



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

INFORMATION TECHNOLOGY P2

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MEMORANDUM

MARKS: 180

This memorandum consists of 13 pages.

SECTION A: MULTIPLE-CHOICE QUESTIONS**QUESTION 1**

- 1.1 **B✓** HTTP (1)
- 1.2 **A✓** Lack of hard disk space (1)
- 1.3 **B✓** Clock multiplication (1)
- 1.4 **D✓** disk defragmenter (1)
- 1.5 **B✓** Android (1)
- 1.6 **C✓** Bluetooth (1)
- 1.7 **B✓** If the antivirus program indicates that an e-mail attachment is infected, open the attachment immediately. (1)
- 1.8 **C✓** Athlete (1)
- 1.9 **D✓** encapsulation (1)
- 1.10 **A✓** HTML **OR** **D** CSS (1)

TOTAL SECTION A: 10

SECTION B: HARDWARE AND SOFTWARE**QUESTION 2**

- 2.1 (Any TWO – UPS✓✓)
- A device which supplies power to a device for a short period of time
 - Supplies power in the event of a power failure
 - An inline UPS prevents power spikes from occurring (2)
- 2.2 2.2.1 (Any TWO software-related measures✓✓)
- Encrypt the data
 - Set user rights
 - Password protect file (2)
- 2.2.2 (Any ONE NON-software-related measure✓)
- Securing the room that the server is in, with security gates and/or keypad **OR** Controlled access to the room where the server is.
 - Biometric/fingerprint scanner (1)
- 2.2.3 Social engineering - activities that attempt to con and deceive people into giving out confidential information that will compromise the security of data or access to a network. Relies on the trusting nature of humans. ✓
- Example:* Someone posing as a technician may ask an authorised user for his/her password. ✓ (2)
- 2.3 2.3.1 Accelerated Graphics Port✓
Technology which allows graphics cards to access RAM directly. ✓ (2)
- 2.3.2 64-bit - the size of the buses transmitting data and instructions✓ is twice as wide as on the 32-bit motherboard. ✓
OR
The larger the buses on the motherboard, the faster data can be transferred. (2)
- 2.3.3 Multi-processing✓ (1)
- 2.3.4 Multi-core is one physical processor✓ with two logical cores or control units. ✓ (2)
- 2.3.5 The data bus✓ would need to increase in width to accommodate data transfer to two CPUs. ✓ (2)

- 2.3.6 (a) A technique whereby a secondary storage device (hard disk)✓
is used as RAM✓ (2)
- (b) The operating system✓ (1)
- (c) (Any ONE ✓)
▪ Add more RAM
▪ Avoid opening too many programs at once (1)
- 2.4 2.4.1 (Any TWO ✓✓)
▪ Barcode scanner
▪ Special printer to print ID cards
▪ Camera to take learner ID photos (2)
- 2.4.2 Each RFID tag has a unique reference✓that is stored in a
database of registered learners.
Learners pass through an RFID reader at the entrances and their
ID is checked to see if they are registered learners✓. If they are not
registered, they will not be allowed access. (2)
- 2.4.3 Fingerprint scanners ✓
Reason: More difficult to steal or copy fingerprint than a bar-
coded ID card or RFID tag✓ (2)
- 2.4.4 Devices are connected directly to the network via the switch (A) ✓
and the data can be stored on a central server (B)✓ (2)
- 2.5 2.5.1 (a) A unique address given to a device on a network✓ (1)
- (b) 10.0.0.1✓ (any other valid IP address) (1)
- (c) NO✓
Any device connected to a network requires an IP address✓ (2)
- 2.5.2 (Any ONE suitable video file extension ✓)
AVI
MPEG
MKV (1)
- 2.5.3 (a) camera_number_date_time.avi ✓
OR
Combine the date, time and camera number as the file name

*(Any suitable example of a file name or a description of how to
name the files)* (1)
- (b) Folders separated into camera numbers✓ and subfolders
containing months and subfolders containing weeks✓

