



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

INFORMATION TECHNOLOGY P2

FEBRUARY/MARCH 2012

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✓) <ul style="list-style-type: none">▪ Google▪ Yahoo▪ Bing | (1) |
| | 3.3.3 | (Any TWO ✓✓) <ul style="list-style-type: none">▪ Make use of the advance search options.▪ Indicate a combination of words that must be found. OR
<i>Any other useful hint</i> | (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 | |
|---|---|---|---|--|
- (2)

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

- (b)
- | | |
|---------|--|
| Line 10 | Average \leftarrow total / 5 ✓
(correct position ✓) |
| 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 |
- (4)

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. ✓

(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.

(c) NO✓ Virus scan only scans local computers and doesn't affect outgoing data✓ | (2)

(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