basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

INFORMATION TECHNOLOGY P2

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MEMORANDUM

MARKS: 180

TIME: 3 hours

This memorandum consists of 13 pages.

SECTION A: MULTIPLE-CHOICE QUESTIONS

QUESTION 1

1.1   **B**✓   decentralised   (1)

1.2   **A**✓   pdf   (1)

1.3   **A**✓   a dynamic-link library file   (1)

1.4   **B**✓   where employees never enter a physical office, but rather conduct their   (1)
          business via the Internet.

1.5   **C**✓   Cookies   (1)

1.6   **D**✓   Zombie   (1)

1.7   **C**✓   KeyLogger   (1)

1.8   **A**✓   Striping   (1)

1.9   **C**✓   Hot Spot   (1)

1.10   **B**✓   Pipelining   (1)

                                                                                  TOTAL SECTION A: 10

SECTION B: HARDWARE AND SOFTWARE

QUESTION 2

2.1   2.1.1   A or B (no mark for the choice itself)
Any TWO appropriate answers   ✓✓
A: Less Expensive,
Has all the features required to operate in a youth centre,
No need for gaming software
OR
Any TWO appropriate answers
B: Has more up to date hardware features
Later version of Windows
More software installed
Faster
Will need to be upgraded later than computer A.   (2)

          2.1.2   (a)   Connects higher speed devices to the motherboard. ✓✓   (2)

                        (b)   PCI express bus is an expansion bus that doubles the speed
of the original PCI bus.✓✓   (2)

          2.1.3   Any ONE ✓✓
Improves the speed at which graphics, 3-D graphics and video transmit.
Provides a faster, dedicated interface between the video card and CPU.   (2)

          2.1.4   (a)   DRAM stores data using electrical charges✓ while
MRAM stores data using magnetic charges (fields)✓   (2)

                        (b)   Virtual memory: A section (area) of the hard disk✓ that the
operating system uses as an extension of RAM (or memory).
✓ It creates the impression that the computer has more RAM   (2)
than it actually has.

                        (c)   (i) Paging - A technique for implementing virtual memory,
where the virtual address space is divided into fixed-sized
blocks called pages, each of which can be moved into primary
memory when space is available✓✓   (2)

                              (ii) Thrashing – refers to excessive paging in a virtual memory.
Thrashing is generally caused by too many processes
competing for scarce memory resources. ✓✓   (2)

2.1.5 (a) Parallel – transmitting more than one bit at a time✓
Serial – transmitting one bit at a time. ✓ (2)

(b) Each device has its own interrupt line. ✓ Can use its IRQ to request the CPU to interrupt what it is busy with and first allocate processing time to the request of this device✓ (2)

2.1.6 Dual-core: Consists of **two** complete execution cores in one physical processor.✓
Quad-core: Consists of **four** complete execution cores in one physical processor.✓ (2)

2.1.7 Universal serial bus✓ (1)

2.1.8 (a) Extra instructions designed to speed up the processing of graphics, audio and video functions. ✓✓ (2)

(b) RISC - Single instruction specifies single operation✓
CISC - Single instruction specifies multiple operations✓ (2)

2.1.9 Any TWO✓✓
Installation of other programs/software might request the original operating system

In the event of the computer crashing, the operating system might need to be re-installed

Proof that the software installed on the computer is legal (2)

2.1.10 (a) Any TWO✓✓
Manages hardware and software
Manages memory space and tasks
Provides a user interface (2)

(b) (i) Any TWO✓✓
Advantages: Often Free, Can add to code, Often available for multiple platforms. (2)
(ii) Any TWO✓✓
Disadvantages: Limited Support, Not always fully debugged and tested (2)

2.2   2.2.1   Any THREE ✓✓✓
- Sharing of software OR any example implying this aspect
- Faster distribution of information OR any example implying this aspect
- Can apply security control OR administrator can monitor activities of users OR access can be restricted etc
- Centralisation of data – data only in one place – reliable – not many versions
- Improved communication – Or any example implying this e.g. messages can be sent to the users or users can communicate electronically
- Entertainment – Can organise computer LAN parties where users play computer games against each other

