



# basic education

Department:  
Basic Education  
**REPUBLIC OF SOUTH AFRICA**

**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 12**

**COMPUTER APPLICATIONS TECHNOLOGY P2**

**NOVEMBER 2017**

**MARKS: 150**

**TIME: 3 hours**

**This question paper consists of 17 pages.**

**INSTRUCTIONS AND INFORMATION**

1. This question paper consists of:  
  
SECTION A (25 marks)  
SECTION B (75 marks)  
SECTION C (50 marks)
2. Answer ALL the questions.
3. Number the answers correctly according to the numbering system used in this question paper.
4. Start EACH question on a NEW page.
5. Do NOT write in the right-hand margin of the ANSWER BOOK.
6. Leave a line after EACH subquestion.
7. In general, a mark is allocated per fact. A 2-mark question would therefore require TWO facts, et cetera.
8. Write neatly and legibly.

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

Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question number (1.1.1–1.1.10) in the ANSWER BOOK, for example 1.1.11 D.

- 1.1 Which hardware device can create electronic copies of documents by capturing an image?
- A Printer
  - B Scanner
  - C Stylus
  - D Monitor
- (1)
- 1.2 Which CPU in the following list is the best choice for video-editing?
- A i3
  - B i7
  - C Pentium
  - D Celeron
- (1)
- 1.3 Which storage device will be more likely to break when it is accidentally dropped?
- A HDD
  - B USB flash disk
  - C SSD
  - D microSD card
- (1)
- 1.4 Non-responding programs are best closed using ...
- A Disk Cleanup.
  - B System Restore.
  - C Task Manager.
  - D Disk Defragmenter.
- (1)
- 1.5 If the display on a monitor appears to be the wrong size or out of focus, it may be corrected by changing the ... of the monitor.
- A position
  - B brightness
  - C resolution
  - D contrast
- (1)
- 1.6 The function =SUM(A1:B2) will add values in ...
- A all cells in rows 1 and 2.
  - B cells A1, A2, B1 and B2.
  - C cells B1 and B2.
  - D all cells in columns A and B.
- (1)

- 1.7 Using a wizard to get data from a CSV file into an application is called ...
- A exporting.
  - B spooling.
  - C importing.
  - D compressing. (1)
- 1.8 Which ONE of the following devices in a LAN is more likely to have a built-in firewall?
- A Printer
  - B Router
  - C Mobile client
  - D Workstation (1)
- 1.9 A pattern of change in data over time is best described by the term ...
- A trend.
  - B process.
  - C thread.
  - D graph. (1)
- 1.10 Which ONE of the following processes is useful when analysing data?
- A Recycling
  - B Cleaning
  - C Archiving
  - D Comparing (1)
- [10]**

**QUESTION 2: MATCHING ITEMS**

Choose a term/concept from COLUMN B that matches the description in COLUMN A. Write only the letter (A–T) next to the question number (2.1–2.10) in the ANSWER BOOK, for example 2.11 U.

COLUMN A		COLUMN B	
2.1	Unit of measurement applicable to bandwidth	A	MHz
2.2	An example of a commonly used aspect ratio	B	eye tracking
2.3	A stage in the information processing cycle	C	caching
2.4	A technology used in devices for paralysed users	D	DIMM
2.5	The reason why a computer screen switches off after a set time	E	overheating
2.6	A medium for a fast and stable Internet connection	F	cap
2.7	Compression of files for long-term storage	G	worm
2.8	A malware program that poses as a useful application	H	archiving
2.9	Cache memory is found here	I	UTP cable
2.10	A monthly limit to data used over an Internet connection	J	19 : 37
		K	shaping
		L	text-to-speech
		M	output
		N	Mbps
		O	16 : 9
		P	power-saving
		Q	encryption
		R	CPU
		S	fibre optics
		T	Trojan

(10 x 1)

**[10]**

**QUESTION 3: TRUE/FALSE ITEMS**

Indicate whether the following statements are TRUE or FALSE. Write 'true' or 'false' next to the question number (3.1–3.5) in the ANSWER BOOK. Correct the statement if it is FALSE. Change the underlined word(s) to make the statement TRUE. (You may not simply use the word 'NOT' to change the statement. NO mark will be awarded if only FALSE is written down.)

EXAMPLES:

QUESTION	ANSWER
<u>Google</u> is the world's most popular search engine.	True
An <u>NIC</u> has slots for hardware components, such as the CPU.	False – motherboard

- 3.1 An asterisk used in search criteria is called a wild card. (1)
- 3.2 Linux is a proprietary operating system. (1)
- 3.3 Formatting a USB flash disk will back up any data stored on it. (1)
- 3.4 Grouping can be used to automatically highlight specific values in a spreadsheet according to a rule. (1)
- 3.5 The spreadsheet functions LEFT and RIGHT can be replaced by the function CONCATENATE to get the same result. (1)

**[5]****TOTAL SECTION A: 25**

**SECTION B****QUESTION 4: SYSTEMS TECHNOLOGIES**

- 4.1 State TWO disadvantages of wireless keyboards. (2)
- 4.2 State TWO ways in which the GUI of a mobile app differs from the desktop version of the same app. (2)
- 4.3 What kind of desktop computer is a result of convergence? (1)
- 4.4 Suggest TWO ways to fix a mouse pointer that moves in an unpredictable way, without replacing the mouse. (2)
- 4.5 Give TWO reasons why many modern notebooks no longer include an optical drive. (2)
- 4.6 State TWO uses of NFC on smartphones. (2)
- 4.7 What should a user do when the trial period of a software product has expired? (1)
- 4.8 PDF is a popular file format.
- 4.8.1 State ONE advantage of using the PDF file format. (1)
- 4.8.2 How would you convert an office suite document to PDF? (1)
- 4.8.3 You receive two documents in PDF format. Both are one page long.  
Explain why they have different file sizes AND why it is not possible to do a text search in one of the two. (2)
- 4.9 Explain TWO ways to find a program on your computer, OTHER than using the Start Menu. (2)
- 4.10 Explain how a POS device finds the price of a product after it is scanned. (2)
- 4.11 Name TWO features to look for in laptop computer hardware that will make upgrades easier in future. (2)
- 4.12 Virtual reality (VR) equipment is becoming more affordable.
- 4.12.1 Name TWO pieces of equipment one would need for VR. (2)
- 4.12.2 State ONE way in which VR can be used. (1)
- [25]**

