basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL
SENIOR CERTIFICATE

GRADE 12

INFORMATION TECHNOLOGY P2

FEBRUARY/MARCH 2015

MEMORANDUM

MARKS: 150

This memorandum consists of 12 pages.

SECTION A: MULTIPLE-CHOICE QUESTIONS

QUESTION 1

1.1	C ✓		(1)
1.2	C ✓		(1)
1.3	B ✓		(1)
1.4	A✓		(1)
1.5	D ✓		(1)
1.6	B ✓		(1)
1.7	B ✓		(1)
1.8	D ✓		(1)
1.9	C ✓		(1)
1.10	A ✓		(1)

TOTAL SECTION A: 10

SECTION B: SYSTEM TECHNOLOGIES

QUESTION 2
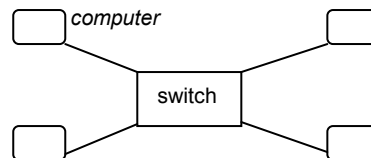
2.1.1 An operating system is (system) software ✓ which manages / controls all the activities that take place in a computer. ✓ (2)

2.1.2 Android ✓ (1)

2.1.3 *Any ONE of:* ✓
- If the upgrade process is disrupted, the device might no longer function.
- The upgrade software may contain bugs. (1)

2.1.4
- The operating system splits / shares the CPU time between the active programs. ✓
- It appears as if the computer is running multiple programs at once. ✓ (2)

2.2 *Any TWO of:* ✓✓
- Physical size is smaller than HDD
- It is more robust than HDD
- It uses less power than HDD
- It is faster than HDD (2)

2.3.1 Thrashing ✓ (1)

2.3.2 It makes use of space on secondary memory / storage / hard drive✓ using it as primary memory / RAM.✓
Virtual memory (one mark only) (2)

2.3.3 It might be difficult to obtain RAM chips / DIMMs that are compatible with the older motherboards✓. (1)

2.4.1 Each core can process separate programs ✓ at the same time. ✓
OR
Each core acts like a separate CPU making it possible to execute multiple tasks simultaneously. (2)

2.4.2 3Tb HDD ✓ Hard disk size could be reduced (1)

2.4.3 (a) The clock pulses determines the rate at which activities take place ✓ within the CPU, data transmission / processing only takes place at each pulse ✓ of the system clock. (2)

2.4.3 (b) The speed of the system clock ✓ will be multiplied by a specific value ✓ in order to obtain the required clock speed for the specific CPU.
Clock multiplication – one mark only (2)

2.4.4   (a) It connects the different components on the motherboard. ✓
        OR
        The internal buses transfer data and instructions between components.   (1)

2.4.4   (b) Point-to-point connections are dedicated connections which cannot be
        interrupted/shared ✓ and therefore speeds up the operation of the CPU
        whereas buses are shared between components / carries data between
        multiple components. ✓   (2)

2.5.1   It can be used in access control✓ to prevent unauthorised access to laptop ✓
        OR a similar description e.g. - used for biometric access control   (2)

2.5.2   *Any ONE of:* ✓
        • Retinal scanner
        • Face recognition scanner
        • Voice recognition   (1)

TOTAL SECTION B: 25

SECTION C: COMMUNICATION AND NETWORK TECHNOLOGIES

QUESTION 3

3.1.1   Correct layout ✓
Diagram include:
Switch/Hub ✓
Computers ✓

computer   switch

 (3)

3.1.2   *Any TWO of:* ✓✓
- Easy to troubleshoot
- Easy to replace individual computers
- If one device stops working, network is not disrupted
- Easy to install/set up/maintain (2)

3.1.3   Bus ✓ or Ring (1)

3.2.1   mobility ✓
OR cost saving / easier to set up (1)

3.2.2   *Any TWO of:* ✓✓
- WiFi range is limited.
- Buildings / obstructions might require a distributed layout
- Multiple computers sharing one access point will drastically decrease speed
- An access point can only support a limited number of connections. (2)

3.2.3   Because the signal is broadcasted, it is easy to intercept the data ✓ and therefore the data, and password, can be accessed. (1)

3.3.1   Is the process whereby a close replica of a web site (or e-mail) is created ✓ in order to create a hoax/false webpage that represents another valid site. ✓
OR
Creating a hoax/false webpage that closely represents another valid site. (2)

