



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

COMPUTER APPLICATIONS TECHNOLOGY P2

NOVEMBER 2021

MARKS: 150

TIME: 3 hours

This question paper consists of 18 pages.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of:

SECTION A (25)
SECTION B (75)
SECTION C (50)
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 an open line after EACH subquestion.
7. Generally, one mark is allocated per fact; therefore, a 2-mark question would require TWO facts, etc.
8. Read the questions carefully. DO NOT give more answers than the question requires as it will NOT be marked.
9. All answers MUST be related to Computer Applications Technology.
10. Unless otherwise specified, answers such as 'cheaper', 'slower'/'faster', etc. will NOT be accepted.
11. Do NOT use brand names in your answers, unless specifically required.
12. Write neatly and legibly.

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

Various options are given as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question numbers (1.1 to 1.10) in the ANSWER BOOK, e.g. 1.11 D.

- 1.1 Which ONE of the following options allows for data to become useful information?
- A Backup
 - B Processing
 - C Communication
 - D Storage
- (1)
- 1.2 ... is an online income tax return service provided by the South African government to its citizens.
- A e-Filing
 - B e-Learning
 - C e-Portal
 - D e-Government
- (1)
- 1.3 A computer connected to the internet that has been compromised by a hacker is known as a ...
- A server.
 - B work station.
 - C zombie.
 - D firewall.
- (1)
- 1.4 Which ONE of the following words would return a result of 4 when used with the LEN function in a spreadsheet?
- A Array
 - B Text string
 - C Number
 - D Link
- (1)
- 1.5 Which ONE of the following options is NOT a function of the operating system?
- A Manages computer hardware
 - B Provides cloud storage
 - C Provides the user interface
 - D Manages the programs
- (1)

- 1.6 ... technology can assist game rangers to monitor and detect poaching activities.
- A Systems
 - B Blockchain
 - C Assistive
 - D Drone
- (1)
- 1.7 The ... attribute in HTML specifies the distance between the border of a table cell and the text in the cell.
- A cellpadding
 - B cell align
 - C cellspacing
 - D cell width
- (1)
- 1.8 The date and time when a photo was taken can be found in the ... of the photo.
- A resolution
 - B metadata
 - C pixels
 - D aspect ratio
- (1)
- 1.9 ... uses special high-speed memory to store data that is frequently used to improve computer performance.
- A Syncing
 - B Backup
 - C Compression
 - D Caching
- (1)
- 1.10 Which communication technology enables a person to tap his/her bank card on a device to pay?
- A LTE
 - B Wi-Fi
 - C NFC
 - D Bluetooth
- (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 numbers (2.1 to 2.10) in the ANSWER BOOK, e.g. 2.11 U.

COLUMN A		COLUMN B	
2.1	A legal agreement between a software company and a user for the use of their software	A	SUMIF
		B	AI
2.2	A utility program that can free up space on a storage medium	C	RFID
		D	motherboard
2.3	The act of opening a bank account using someone else's personal details	E	phishing
		F	ROM
2.4	A spreadsheet function that totals the values in a range based on a certain condition	G	firewall
		H	footnote
2.5	Software that can monitor all attempts made to access your computer	I	USB port
2.6	A technology that tries to solve problems in the way that humans do	J	EULA
		K	Disk Clean-Up
2.7	Data needs to be loaded into this type of memory before it can be processed	L	antivirus
2.8	A reference found at the bottom of a page in a word processing document	M	OCR
		N	identity theft
2.9	Technology using radio waves to communicate with a tag attached to an object	O	endnote
		P	AR
2.10	A circuit board that may be faulty if your computer will not start up	Q	IF
		R	AUP
		S	defragmenter
		T	RAM

(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 numbers (3.1 to 3.5) in the ANSWER BOOK. If the statement is true, write 'TRUE'. If the statement is false, write 'FALSE' and change the underlined word(s) to make the statement TRUE. (Do NOT simply use the word 'NOT' to change the statement.)

No mark will be awarded if FALSE is written without a correct answer.

EXAMPLES:

QUESTION	ANSWER
The initial start-up instructions are stored in the <u>ROM</u> .	True
<u>Social engineering</u> is the study of the design of equipment for the comfort and the safety of people in a working environment.	False, Ergonomics

- 3.1 An internet-based protocol for sending and receiving web pages is www. (1)
- 3.2 Social networks create a platform to connect groups of people with similar interests. (1)
- 3.3 Throttling causes certain internet services to be given priority over others. (1)
- 3.4 When you restore a document, the program icon will appear on the task bar and the document will no longer be displayed on the desktop. (1)
- 3.5 File properties can be used to view the date on which a file was accessed. (1)

[5]