**QUESTION 5: INTERNET AND NETWORK TECHNOLOGIES**

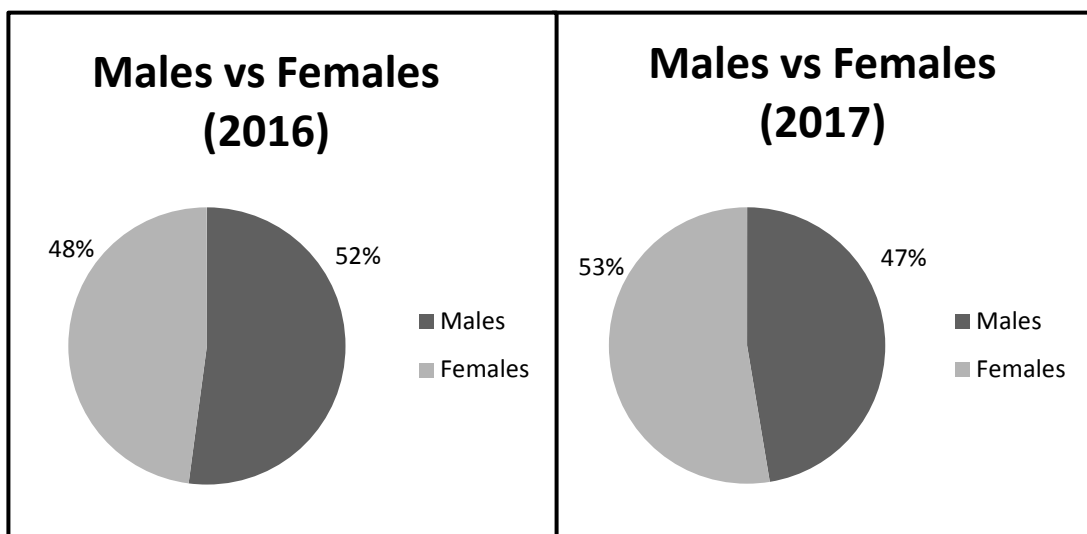
- 5.1 Name a device that connects a LAN to a WAN. (1)
- 5.2 State TWO disadvantages of using Bluetooth to connect devices in a home area network (HAN). (2)
- 5.3 Give TWO reasons why a school may not want to use cloud storage for storing large volumes of data. (2)
- 5.4 Name ONE type of technology that uses radio waves for data transfer. (1)
- 5.5 What is the function of a network switch? (1)
- 5.6 User access rights can limit what a user can do on a network.  
Give TWO examples of access rights that restrict a user on a network. (2)
- 5.7 Which software is required to access a company's intranet? (1)
- 5.8 The Internet is increasingly being used to make voice calls.
- 5.8.1 Give an example of a program that supports VoIP, other than Skype. (1)
- 5.8.2 Why is it not recommended to use VoIP for emergency calls? (1)
- 5.8.3 Why would a user reduce the quality of VoIP calls? (1)
- 5.9 Suggest TWO ways in which a user can listen to music on a smartphone that has no headphone jack (port). (2)
- [15]**

**QUESTION 6: INFORMATION MANAGEMENT**

6.1 Why would an author's name not be enough to consider a source trustworthy? (1)

6.2 An Internet search returned a link from an advertiser at the top of the set of results.  
Give a reason why it may not be a good idea to follow this link. (1)

6.3 The graphs below represent the change in male and female learner numbers over a period of time.



6.3.1 What conclusion can be made based on the data above? (1)

6.3.2 What type of graph would you use to combine the information in the graphs above? (1)

6.4 How does the number of respondents affect the outcome of a survey? (1)

6.5 Give ONE reason why the values in the *Name* column and *Marks* column in the data below were not sorted correctly.

Original data			➔	Sorted data		
<i>Surname</i>	<i>Name</i>	<i>Marks</i>		<i>Surname</i>	<i>Name</i>	<i>Marks</i>
Tlou	Lerato	54		Harms	Frikkie	54
Hlongwana	Bulisa	89		Hlongwana	Bulisa	89
Rhadebe	Julius	28		Howell	Liam	28
Harms	Frikkie	17		Rhadebe	Julius	17
Howell	Liam	43		Tlou	Lerato	43

(2)

6.6 Identify THREE problems in the wizard below that will affect the quality of data when the import process is completed.

Import Text Wizard

What delimiter separates your fields? Select the appropriate delimiter and see how your text is affected in the preview below.

Choose the delimiter that separates your fields:

Tab     Semicolon     Comma     Space     Other:

First Row Contains Field Names    Text Qualifier: {none} ▼

ID	NAME	SURNAME	GRADE	CLASS
9805022579182	Greg	Johnson	12	A
9803074103084	Anastasia	12	B	
9801199621089	Sipho	Lushaka	12	C
9804293101081;Lerato;Makhena;12;D				

(3)  
[10]

**QUESTION 7: SOCIAL IMPLICATIONS**

- 7.1 Name the computer crime that has to do with posting false information/accusations about another person online. (1)
- 7.2 Suggest TWO rules for an acceptable use policy (AUP) in a school computer centre that has Internet access. (2)
- 7.3 While installing software, you were not required to enter a product key.  
Give TWO reasons why this occurred. (2)
- 7.4 A company stores the personal information of its clients.  
Suggest TWO guidelines for the company to ethically manage client data. (2)
- 7.5 Study the picture below and answer the questions that follow.