NB – Saves time is not acceptable – must indicate why it saves time such as faster distribution of information, quicker to install software on all the computers, etc.
NB – Each advantage must focus on a different aspect. Guard against the same advantage being mentioned in different ways- such as three examples implying the same advantage. Only one mark in this case   (3)

2.2.2   (a) Buffer: A special storage location in RAM✓ used to hold data being sent to the printer. ✓   (2)

          (b) Spooler: A program✓ that places jobs in a queue in a spooling file✓ (or space on hard disk), sends these files to the buffer when ready ✓   (3)

2.2.3   (a) Network Interface Cards:
               Used to link the network cable to the PC – supplies the port ✓ and to convert the outgoing data to the format ✓that the cable will be able to carry ✓and vice versa to transform the incoming data into a format that the computer can work with.   (3)

          (b) Switch or hub:
               Controls the send and receive✓ of data ✓ OR any explanation that implies this fact   (2)

2.2.4   UTP is cheap✓, easily installed. ✓   (2)

2.2.5   (a) Peer to Peer✓   (1)

          (b) Security is managed better. ✓
               Data can be distributed easily. ✓   (2)

2.2.6   (a) Network administrator:
ANY TWO ✓✓
Network layout planning, User setup/control of rights, installation and testing of new network software, BackUps   (2)

(b) Network technician:
ANY TWO✓✓
Fixing faulty printers and computers, testing/repair of cabling, installation of new equipment, installation of drivers for new equipment etc.   (2)

2.3   2.3.1   Determine the correct and most efficient (or fasters) path to transmit data✓ Reduce traffic✓   (2)

2.3.2   Any TWO✓✓
Can be used in remote areas
Cables are not reliable – get stolen or damages
Easy to add new centres to the WAN – no physical cable required.   (2)

TOTAL SECTION B: 61

SECTION C: APPLICATIONS AND IMPLICATIONS

QUESTION 3: e-COMMUNICATION

3.1   3.1.1   Any TWO✓✓
Instant Messaging
Internet Relay Chat (IRC)
Forums
Blogs
Social networking website such as Facebook or Twitter   (2)

        3.1.2   Any TWO✓✓
Research
On-line banking
On-line shopping
Entertainment
(NOT communication or any example of communication mentioned
e.g. as mentioned in Question 3.1.1)   (2)

        3.1.3   (a)   Any ONE✓
Share ideas, photos etc
Cheap and fast way of communicating   (1)

                (b)   Any TWO✓✓
Not much physical contact with humans
Can become addictive
Loose track of time
Can communicate with strangers - can be dangerous   (2)

3.2   Any TWO✓✓
Must be from a reliable and well-known source (Well known author)
Compare information from different websites
Must be from authors who are frequently cited by other authors in the field.
Any other useful advice   (2)

[9]

QUESTION 4: SOCIAL AND ETHICAL ISSUES

4.1 Computer Ethics: The moral guidelines✓ that govern the use of computers and information systems✓. The conduct that specifies the standard for the ethical use of computers and information systems. (2)

4.2 4.2.1 Copyright: Exclusive rights given to authors and artists to duplicate, publish and sell their work. ✓ (1)

4.2.2 Plagiarism: A person invades the exclusive rights of the author by duplicating articles without the author's permission. ✓ (1)

4.3 4.3.1 Identity theft
A perpetrator uses another person's identity as his/her own in order to gain financially and/or in other ways. ✓ (1)

4.3.2 Phishing
A scam in which a perpetrator attempts to obtain your personal information. ✓ (1)

4.4 4.4.1 Online advertising✓ OR any example implying online advertising. (1)

4.4.2 Wise to have a blog on the website?
Yes ✓ (also accept No if motivation is correct) (2)

Any ONE ✓
- Sites that have blogs have a high hit rate. Blogs are a real attraction on any website.
- Obtain different perspective on issues