*(Accept suitable diagram indicating folder structures with 3
levels of folders)* (2)

- 2.5.4 (a) $2\,000 / 50 = 40$ days✓✓
(1 mark for correct calculation/formula if answer is incorrect) (2)
- (b) (Any TWO ✓✓)
 - Compressing the old video data
 - Copying the video data onto an external storage medium
 - Copy it to any other location on the network
(2)
- 2.5.5 (a) At least every day✓
Reason: A security-related event could happen at any time/day and the footage may be needed✓
(NOTE: Accept answers within a 6- to 24-hour period) (2)
- (b) (Any ONE suitable storage medium✓ with corresponding justification✓)
 - Magnetic tape – speed of access not required can retrieve data at own time
 - External hard drive – can retrieve data quickly/enough space**NOTE:**
Incorrect: *Size of the video data is too large to upload to an Internet backup site or store on a DVD* (2)
- (c) Utility software is software that is normally used to carry out routine maintenance on a computer system✓✓ (2)
- 2.5.6 (a) ADSL – permanent digital connection consisting of a single line that uses a splitter or a DSL filter✓ to allow data and voice to be transmitted through the same line at the same time✓ (2)
- (b) NO✓ (and ONE valid reason✓)
 - There will not be enough available cap on the Internet connection.
 - It will be time-consuming to transmit 50 GB of data.
(2)
- 2.5.7 (a) RAID → A mechanism whereby multiple hard disks✓ are combined but appear as one disk. ✓
NOTE: For only ONE mark:
 Redundant Array of Inexpensive (Independent) Disks (2)
- (b) NO✓ Data is just spanned across multiple disks but there is no mirroring or parity ✓ (2)

TOTAL SECTION B: 54

SECTION C: APPLICATIONS AND IMPLICATIONS**QUESTION 3: e-COMMUNICATION**

- 3.1 3.1.1 Phishing✓ (1)
- 3.1.2 Spoofing✓ (1)
- 3.2 3.2.1 DoS attack → An assault whose purpose it is to disrupt computer access✓ to an Internet service✓ such as the Web or e-mail. (2)
- 3.2.2 Use an unsuspecting computer to send a stream of confusing data messages or useless traffic to a computer network to block visitors from accessing the network. ✓ (1)
- 3.3 3.3.1 Search engine → Program/software ✓ that finds websites, web pages, images, etc. related to a topic on the Internet ✓ (2)
- 3.3.2 (Any correct ONE✓)
- Google
 - Yahoo
 - Bing
- (1)
- 3.3.3 (Any TWO ✓✓)
- Make use of the advance search options.
 - Indicate a combination of words that must be found.
- OR**
- Any other useful hint* (2)
- [10]**

QUESTION 4: SOCIAL AND ETHICAL ISSUES

4.1 YES/NO ✓ and any valid justification ✓

Yes – fewer security guards are employed

No – other job opportunities are created such as the installation of security systems and the monitoring of security systems, etc. (2)

4.2 (Any ONE example ✓✓)

- It can have serious consequences if data such as physical addresses or information related to the crime is recorded incorrectly.
- There might be a police investigation that relies on the information recorded to press charges against criminals. (2)

4.3 (Any TWO ✓✓)

- Warn people against crime spots via Twitter, Facebook, etc.
- Educate people via forums about the way specific types of criminals behave to be able to be prepared and alert.

OR*Any other sensible suggestion* (2)

4.4 Violation of privacy ✓

OR*Any other sensible suggestion* (1)

4.5 (Any THREE ✓✓✓)

- Install an updated antivirus program
 - Update the antivirus program regularly
 - Install malware detection and removal software
 - Do not open e-mails with attachments from an unknown source (3)
- [10]**