**NOTE:** Assume that BANKZA is the name of a legitimate South African bank.

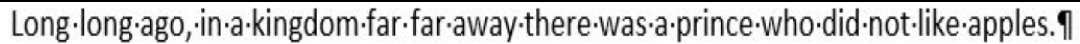
The screenshot shows a web browser window with the address bar displaying `http://bankza.com.ua/login.jsp`. The page content includes a logo on the left, a navigation bar with 'Logon' and 'Registration' buttons, and a message: 'URGENTLY updated your detail'. Below this is a 'Logon |' section. The main form area is titled 'Logon details' and contains three input fields: 'Enter your access account number' with the value '9062673930', 'Enter your PIN' with masked characters '.....', and 'Enter your user number' with the value '1'. To the right of these fields is a 'Keypad' with buttons for digits 1-9, 0, and a 'C' button. Below the input fields is a warning: 'It is your responsibility to ensure the secrecy of your PIN number.' At the bottom of the form, there are links for 'EN Verander na Afrikaans' and 'Reset PIN', and buttons for 'Reset' and 'Next'.

- 7.5.1 Identify the type of scam represented in the picture above. (1)
- 7.5.2 State TWO ways in which a user can identify this as a scam. (2)

**[10]**

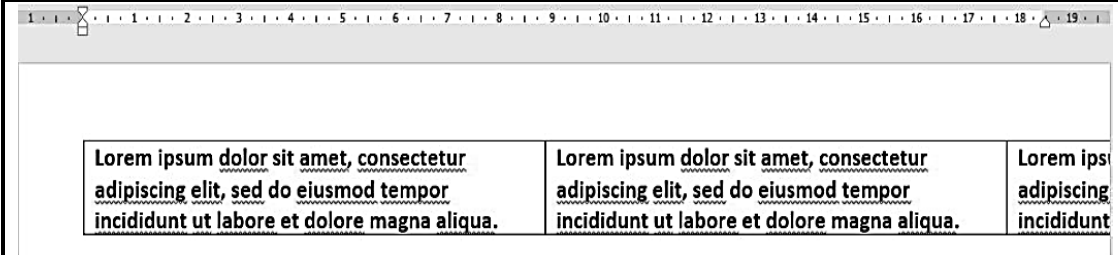
**QUESTION 8: SOLUTION DEVELOPMENT**

- 8.1 Why would one turn on the formatting symbols, as is done in the screenshot below?



(1)

- 8.2 Look at the screenshot of a table below and answer the questions that follow.



Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.	Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.	Lorem ipsi adipiscing incididunt
---	---	--

- 8.2.1 What is the current width of the page without the margins? (1)

- 8.2.2 Suggest a way to reduce the number of cells in the table WITHOUT deleting any text. (1)

- 8.2.3 State TWO general ways to configure the spell checker to get rid of the automatic underline. (2)

- 8.2.4 The table in the screenshot above is too wide to display correctly. Suggest ONE way to make the table fit on the page. (1)

- 8.3 The ACTUAL size of an image called 'google.jpg' is 1080x900.

This image should display smaller when the following HTML code is executed:

```

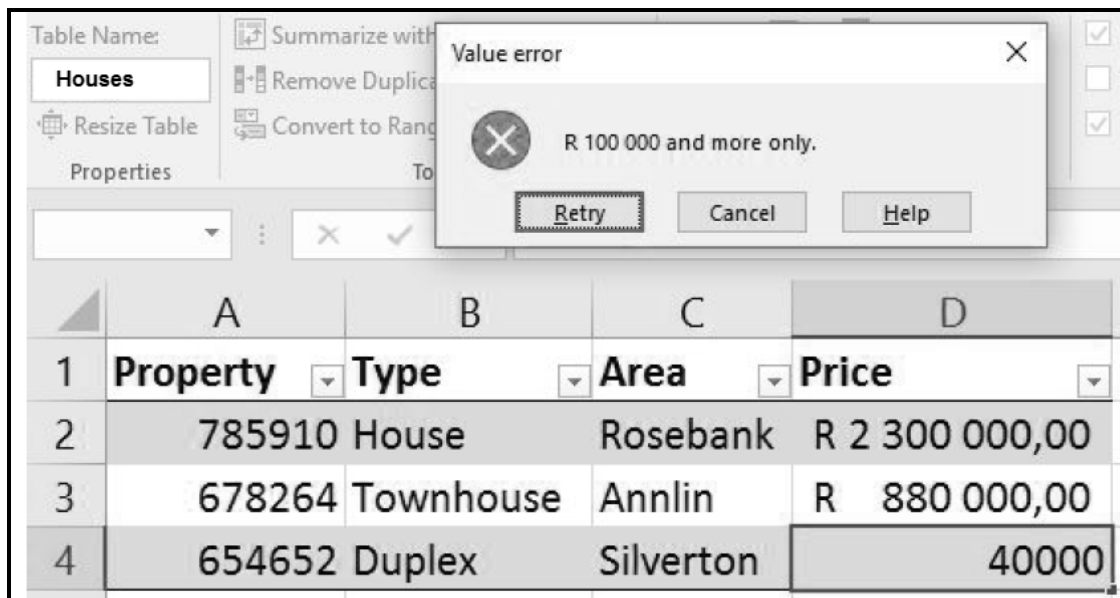
```

- 8.3.1 How does the image size specified in the HTML code affect the original size of the image saved on a disk? (1)

- 8.3.2 Why does the displayed image appear distorted? (1)

- 8.3.3 Comment on the accessibility of the image in the web page for blind users. Motivate your answer. (2)

8.4 Look at the screenshot of a spreadsheet below and answer the questions that follow.



- 8.4.1 Give the term for the feature that was applied to give the 'Value error' dialog as a result. (1)
- 8.4.2 What is the purpose of the dropdown buttons next to the column headings in the image? (1)
- 8.4.3 A named range has been defined in the spreadsheet above.  
What is this named range called? (1)
- 8.4.4 You need to export the data in the spreadsheet to a database.  
Which field would you choose as a primary key? Explain the reason for your choice. (2)

[15]

**TOTAL SECTION B: 75**

**SECTION C: INTEGRATED SCENARIO****QUESTION 9**

The local municipality asked you to use your knowledge of ICTs to help them implement an effective water-saving campaign.