3.3.2   *Any TWO of the following concepts* ✓✓
- Use anti-virus and anti-spyware software
- Regularly update software / anti-virus
- Don't open e-mails or attachments from suspicious sources
- Scan external devices before you use them
- Don't install pirated software / untrustworthy software
- Activate the firewall
- Don't visit / download from suspicious websites
- Read and obey security warnings on websites / software (2)

3.4.1
- Technology used in the website is not compatible/available on the mobile device, e.g. Flash player. ✓
- The website has not been designed for a smaller screen size/has been designed for larger computer screens. ✓ (2)

3.4.2   Bluetooth is used by devices like keyboards✓ and WiFi is used for wireless networks ✓two separate technologies.
OR
The mobile device offers two wireless technologies – *ONE mark only* (2)

3.5.1   VoIP ✓ (1)

3.5.2   *Any TWO of:* ✓✓
- Data is expensive.
- Bandwidth of connections is often very low
- Internet connections are not reliable/ not available everywhere.
- Not all schools will have the necessary hardware. (2)

3.5.3   Cross platform means that software is designed to run on different operating systems. ✓ (1)

3.6.1   The manager needs to be connected to the Internet. ✓ After that the manager connects to the resource centre's server ✓ with access being controlled with a username and password. ✓ (3)

3.6.2   The desktop of the remote computer appears as a separate application on his computer ✓which allows him to work with the computer as if seated in front of the computer itself. ✓ (2)

TOTAL SECTION C: 27

SECTION D: DATA AND INFORMATION MANAGEMENT

QUESTION 4

4.1   A desktop database is usually used for single user applications and is installed on personal computers. ✓
A server database is installed on the server and is accessed by the user using a network connection and shared by users. ✓   (2)

4.2.1   (a)   1 (DevicesTb) to many (BorrowedTb) ✓   (1)

         (b)   DeviceID in DevicesTb✓ and DeviceID in BorrowedTb ✓   (2)

         (c)   BorrowedTb has DeviceID as the foreign key ✓ and DevicesTb has DeviceID as primary key ✓   (2)

4.2.2   (a)   SELECT Make, Type, Value FROM DevicesTb WHERE Type = 'T' ORDER BY Value DESC
- Correct fields and table: Make, Type, Value from DevicesTb ✓
- Condition: Type = 'T' ✓
- Sorting: ORDER BY ✓ Value DESC ✓   (4)

         (b)   DELETE FROM DevicesTb WHERE Type = 'P'
- Correct Table: DevicesTb ✓
- Correct field: Type ✓
- Correct condition: 'P' ✓   (3)

         (c)   UPDATE DevicesTb SET Value= Value- Value*10%
- Correct instruction and table:- UPDATE DevicesTb✓
- Correct field to change:= Value ✓
- Correct calculation:- Value-Value*10% ✓ OR Value-Value*0.01   (3)

         (d)   SELECT MemberID, Type, DateBorrowed FROM DevicesTb, BorrowedTb WHERE DevicesTb.DeviceID = BorrowedTb.DeviceID AND DateReturned IS NULL
- Correct fields: MemberID, Type, DateBorrowed ✓
- Correct Tables: DevicesTb, BorrowedTb ✓
- Connection: DevicesTb.DeviceID = BorrowedTb.DeviceID ✓
- Correct field in condition: DateReturned ✓
- Correct condition: IS NULL ✓   (5)

4.3.1
- Fine – currency ✓
- DateOfBirth – date ✓   (2)

4.3.2   *Any TWO of the following:* ✓✓
May borrow only two books/no space to borrow more than two books
Repeating fields
Fields are dependent on a field other than the primary key
Two different entities (members/books) included in one table   (2)

                                            TOTAL SECTION D: 26

SECTION E: SOLUTION DEVELOPMENT

QUESTION 5

5.1.1   (a)   Age: the user has to select from list of options thus preventing invalid input. ✓
OR prevents typing errors / all possible values displayed / saves time   (1)

           (b)   Gender: only one of the given options may be selected. ✓
OR prevents both options from being selected / prevents typing errors   (1)

5.1.2   *Any ONE of:* ✓
   • Any character can be saved in a string variable
   • Text box is type string and the surname variable will be of the same type
   • No type casting needed when using the value   (1)

5.1.3   An incorrect day may be selected for a specific month ✓ 29 February used in a non-leap year OR **30** February/31 April, etc. ✓   (2)

5.1.4   *Any TWO of:* ✓✓
   • Display what caused the error / Give a specific error message
   • Indicate how error can be corrected
   • The user could be given the option to continue or cancel the current operation.   (2)

