which will automatically start working on the project when their computers are idle✓.
- Any TWO concepts✓✓*
- Give permission for the use of your computer
 - Provide/ share processing power
 - Computer is idle/ not in use
 - Install the appropriate software on their computers (2)
- 6.6
- 6.6.1 Artificial Intelligence✓ (1)
- 6.6.2 Since the developer makes use of a knowledge base ✓ there are a fixed number/possible outcomes/answers ✓ for each question or criterion. (2)

6.7

- 6.7.1(a) *Any TWO: ✓✓*
- Anti-malware products/ Antivirus
 - Operating system/ System software
 - Firewall
 - Firmware/ BIOS
 - Web browser
 - Product specific updates
- (2)

- 6.7.1(b) Anti-malware/ Antivirus products: to allow for newer forms of malware to be detected ✓
All other software: malware exploits bugs or weaknesses in the security of software. ✓
- (2)

- 6.7.2 Malware that locks or encrypts data/devices ✓ until a ransom is paid✓.

Concepts

- Malware makes data/devices unavailable / unreadable.
 - Ransom/Money must be paid to make data accessible again or decrypt data.
- (2)

6.8

- 6.8.1 An attack that makes a web site unavailable ✓by using thousands of computers/botnet to request data from the site at the same time/overloading the system. ✓
- (2)

- 6.8.2 Script kiddie ✓
- (1)

6.9

- 6.9.1 *Any ONE: ✓*
Device that uses a battery to supply power.
Device used in the event of a power failure/problem to supply power.
- (1)

- 6.9.2 *Any ONE: ✓*
- Helps to protect the computer/storage devices against power surges and spikes.
 - Keeps the computer on to allow the user to save data/ shut down the computer.
- (1)

- 6.9.3 Lossy ✓
- (1)

- 6.10
- 6.10.1 Digital rights management ✓ (1)
- 6.10.2 *Any ONE:* ✓
- BitTorrent/ Torrent/ UTorrent
 - FTP (1)
- 6.11
- 6.11.1 *Any TWO:* ✓✓
- Turn off radio wave transferring and receiving devices such as Bluetooth, GPS, Wi-Fi, etc.
 - Turn on battery-saving mode.
 - Disable sync functionalities.
 - Limit background activity.
 - Close open apps not in use (multitasking).
 - Turn down screen brightness.
 - Avoid playing media or video games on smartphones, as it drains battery rapidly.
 - Carry a battery pack. (2)
- 6.11.2 *Any ONE:* ✓
- An Internet connection is required.
 - Both users need to utilise the same software in order to communicate using VoIP.
 - Credits need to be purchased in order to call telephones that are not on the Internet.
 - VoIP can transfer a lot of data, especially for video calls, which can make it expensive or use up data caps quickly.
 - Call quality is easily negatively affected due to slow or poor quality Internet connections. (1)

TOTAL SECTION F: 40
GRAND TOTAL: 150