- 9.1 They want to create an information booklet with images for the campaign.
- 9.1.1 Name an application that can be used to design such a booklet. (1)
- 9.1.2 Why would A2 size paper be a bad choice for printing the booklet? (1)
- 9.1.3 Suggest TWO ways to save ink when printing a project. (2)
- 9.1.4 Recommend a cost-effective alternative to printing to distribute a large number of booklets. (1)
- 9.1.5 A digital camera will be used to take photographs for the booklet.  
Name TWO types of storage media one can use with the digital camera for saving the photographs. (2)
- 9.2 The municipality will publish an online list of citizens who saved or wasted the most water for the month.
- 9.2.1 Which TWO objects in a database program could be used to enter water usage by each customer? (2)
- 9.2.2 Identify a field in the list below in which the same data has to be entered repeatedly AND suggest a property that one can set to avoid manual capturing of duplicate data.
- |                    |                     |                   |
|--------------------|---------------------|-------------------|
| <b>Customer_ID</b> | <b>Usage_Period</b> | <b>Water_Used</b> |
|--------------------|---------------------|-------------------|
- (2)
- 9.2.3 Which database technique could the municipality use to determine the top ten water savers? (1)
- 9.2.4 Which website feature could provide municipal customers with automatic updates each time the top ten list changes? (1)
- 9.2.5 Discuss TWO implications of posting the names of the top ten offenders online. (2)
- 9.2.6 Name TWO design principles that would make the municipal website easy to use. (2)
- 9.2.7 How can a hacker force the municipal website to go offline? (1)
- 9.2.8 Explain how it is possible that the website is attacked from a customer's computer, without the customer's knowledge. (2)

9.3 The municipality wants to conduct a water awareness survey.

9.3.1 State TWO problems regarding the use of the question below that appeared in the survey.

How do you save water at home? _____ _____ _____
---

(2)

9.3.2 State TWO methods to conduct this water awareness survey.

(2)

9.3.3 What are the implications for the survey findings if the same people can submit more than one survey response?

(1)  
**[25]**

**QUESTION 10**

Your municipality has formed a committee to deal with disaster management.

- 10.1 Mobile emergency officers will receive ICT equipment.
- 10.1.1 What Internet connection should the officers get? (1)
  - 10.1.2 Give TWO reasons for using an SSD rather than a traditional hard drive on laptop computers for the officers. (2)
  - 10.1.3 Give a specification of the laptop computer screen that will affect its use in sunlight. (1)
  - 10.1.4 What popular instant messaging service can be used to create groups for sharing disaster alerts for the area? (1)
- 10.2 Local government wants to develop an app that people can use to report an incident as soon as it happens. They will rely on the community to fund the project.
- 10.2.1 State TWO disadvantages of crowd-funding for the individual who contributes money. (2)
  - 10.2.2 What technology would citizens use to determine the precise location of a natural disaster they may witness? (1)
  - 10.2.3 What information does a pin on a map provide in a mapping service app such as Google Maps? (1)
- 10.3 People may have to leave their homes when disaster strikes. They will be accommodated in community halls or churches.
- 10.3.1 State an advantage of using RFID tags for people that have been displaced as a result of a disaster. (1)
  - 10.3.2 Biometric devices will be installed at the different venues.  
Give TWO examples of biometric devices. (2)
  - 10.3.3 State TWO ways in which having a user account, such as an account with Google, Apple or Microsoft, can be helpful when a smartphone is lost. (2)
  - 10.3.4 What service can the municipality set up at the venues to provide free wireless Internet access to the people accommodated there? (1)
  - 10.3.5 State TWO precautions one should take when using a public computer. (2)

- 10.4 The following message appears on a computer that was made available in one of the venues:

We're sorry, but we encrypted (scrambled) ALL the files on your computer. To make your computer work again, please pay 3 Bitcoin to the provided account.

You are helping the victims of hunger by paying this amount.

We thank you.

- 10.4.1 What type of software is to blame for the message above? (1)
- 10.4.2 What is *Bitcoin*? (1)
- 10.4.3 State an advantage of being paid in Bitcoin for the authors of the message. (1)
- 10.4.4 What action can the municipal IT department take to react to this threat? (1)
- 10.5 An example spreadsheet with natural disaster survivor details was drafted as follows:

	A	B	C	D	E	F
1	<b>ID_Number</b>	<b>Name</b>	<b>Surname</b>	<b>Gender</b>	<b>Age_G</b>	<b>Blood_type</b>
2	8.70915E+12	John	Zulu	Male	30	O
3	0504220436081	Jane	Abrahams	Female	12	A+

- 10.5.1 Why is the ID number in cell A2 displayed incorrectly? (1)
- 10.5.2 The following function will be used to calculate the average age of the survivors:
- =AVERAGE(D2:D200)
- Why would it not give the average age of the survivors? (1)
- 10.5.3 State TWO ways to fully display the word 'Age\_Group' in cell E1. (2)

**[25]**

**TOTAL SECTION C: 50**  
**GRAND TOTAL: 150**



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**NOVEMBER 2017**

**MARKING GUIDELINES**

**MARKS: 150**

**These marking guidelines consist of 15 pages.**

## SUGGESTIONS AND RECOMMENDATIONS TO MARKERS

- Revisit the questions and the marking guidelines frequently during the marking session.
- It is advisable to read the question frequently (and re-read) together with the candidate's response to check that it correlates, so that you are not misled by the candidate's statements/answers.
- Be careful not to focus on keywords or general statements, but rather read the entire answer. If in doubt, read the entire answer and then the question paper and marking guidelines. Ask yourself or your senior marker if the response could 'fit' into the marking guidelines before allocating the correct marks to the candidate. For example, the marking guidelines state 'cheap' and the learner responds with 'less expensive'.
- Beware of overlapping answers to a specific question. In general, one mark is awarded per fact.