4.5 Any TWO✓✓
Read documents electronically (instead of printing documents to read)
Edit data on the screen before printing
Use both sides of the paper
Save files instead of printing and filing printouts
Use low power devices
Use screen savers
Or any acceptable answer (2)
[11]

TOTAL SECTION C: 20

SECTION D: PROGRAMMING AND SOFTWARE DEVELOPMENT

QUESTION 5: ALGORITHMS AND PLANNING

5.1   5.1.1   5✓ (1)

        5.1.2   It provides the field names✓ and order in which the rest of the data appears in each line of text in the file✓ (2)

        5.1.3   Spreadsheets✓
                   Databases✓ (2)

        5.1.4   # ~ ^ ✓ These characters are not commonly used in human-readable data ✓ (1)

5.2   5.2.1   Give the format of the name of the file as part of the message✓ (1)

        5.2.2   Any ONE✓
                   File Not Found
                   IO error OR Device IO error OR cannot read from disk (1)

        5.2.3   Any TWO ✓✓
                   Display an error message and quit the action
                   Allow the user to re-enter the filename (2)

        5.2.4   The number of lines in the file are unknown ✓ and a conditional loop can execute until the end of the file is reached ✓ (2)

        5.2.5   String/Text✓
                   Need to retain the leading zero and/or spaces of the contact number which a numerical data type would not✓ (2)

        5.2.6   So that the file is not locked✓
                   Preventing other applications/users from changing it after the program has used it✓ (2)

5.3   5.3.1   Any TWO✓✓
                   Developers can work on separate modules of the software independently – save time – get the project done faster
                   Code can be written once and re-used
                   Code can be debugged more easily since modules where the error occurs can be identified more easily. Less code to work through. (2)

5.3.2　　Either of the following: ✓✓
The grouping together of data and its associated operations in a single unit/class

OR

Restricting　　access　　(making　　private)　　to　　a　　class's attributes/properties　　　　　　　　　　　　　　　　　　　　　　　　　(2)

5.3.3　　(a) False✓　　　　　　　　　　　　　　　　　　　　　　　　(1)

(b) True✓　　　　　　　　　　　　　　　　　　　　　　　　(1)

(c) False✓　　　　　　　　　　　　　　　　　　　　　　　　(1)

5.3.4　　Rewrites code using proper indentation ✓✓ variable names ✓✓
E.g

```
LINE
1         counter ← 0
2         searchText ← "Career"
3         LOOP UNTIL counter <= 10
4            IF res [counter] EQUALS searchText
5               DISPLAY res[counter]
6            END IF
7            counter ← counter + 1
8         END LOOP
```
(4)

5.3.5　　For debugging-purposes – temporarily excluding non-working sections of code ✓
Document their code for other programmers to easily determine what the section of code does✓　　　　　　　　　　　　　　　　(2)

5.4　　5.4.1　　(a) True✓　　　　　　　　　　　　　　　　　　　　　　(1)

(b) False✓　　　　　　　　　　　　　　　　　　　　　(1)

(c) True✓✓　　　　　　　　　　　　　　　　　　　　　(2)

5.4.2　　Any correct answer e.g.:

if　((Grade = 12) AND (visits <= 5)) ✓ OR ((Grade <> 12) AND (visits <= 20)) ✓
Another possible answer:
if　((Grade = 12) AND NOT(visits > 5)) OR ((Grade <> 12) AND NOT(visits > 20))　　　　　　　　　　　　　　　　　　　　　　(2)

5.5　　5.5.1　　Any TWO✓✓
Scalable
Easy to query
Handles multiple access
Easy to create relationships between data　　　　　　　　　　(2)

　　　　　　　　　　　　　　　　　　　　　　Please turn over

5.5.2 The value for each record/row is not unique ✓ OR
There are duplicate values in the field✓ (1)

5.5.3 (a) Validation Rule ✓✓ (2)