TOTAL SECTION C: 20

SECTION D: PROGRAMMING AND SOFTWARE DEVELOPMENT**QUESTION 5: ALGORITHMS AND PLANNING**

- 5.1 5.1.1 Record ✓ (1)
- 5.1.2 (a) Valid data falls within the allowed boundaries ✓
Any acceptable example, ✓ e.g. the number of the month entered falls between 1 and 12.
- Invalid data falls outside the allowed boundaries ✓
Any acceptable example, ✓ e.g. entering X as the gender instead of a M or F.
- (Any other correct examples) (4)
- (b) Input mask prescribes the format of the input data, ✓
e.g. for a date 00/00/0000 ✓ (2)
- (c) (Any TWO ✓✓)
 - Combo boxes
 - Lookup
 - Validation rules
(2)
- 5.1.3 Query ✓ (1)
- 5.2 5.2.1 One to many ✓ (1)
- 5.2.2 (a) (Any ONE correct explanation ✓✓)
 - Links the information in the **tblCodes** table to the **tblEntry** table or the **tblExit** table.
 - The data in the **tblCodes** table in the other two tables does not have to be repeated.
(2)
- (b) Foreign key ✓ (1)
- 5.2.3 (Any ONE ✓)
 - The number of entries into the school premises is unknown.
 - The **EntryNo** should not be physically captured.
 - There will be no possibilities of duplicate numbers.
(1)
- 5.2.4 The **Code** field in these tables will carry duplicate data. ✓ (1)
- 5.2.5 (a) NO ✓ More than one individual could enter at the same time and on the same day. ✓ (2)
- (b) YES ✓ Only one individual with that code could enter at that time and on that day. ✓ (2)

- 5.2.6 (Any TWO ✓✓)
- Increase accuracy of data
 - Make maintenance easier and faster
 - Faster and more accurate querying
 - Avoids anomalies
 - Remove redundant data
- (2)
- 5.3 5.3.1 False✓ (1)
- 5.3.2 False✓ (1)
- 5.3.3 True✓ (1)
- 5.3.4 True✓ (1)
- 5.3.5 False✓ (1)
- 5.4 5.4.1 For-loop (1)
- 5.4.2 (a) (i) The value of total will stay 0 – resulting in an endless loop.✓ (1)
- (ii) Add one to total **OR** $\text{total} \leftarrow \text{total} + 1$
Between statements 2 and 3 **OR** statements 3 and 4 **OR** statements 4 and 5.✓
(Must be added anywhere inside the loop) (2)
- (b) 1. $\text{total} \leftarrow 0$
2. input name✓
3. do while total less than 20 and✓ name \neq 'XXX" ✓
4. $\text{total} \leftarrow \text{total} + 1$
5. display name
6. input name✓
7. end loop (4)
- 5.5 5.5.1 (Any TWO ✓✓)
- Tracetables
 - Walkthroughs
 - Breakpoints
 - Logging error messages
 - Stepthroughs
 - Debugger on the computer
- (2)
- 5.5.2 (a) Syntax ✓ (1)
- (b) Logical ✓ (1)
- (c) Logical ✓ (1)

- 5.6 5.6.1 (Any TWO ✓✓)
 ▪ Randomly generating data
 ▪ Assigning data in the program
 ▪ Reading from a text file/database (2)

- 5.6.2 (a) (i) **visitArr** ✓✓

6	9	4	1	
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 (2)

- (ii) Remove the input number statement above the first loop in line 4 ✓ (1)

- (b)
- | | | |
|---------|---|-----|
| Line 10 | Average ← total / 5 ✓
(correct position ✓) | (4) |
| Line 11 | Display average | |
| Line 12 | Start loop | |
| Line 13 | If visitArr[loop_value] ✓ > average | |
| Line 14 | Display daysArr[Loop_value] ✓ | |
| Line 15 | End loop | |