### SECTION A

#### QUESTION 1: MULTIPLE-CHOICE

1.1	B	✓	1
1.2	B	✓	1
1.3	A	✓	1
1.4	C	✓	1
1.5	C	✓	1
1.6	B	✓	1
1.7	C	✓	1
1.8	B/C/D	✓	1
1.9	A	✓	1
1.10	B/D	✓	1
<b>Total: [10]</b>			

#### QUESTION 2: MATCHING ITEMS

2.1	N	✓	1
2.2	O	✓	1
2.3	M	✓	1
2.4	B	✓	1
2.5	P	✓	1
2.6	S	✓	1
2.7	H	✓	1
2.8	T	✓	1
2.9	R/D	✓	1
2.10	F	✓	1
<b>Total: [10]</b>			

**QUESTION 3: TRUE/FALSE ITEMS**

<i>(Note to marker: Do not award a mark if only 'FALSE' is written down.)</i>		
3.1	TRUE✓	1
3.2	FALSE, open-source/free/open/FOSS✓	1
3.3	FALSE, erase/wipe/delete✓	1
3.4	FALSE, Conditional formatting✓	1
3.5	FALSE, MID✓	1
		<b>[5]</b>

**TOTAL SECTION A: 25**

**SECTION B****QUESTION 4: SYSTEMS TECHNOLOGIES**

4.1	<ul style="list-style-type: none"> <li>• Batteries run flat</li> <li>• Limited range</li> <li>• Prone to interference/crosstalk</li> <li>• More expensive than wired keyboards</li> <li>• If transceiver is damaged/lost/stolen, keyboard has to be replaced as well/Easily stolen</li> <li>• Keyboard drivers only load once operating system is loaded</li> <li>• Can be intercepted/tapped into by hackers</li> <li>• Latency during gaming/Not as responsive as wired keyboards</li> </ul> <p style="text-align: right;">✓✓ (Any two)</p>		(2)
4.2	<ul style="list-style-type: none"> <li>• Buttons/Components designed for smaller screen</li> <li>• No scroll bars</li> <li>• Fewer screen elements visible/Less information visible</li> <li>• No mouse pointer required/Designed for touch interface</li> </ul> <p style="text-align: right;">✓✓ (Any two)</p>		(2)
4.3	<p>All-in-one computer✓</p> <p><i>(Note to marker: Accept any reasonable description/example of an all-in-one PC, e.g. Laptop/Touch screen/Convertible/Hybrid)</i></p>		(1)
4.4	<ul style="list-style-type: none"> <li>• Re-install driver</li> <li>• Check cable/transceiver connection</li> <li>• Try another surface for the mouse</li> <li>• Re-start the computer/mouse</li> <li>• Adjust mouse pointer settings/speed/sensitivity</li> <li>• Try another USB port</li> <li>• Clean/Clear any residue on optical sensor</li> <li>• Replace battery on wireless mouse</li> </ul> <p style="text-align: right;">✓✓ (Any two)</p>		(2)
4.5	<ul style="list-style-type: none"> <li>• Most data/software is available to download</li> <li>• Reduction in size/Lighter to carry</li> <li>• Save on battery life/Longer battery life</li> <li>• Other larger capacity storage options available</li> <li>• Less demand for optical media/Obsolete</li> </ul> <p style="text-align: right;">✓✓ (Any two)</p>		(2)
4.6	<ul style="list-style-type: none"> <li>• Transfer of files/data between devices</li> <li>• Can be used for payments</li> <li>• Can be used with RFID tags</li> </ul> <p style="text-align: right;">✓✓ (Any two)</p>		(2)

4.7	<ul style="list-style-type: none"> <li>Uninstall the software/Stop using the software</li> <li>Purchase a licence/Register the software</li> <li>Continue using with reduced functionality</li> </ul> <p style="text-align: right;">✓ (Any one)</p>		(1)
4.8.1	<ul style="list-style-type: none"> <li>Easier to share with others who do not have the program in which it was originally created/Reader is freely available</li> <li>Layout and formatting will be maintained</li> <li>Can add security to pdf to make it difficult to edit/print</li> <li>Reduced file size</li> </ul> <p style="text-align: right;">✓ (Any one)</p>		(1)
4.8.2	<ul style="list-style-type: none"> <li>Save as PDF/Send to PDF</li> <li>Export to PDF</li> <li>Print to PDF</li> <li>Use converter software</li> <li>Print on paper and scan to pdf/Fax to e-mail</li> </ul> <p style="text-align: right;">✓ (Any one)</p>		(1)
4.8.3	<ul style="list-style-type: none"> <li>Difference in DPI if they were scanned to pdf</li> <li>Different content, e.g. smaller document is from text/larger document is from an image</li> <li>Different PDF converters were used/Converted from different programs</li> </ul> <p style="text-align: right;">✓ (Any one)</p> <p>AND</p> <ul style="list-style-type: none"> <li>OCR data is not available/PDF is an image</li> <li>PDF security does not allow the search function</li> </ul> <p style="text-align: right;">✓ (Any one)</p>		(2) (4)
4.9	<ul style="list-style-type: none"> <li>Use search program and files tool</li> <li>Use a file management app (e.g. Windows Explorer, My Computer) and navigate to folder</li> <li>Check for shortcuts on desktop</li> <li>Open a recent document for a particular application</li> <li>Check programs pinned to the taskbar</li> <li>Check add/remove programs list</li> <li>Use Run Command feature</li> </ul> <p style="text-align: right;">✓✓ (Any two)</p>		(2)
4.10	<p>Searches a database✓ using a product code/key/barcode✓</p> <p><i>(Note to marker: Accept any reference to retrieval of information if 'Database' is not mentioned.)</i></p>		(2)