5.2.1   It is used to create/instantiate ✓ an object.   (1)

5.2.2   The attributes are private ✓ /attributes cannot be accessed directly   (1)

5.2.3   (a) Auxiliary ✓   (1)

5.2.3   (b) if (age >=10 AND address Not Null) ✓ OR✓
                  (age > 16 AND membership validated) ✓   return **true**
          else
             return **false** ✓   (4)

5.3.1   (a) Read days ✓   (1)

5.3.1   (b) (days > 0) ✓ AND (days < 100)✓
          NOTE: *AND* operator must be used.
          Accept if Java or Delphi code is used.   (2)

5.3.2   (a)

Count	Count < 10
1	True
2	True
3	True
4	True
5	True
6	False

Count incrementing from 1 to 6 ✓
Count < 6 True for 1 to 5 ✓
Count < 6 False for 6 ✓   (3)

5.3.2   (b) Count <= 6 ✓   (1)

5.3.2   (c) Counter will be 1 larger than the real count (count will become 7) ✓
OR Average will be calculated incorrectly   (1)

5.3.2   (d) Line 1: Count = 0 ✓   (1)

5.4   Marks given for:
- Taking first index as highest *or* making highest = 0✓
- Looping through days to compare✓
- Testing array value against highest *or* against value at highest index✓
- *then* Changing highest *or* highest index ✓

Possible algorithm solution
Take first index as highest✓
Loop 2 to 5 (4 times) ✓
    Test array value against high index array value✓
        Change index to new high value✓
Display from Weekdays array the day in highIndex position

NOTE: *Loop and If dependency must be clearly indicated/indented.*

Possible pseudocode solution

highIndex ← 1
index ← 1
repeat until index = 5
index ← index + 1
If NumBooks[index] > NumBooks[highIndex]
highIndex ← index
end repeat
Display from Weekdays array the day in highIndex position

(4)

TOTAL SECTION E: 27

SECTION F: INTEGRATED SCENARIO

QUESTION 6

6.1.1   *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)

6.1.2   Indicates that the computer is energy efficient without sacrificing performance.✓
OR   Device has been designed in order to use less electricity.   (1)

6.1.3   *Any TWO of:* ✓✓
- Recycle
- Use for spare parts
- Make use of companies that dispose of e-waste   (2)

6.2.1   4G is provided by cellular ✓service providers as an extension of mobile voice service, while WiMAX is a service dedicated for Internet connection only✓   (2)

6.2.2   Cellular data/Internet connection is in general more expensive. ✓   (1)

6.2.3   Both use radio wave / microwave transmission ✓   (1)

6.3.1   *Any ONE of:* ✓
- Theft of data
- Theft of hardware
- Accidental damage / deleting while working with data   (1)

6.3.2   *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)

6.4.1   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)

6.4.2   *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)

6.5.1   A wiki is a collaborative ✓ reference resource where any user can make contributions. ✓   (2)

6.5.2   *Any TWO of:* ✓✓
- The administrator can moderate content before it is published
- Published content can be cross checked with other sources on web
- Request knowledgeable people to assist in moderating content
- Remove content that is not accurate
- Provide for professional peer comment on content placed on site   (2)

6.6.1   File is split into sections ✓ and shared via a number of peers ✓ instead of a server.   (2)

6.6.2   Any *ONE* of: ✓
- You Tube
- Streaming
- The cloud/DropBox/GoogleDrive/SkyDrive   (1)

6.7.1   The (a) key is a formula that is used to encrypt / change the information ✓ so that it cannot be read, the (a) key is used to decrypt it again after transmission ✓ and make it readable again.   (2)

6.7.2   (a) Any *ONE* of: ✓
- Online storage space
- Storage in the cloud   (1)

6.7.2   (b) Any *TWO* of: ✓✓
- Access on any device with Internet access
- No need for large storage capacity in devices
- Files can be accessed anywhere where Internet is available
- Easy to maintain / update material   (2)

6.8.1   Globalisation describes the increasing trend and ease with which people, goods, services and information ✓ travel around the world with the use of technology. ✓   (2)

6.8.2   *Any THREE of:* ✓✓✓
- Can obtain information much faster
- Access to information is not restricted to certain place, people, time/No borders
- Processing large amounts of data: Collection of data for elections/voting process
- Safety: Electronic money
- Convenience: Online banking/ATMs
- Employment: provides opportunities for skilled workers
- Tele medicine/developments in equipment
- Telecommuting   (3)

TOTAL SECTION F: 35
GRAND TOTAL: 150