



# basic education

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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**

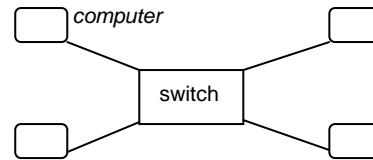
- 2.1.1 An operating system is (system) software ✓ which manages / controls all the activities that take place in a computer. ✓ (2)
- 2.1.2 Android ✓ (1)
- 2.1.3 *Any ONE of:* ✓
- If the upgrade process is disrupted, the device might no longer function.
  - The upgrade software may contain bugs. (1)
- 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 ✓



- (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**