4.11	<ul style="list-style-type: none"> <li>• Extra RAM slots available/Ability to add more RAM</li> <li>• Extra ports available</li> <li>• Replaceable graphics card/adaptor</li> <li>• Replaceable CPU</li> <li>• Extra hard drive bay available/Replaceable hard disk drive/SSD</li> <li>• Replaceable optical drive</li> <li>• Removable battery</li> </ul> <p style="text-align: right;">✓✓ (Any two)</p>		(2)
4.12.1	<ul style="list-style-type: none"> <li>• Head gear/Helmet with screen</li> <li>• Headphones</li> <li>• Gaming console</li> <li>• Smartphones/Mobile device/Cellphone</li> <li>• Gloves/Body suit with sensors/controllers</li> <li>• Box/Room/Simulation environment</li> </ul> <p style="text-align: right;">✓✓ (Any two)</p>		(2)
4.12.2	<ul style="list-style-type: none"> <li>• Tourism/Virtual tours</li> <li>• Flight simulation</li> <li>• Entertainment/Gaming</li> <li>• Communication</li> <li>• Education</li> </ul> <p style="text-align: right;">✓ (Any one)</p> <p><i>(Note to marker: Accept any valid explanation of a use of VR)</i></p>		(1) (3)
			<b>[25]</b>

**QUESTION 5: INTERNET AND NETWORK TECHNOLOGIES**

5.1	Router/Modem✓		(1)
5.2	<ul style="list-style-type: none"> <li>• Speed of data transfer is slow</li> <li>• Range is limited (up to 100 m)</li> <li>• Limited number of devices can connect</li> </ul> <p style="text-align: right;">✓✓ (Any two)</p>		(2)
5.3	<ul style="list-style-type: none"> <li>• High bandwidth costs</li> <li>• Limited bandwidth/Uploads and downloads can take long</li> <li>• Cloud storage subscription fees/Limited space at no subscription</li> <li>• Security issues</li> <li>• Internet connection may be troublesome</li> </ul> <p style="text-align: right;">✓✓ (Any two)</p>		(2)
5.4	<ul style="list-style-type: none"> <li>• Wi-Fi/Wi-Max</li> <li>• NFC/RFID</li> <li>• Satellite</li> <li>• Bluetooth</li> <li>• 3G/LTE</li> </ul> <p style="text-align: right;">✓ (Any one)</p>		(1)
5.5	<ul style="list-style-type: none"> <li>• Connects two or more computers/devices in a network</li> <li>• Directs network traffic (data) efficiently</li> </ul> <p style="text-align: right;">✓ (Any one)</p> <p><i>(Note to marker: Accept features of a managed (smart) switch that has to do with control or management of the network.)</i></p>		(1)
5.6	<ul style="list-style-type: none"> <li>• Unable to edit a document</li> <li>• Unable to access a folder/data/files</li> <li>• Restriction on access to physical resources, e.g. Printers, flash drives, etc.</li> <li>• Cannot access the Internet/a particular website</li> <li>• Cannot make changes to system settings/Cannot perform administration tasks</li> <li>• Cannot install software</li> </ul> <p style="text-align: right;">✓✓ (Any two)</p>		(2)
5.7	<ul style="list-style-type: none"> <li>• Web browser</li> <li>• File management application/FTP program (e.g. Windows Explorer/File Manager)</li> <li>• Proprietary interface program</li> </ul> <p style="text-align: right;">✓ (Any one)</p> <p><i>(Note to marker: Accept any suitable example of a program.)</i></p>		(1)
5.8.1	<p>Hangouts/Facetime/WhatsApp/Viber, etc.✓</p> <p><i>(Note to marker: Accept any suitable example of a program.)</i></p>		(1)

5.8.2	<ul style="list-style-type: none"><li>• Internet connection may not be reliable</li><li>• Lack of bandwidth</li><li>• Destination point may not have VOIP</li><li>• Difficult for emergency services to trace origin of the call</li></ul> <p style="text-align: right;">✓ (Any one)</p>		(1)
5.8.3	<ul style="list-style-type: none"><li>• Prevent dropped calls</li><li>• Save on data/costs</li></ul> <p style="text-align: right;">✓ (Any one)</p>		(1)
5.9	<ul style="list-style-type: none"><li>• Connect speakers via Bluetooth/Via Bluetooth/Bluetooth speakers</li><li>• Use Chromecast/Use Wi-Fi</li><li>• Via USB cable</li><li>• Using the device's speaker</li></ul> <p style="text-align: right;">✓✓ (Any two)</p>		(2)
			<b>[15]</b>

**QUESTION 6: INFORMATION MANAGEMENT**

6.1	<ul style="list-style-type: none"> <li>It may be an unverifiable author</li> <li>The author could have no expertise in that subject/field</li> <li>The author could have plagiarised the information</li> </ul> <p style="text-align: right;">✓ (Any one)</p>		(1)
6.2	<ul style="list-style-type: none"> <li>It may give biased information</li> <li>It may not give all the information required</li> </ul> <p style="text-align: right;">✓(Any one)</p> <p><i>(Note to marker: Accept answers related to a scam.)</i></p>		(1)
6.3.1	Males decreased/Females increased✓	(1)	
6.3.2	Use a line/bar/column graph✓	(1)	(2)
6.4	<ul style="list-style-type: none"> <li>Too few respondents will result in inconclusive findings</li> <li>Sufficient number of respondents will result in reliable findings</li> <li>Wider range of viewpoints</li> </ul> <p style="text-align: right;">✓(Any one)</p>		(1)
6.5	The sorted range did not include the marks column✓✓		(2)
6.6	First row should be set to field names✓ Missing field/surname in the third row/other data in wrong columns for row 2/3✓ Wrong delimiter used/Data is not separated into columns in the last row✓		(3)
			<b>[10]</b>