TOTAL SECTION D: 49

SECTION E: INTEGRATED SCENARIO**QUESTION 6**

- 6.1 6.1.1 (Any THREE ✓✓✓)
▪ Phone numbers
▪ Address
▪ School
▪ e-mail address (3)
- 6.1.2 Identity theft – where someone obtains your personal information✓
in order to assume your identity (pretends to be you)✓ (2)
- 6.1.3 (Any TWO ✓✓)
▪ Don't give out personal information
▪ Install anti-spyware software
▪ Keep documents that contain your personal information in a
safe place
▪ Only enter your personal information on reputable websites (2)
- 6.1.4 Spyware✓
Keylogger✓ (2)
- 6.1.5 (a) Cyber-bullying – when someone's reputation or integrity is
attacked or undermined using an electronic communication
medium✓ (1)
- (b) (Any suitable example ✓)
▪ Posting derogatory comments or photos about someone
on a social networking site
▪ Spreading rumours about a person via IM or chat rooms (1)
- 6.1.6 (a) (Any TWO ✓✓)
▪ Gather personal information in order to provide you with
personalised advertising
▪ Gather statistics about the population to develop new
products (2)
- (b) (Any ONE ✓)
▪ Photographs
▪ School
▪ Grade
▪ Sports
▪ Teams
▪ Extra-curricular activities, etc. (1)

- (c) YES ✓
Data-mining is used to provide better commercial services and does not harm anyone. ✓
OR
NO ✓
People have not given consent for the data to be used for commercial purposes and are unaware it is being used for this purpose. ✓
(Do not award marks for ONLY Yes/No) (2)
- 6.2 6.2.1 (Any ONE ✓)
 - Library
 - Tuck shop purchases
 - Internet access in the computer lab
(1)
- 6.2.2 (a) (Any TWO ✓✓)
 - Pupils/Student council members
 - Member of the cleaning staff
 - Unauthorised teachers
 - Parents
 - Members of the governing body
 - District officials
(2)
- (b) Copyright – protects the intellectual property of an author. ✓ (1)
- (c) So that the school would have legal recourse if someone made a copy of the data without consent ✓ (1)
- (d) Students could gain access to the video and post it on Youtube. ✓
Criminals could use it to learn about the school's layout and learner movements. ✓ (2)
- 6.2.3 NO ✓
The surveillance data is used for security purposes and the learners and staff are aware of their locations. ✓ (2)
- 6.3 6.3.1 (Any ONE – WiFi ✓)
 - Wireless network connectivity
 - A standard that allows devices to communicate wirelessly with one another
 - Wireless Fidelity
(1)
- 6.3.2 (Any TWO ✓✓)
 - Laptop
 - Tablet PC
 - Smartphone
 - PDA
 - eBook reader
(2)

- 6.3.3 (Any suitable explanation ✓✓)
 ▪ Some WiFi networks are used for WLAN connectivity without Internet access.
 ▪ The business may require users to pay for Internet access. (2)
- 6.3.4 (Any ONE ✓)
 ▪ Packet-sniffing
 ▪ Eavesdropping (1)
- 6.3.5 (a) NO✓ Firewall's protect a computer from unwanted access but they do not secure outgoing data. ✓ (2)
- (b) YES✓
 (Any ONE ✓)
 ▪ You can only decrypt the transmitted data if the encryption key is known.
 ▪ Without decrypting the data would not be useful. (2)
- (c) NO✓ Virus scan only scans local computers and doesn't affect outgoing data✓ (2)
- 6.3.6 (Any ONE ✓)
 ▪ 3G
 ▪ iBurst/Sentech
 ▪ WiMax (1)
- 6.4. 6.4.1 The person got their e-mail address from the original e-mail because it was in the TO field✓ (1)
- 6.4.2 In the BCC/BC field✓✓ (2)
- 6.4.3 (ANY TWO ✓✓)
 ▪ Find another reliable source with the same information.
 ▪ Ask an expert in the field.
 ▪ Determine who the author of the original e-mail is and verify if he/se is reliable. (2)
- 6.4.4 Phishing tries to obtain personal security information✓ whereas a hoax e-mail is just false information. ✓ (2)
- 6.4.5 FWD: FWD: → the e-mail has been forwarded by previous recipients ✓ (1)
- 6.4.6 .co.za → the e-mail address is registered in South-Africa ✓ (1)
- TOTAL SECTION E: 47**
GRAND TOTAL: 180