(b) Change the data type to a lookup field (combo box) ✓ (1)

5.5.4 The maximum number of characters that can be entered in this field is 255 characters✓ (1)

5.5.5 (a) tblCounsellors – CounsellorID, CounsellorName, Speciality, Availability✓

tblLearners – LearnerID, LearnerName, CounsellorID✓ (2)

(b) tblCounsellors – CounsellorID✓, CounsellorName, Speciality, Availability

tblLearners – LearnerID✓, LearnerName, CounsellorID (2)

(c) (i) Foreign key: CounsellorID✓ (1)
(ii) tblLearners table✓ (1)

TOTAL SECTION D: 48

SECTION E: INTEGRATED SCENARIO

QUESTION 6

6.1	6.1.1	Web-server software✓	(1)
	6.1.2	HyperText Transfer Protocol✓✓	(2)
	6.1.3	An ISP would still be required to provide a connection to the Internet ✓	(1)
	6.1.4	Advantage of ADSL: Supports a faster rate when receiving data ✓than when sending data. ✓ Most Internet users download more information from the Internet than they upload.	(2)
	6.1.5	(a) Bandwidth: The total volume of data that can be transmitted from one point to another during a given time. ✓✓	(2)
		(b) Host videos on an external website (e.g. Youtube)✓ and embed (or put a link to) the video on the centre's website ✓	(2)
6.2	6.2.1	HTTPS is a secure protocol✓ used for encrypting information such as passwords on websites✓	(2)
	6.2.2	He can use the same domain name for both✓ as long as the centre owns the domain name and the e-mail server is set up correctly ✓	(2)
	6.2.3	Computers use IP addresses to communicate but users will find it easier to type in a URL – that is in words ✓ ✓	(2)
6.3	6.3.1	Popup: A website or part of a website that appears in a new window✓ (No mark for indicating that popups are always advertising)	(1)
	6.3.2	Any TWO✓✓ Why should popups be blocked: Popups can be used maliciously Can be used for unwanted advertising Web-browser block them for security reasons	(2)
	6.3.3	Why pop-ups are recommend: Popups are a way of displaying additional information✓ To avoid having too much information on a screen ✓– keep interface simple	(2)
6.4	6.4.1	It should state how the website/organisation will make use of your personal information and how it will be kept private✓✓	(2)

6.4.2   Wiki:
Web-based software/website✓ that allows users to create and edit information collectively✓   (2)

6.4.3   No✓
Teenagers have a lot of misconceptions about sex and HIV/AIDs and a wiki that anyone could edit might contain incorrect information and the result is too risky ✓✓

Do NOT accept Yes as an answer.   (3)

6.4.4   Only usernames✓
The information might be of a sensitive nature and the user might not want his/her full name published. ✓
OR
Full names
People who abuse the forums or partake in cyber bullying can be easily tracked and dealt with.   (2)

6.5   The message is broken up into smaller units called packets. ✓ Packets are numbered indicating the position of the packet in the message.
The packets are sent individually✓ to the destination via different ✓available routes. The packets are assembled at the destination into the original message. ✓   (4)

6.6   Any TWO ✓✓   (2)
Users are overwhelmed by too much information.
Difficult to distinguish between useful information and garbage
Information can be contradictory and then may confuse learners.
Can waste time looking for real facts amongst all the useless information

6.7   6.7.1   Doing business over the Internet✓   (1)

6.7.2   Any TWO✓✓
Many clients – world wide
Less expensive – no hiring of buildings, office equipment etc
Does not have to keep much stock
Can do business 24 hours a day.   (2)

6.7.3   Any TWO✓✓
Users must take the delivery cost into account to calculate the final cost of the product
Delivery of items may take long
It might be difficult to get advice on products because of lack of human interaction
Credit cards details on the Internet – prone to abuse, etc.   (2)

TOTAL SECTION E: 41
GRAND TOTAL: 180