**QUESTION 7: SOCIAL IMPLICATIONS**

7.1	<ul style="list-style-type: none"> <li>• Cyberbullying</li> <li>• Flaming</li> </ul> <p style="text-align: right;">✓ (Any one)</p> <p><i>(Note to marker: Accept bullying.)</i></p>		(1)
7.2	<ul style="list-style-type: none"> <li>• Do not give out login information/Do not use other peoples credentials</li> <li>• Do not visit untrustworthy/offensive websites</li> <li>• Do not stream or download during peak use</li> <li>• Do not use for non-school related activities</li> <li>• Limit the duration of using ICT resources</li> <li>• Guidelines on the use of external storage media</li> <li>• Guidelines on printer usage</li> </ul> <p style="text-align: right;">✓✓ (Any two)</p> <p><i>(Note to marker: Accept answers that may be practical in a school situation.)</i></p>		(2)
7.3	<ul style="list-style-type: none"> <li>• Software does not require a licence key/ freeware/shareware/OSS</li> <li>• Upgrade of existing software</li> <li>• Pre-activated enterprise software</li> <li>• The software is illegal/cracked</li> </ul> <p style="text-align: right;">✓✓ (Any two)</p>		(2)
7.4	<ul style="list-style-type: none"> <li>• Ensure privacy of data/They should not sell/share user data to third parties</li> <li>• Ensure safety of data against hackers/Encrypt data</li> <li>• Ensure compliance with the POPI act (Protection of Personal Information)</li> </ul> <p style="text-align: right;">✓✓ (Any two)</p>		(2)
7.5.1	<p>Phishing✓</p> <p><i>(Note to marker: Accept an explanation of phishing)</i></p>		(1)
7.5.2	<ul style="list-style-type: none"> <li>• Not HTTPS/Connection is not secure/Lock icon missing</li> <li>• Not a South African domain</li> <li>• Spelling/Grammar mistakes</li> </ul> <p style="text-align: right;">✓✓ (Any two)</p>		(2)
			<b>[10]</b>

**QUESTION 8: SOLUTION DEVELOPMENT**

8.1	<ul style="list-style-type: none"> <li>To check/correct the text layout/formatting/non-printing characters of the document</li> <li>To check the number of spaces/tabs between words</li> <li>Checking for page/section breaks</li> <li>Checking for empty lines</li> </ul> <p style="text-align: right;">✓(Any one)</p>		(1)
8.2.1	18.5 (cm) ✓  (Note to marker: Accept an answer from 18.3 to 18.7)		(1)
8.2.2	<ul style="list-style-type: none"> <li>Merge cells</li> <li>Copy all text to one cell and delete unwanted column(s)</li> </ul> <p style="text-align: right;">✓(Any one)</p>		(1)
8.2.3	<ul style="list-style-type: none"> <li>Add underlined words to dictionary</li> <li>Change the language of the spell checker</li> <li>Disable the spell checker</li> </ul> <p style="text-align: right;">✓✓(Any two)</p> <p>(Note to marker: Accept responses that refer to right click and selecting the correct option as well as selecting the "Ignore/Ignore all" option.)</p>		(2)
8.2.4	<ul style="list-style-type: none"> <li>Use Autofit option</li> <li>Adjust width in table properties</li> <li>Manually drag column borders</li> <li>Change page orientation to landscape</li> <li>Change margins</li> <li>Change the page size</li> </ul> <p style="text-align: right;">✓(Any one)</p>		(1) (5)
8.3.1	It will have no effect✓		(1)
8.3.2	<ul style="list-style-type: none"> <li>The dimensions specified are not in keeping with the aspect ratio</li> <li>The balance between height and width is wrong</li> </ul> <p style="text-align: right;">✓(Any one)</p>		(1)
8.3.3	The blind user will not be able to understand what the picture is about✓ There is no alt attribute (for the screen reader)✓		(2) (4)
8.4.1	(Data) validation ✓		(1)
8.4.2	It indicates the use of a filter/Gives a list of options for items to display✓		(1)
8.4.3	<b>DO NOT MARK</b>		
8.4.4	Property✓ Unique field/No duplicate in this field ✓		(2) (4)
			<b>[14]</b>

**TOTAL SECTION B: 74**

**SECTION C: INTEGRATED SCENARIO****QUESTION 9**

9.1.1	Word/Publisher✓  (Note to marker: Accept any other suitable software for this purpose.)	(1)	
9.1.2	<ul style="list-style-type: none"> <li>Paper size not accommodated by most printers</li> <li>Paper size too large for a booklet</li> </ul> ✓(Any one)	(1)	
9.1.3	<ul style="list-style-type: none"> <li>Use draft/econo mode when printing/Reduce print resolution</li> <li>Use eco fonts</li> <li>Print multiple pages in one/Reduction in print size</li> <li>Check document/Proof-read thoroughly before printing</li> <li>Print in black and white</li> <li>Use fewer images</li> </ul> ✓✓(Any two)	(2)	
9.1.4	Distribute booklet electronically/Print to PDF✓	(1)	
9.1.5	<ul style="list-style-type: none"> <li>SD Card</li> <li>Micro SD Card</li> <li>OTG enabled storage medium/Flash Drive</li> <li>Internal memory (Built in memory)</li> <li>Optical media</li> </ul> ✓✓(Any two)  (Note to marker: Accept reference to OTG storage medium as a USB. If a response is memory card, only one mark can be given in total for cards)	(2)	(7)
9.2.1	Table✓ Form✓	(2)	
9.2.2	Customer ID/Usage period✓ Set default value✓	(2)	
9.2.3	Use a query/filter/sorting✓	(1)	
9.2.4	RSS Feed✓	(1)	
9.2.5	<ul style="list-style-type: none"> <li>Offenders will be ridiculed/ostracised</li> <li>May incite others to take revenge on offenders</li> <li>Can affect their reputation</li> <li>Accused people may sue the municipality/Accused people may get angry</li> <li>People will try harder to save water/Positive behavioural change</li> </ul> ✓✓(Any two)	(2)	(13)

9.2.6	<ul style="list-style-type: none"> <li>• Consistency: layout/fonts</li> <li>• Ease of navigation, e.g. Hyperlinks</li> <li>• Accommodate for displays on mobile and desktop devices</li> <li>• Colour schemes</li> <li>• Readability/Font size/Typography/Web pages not too busy</li> <li>• Accessibility features</li> </ul> <p style="text-align: right;">✓✓(Any two)</p> <p><i>(Note to marker: Accept any valid examples of the above bullets.)</i></p>	(2)	
9.2.7	Internet attack/DoS attack/Bot-attack	(1)	
9.2.8	Customer computers can be infected by malware/hacked✓ and used as a bot/zombie✓	(2)	
9.3.1	Respondent is not guided on what type of answer is required/Does not have options to select from/Open-ended question✓ That data cannot be easily analysed✓	(2)	
9.3.2	Print and distribute/Distribute via postal services/fax Ask questions verbally face to face Have respondents fill it in online	✓✓(Any two)	(2)
9.3.3	Inaccurate/Unreliable results for the survey✓	(1)	(5)
			<b>[25]</b>

**QUESTION 10**

10.1.1	Cellular/3G/Wi-Fi/LTE/4G/Wireless✓	(1)	
10.1.2	<ul style="list-style-type: none"> <li>• SSD is faster</li> <li>• SSD is resistant to impact</li> <li>• Uses less energy/Generates less heat</li> <li>• Quieter operation</li> </ul> <p style="text-align: right;">✓✓(Any two)</p>	(2)	
10.1.3	<ul style="list-style-type: none"> <li>• Brightness</li> <li>• Contrast ratio</li> <li>• Reflective property of screen</li> </ul> <p style="text-align: right;">✓(Any one)</p>	(1)	
10.1.4	WhatsApp/Facebook messenger/Telegram/Twitter✓  <i>(Note to marker: Accept any suitable internet based messaging service.)</i>	(1)	(5)
10.2.1	<ul style="list-style-type: none"> <li>• The app/project may not be completed</li> <li>• You may not get your money back (if the project fails)</li> <li>• You are unlikely to become a shareholder/recipient of any income that the app/project may generate</li> </ul> <p style="text-align: right;">✓✓(Any two)</p>	(2)	
10.2.2	GPS/Cellular Triangulation✓	(1)	
10.2.3	Location/Coordinates✓	(1)	(4)
10.3.1	To be able to identify/track people✓	(1)	
10.3.2	<ul style="list-style-type: none"> <li>• Finger print reader</li> <li>• Iris/Eye/Retinal scanner</li> <li>• (Camera for) facial recognition</li> <li>• (Microphone for) voice recognition</li> </ul> <p style="text-align: right;">✓✓(Any two)</p>	(2)	
10.3.3	<ul style="list-style-type: none"> <li>• Document/Files/Data backup (in cloud)</li> <li>• Personalised services can be used from any computer, e.g. E-mail</li> <li>• Possible to track your smartphone/Make it ring</li> <li>• Lock/Block/Erase the phone remotely</li> </ul> <p style="text-align: right;">✓✓(Any two)</p>	(2)	
10.3.4	Wi-Fi/Hotspot✓	(1)	(8)

10.3.5	<ul style="list-style-type: none"> <li>• Be cautious of who is around you</li> <li>• Try not to do Internet banking</li> <li>• Log off when finished</li> <li>• Use private browsing/incognito mode</li> <li>• Disable/Ignore the Save Password feature when browsing</li> <li>• Avoid using external storage because of malware</li> <li>• Avoid sending files/data because of malware</li> <li>• Avoid entering personal details whilst online</li> </ul> <p style="text-align: right;">✓✓(Any two)</p>	(2)	
10.4.1	Malware infection/Ransomware✓	(1)	
10.4.2	It is a virtual/digital/crypto currency✓	(1)	
10.4.3	<ul style="list-style-type: none"> <li>• Criminals can remain anonymous/Transaction cannot be traced to the individual</li> <li>• Evading tax</li> </ul> <p style="text-align: right;">✓(Any one)</p>	(1)	
10.4.4	<ul style="list-style-type: none"> <li>• Restore data from backup</li> <li>• Do a factory reset/Re-install the system</li> <li>• Pay the ransom if necessary</li> <li>• Disconnect from the network</li> <li>• Report to the authorities</li> <li>• Implement measures for future prevention</li> </ul> <p style="text-align: right;">✓(Any one)</p>	(1)	
10.5.1	Cell is formatted as General or Number/Cell is not formatted to text/Incorrect formatting✓	(1)	
10.5.2	<p>Uses Gender data (Column D) instead of Age data (Column E)/Range uses the wrong column✓</p> <p><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/><input type="checkbox"/> : Accept a reference to range not incorporating numerical values.)</p>	(1)	
10.5.3	<ul style="list-style-type: none"> <li>• Manually drag the column width wider</li> <li>• Double click the right hand border of the column header</li> <li>• Reduce the font size</li> <li>• Rotate text</li> <li>• Wrap text</li> </ul> <p style="text-align: right;">✓✓(Any two)</p>	(2)	
			[25]

**TOTAL SECTION C: 50**  
**GRAND TOTAL: 149**