TOTAL SECTION A: 25

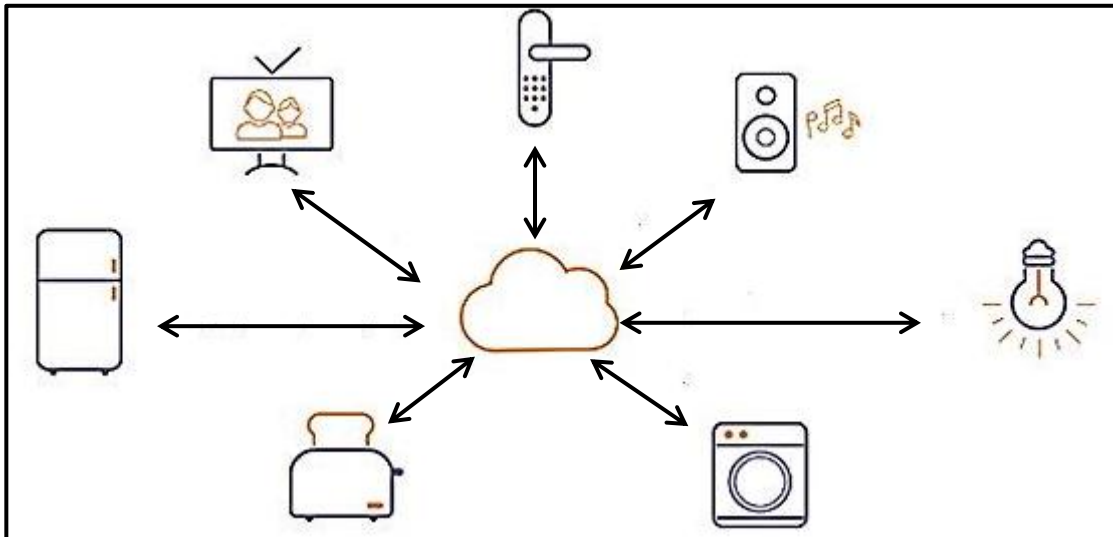
SECTION B**QUESTION 4: SYSTEMS TECHNOLOGIES**

- 4.1 What is the purpose of a product key when installing software? (1)
- 4.2 Give TWO differences between the user interfaces of laptops and smartphones. (2)
- 4.3 Briefly explain TWO ways to repair a flash drive when the operating system reports that there are errors on it. (2)
- 4.4 All hardware in a computer require drivers to work.
- 4.4.1 What is a *driver* AND what is its main function? (2)
- 4.4.2 Why do you NOT have to install a driver when connecting plug-and-play devices? (1)
- 4.5 The SD card on your camera is full.
- Which device would you use to upload the photos to your computer without connecting your camera to the computer? (1)
- 4.6 Health trackers are often worn by athletes and people who are health conscious.
- Name TWO types of outputs a user would expect to find on his/her health tracker. (2)
- 4.7 You formatted a document on your computer that you wish to send to a friend.
- 4.7.1 Give TWO reasons why the document will sometimes not display in the way you created it on your friend's computer. (2)
- 4.7.2 How can you ensure that a document you create on your computer will display as you created it on someone else's computer? (1)
- 4.8 Give TWO reasons why the use of online applications/software has become popular. (2)
- 4.9 The quality of cameras on smartphones improves every year.
- Explain why smartphone cameras have not made dedicated cameras obsolete yet. (2)
- 4.10 Give TWO reasons for using voice recognition software. (2)

- 4.11 State TWO possible problems associated with 3D printing. (2)
- 4.12 Pop-ups can suddenly appear in the browser window when browsing the internet.
- 4.12.1 Give TWO disadvantages of pop-ups appearing on a web page in a browser window, other than being distracting and irritating for a user. (2)
- 4.12.2 Why does a pop-up blocker not block all pop-ups automatically? (1)
- [25]**

QUESTION 5: INTERNET AND NETWORK TECHNOLOGIES

- 5.1 Give TWO advantages of grid computing. (2)
- 5.2 Give TWO similarities between *VoIP* and *streaming*. (2)
- 5.3 Study the diagram below and answer the questions that follow.



- 5.3.1 Name the technology that is represented by the diagram above. (1)
- 5.3.2 What do the arrows in the diagram represent? (1)
- 5.3.3 State ONE concern that could arise around the technology in the diagram above. (1)
- 5.4 Why would you use a browser add-on? (1)
- 5.5 Give ONE reason why you would adjust the home page settings in a browser. (1)
- 5.6 From an end-user point of view, explain TWO disadvantages of deleting the browser history and cache. (2)
- 5.7 Explain the concept of a *cap* in the context of internet access. (2)
- 5.8 Suggest TWO benefits of synchronising the calendar in a web-based e-mail client. (2)

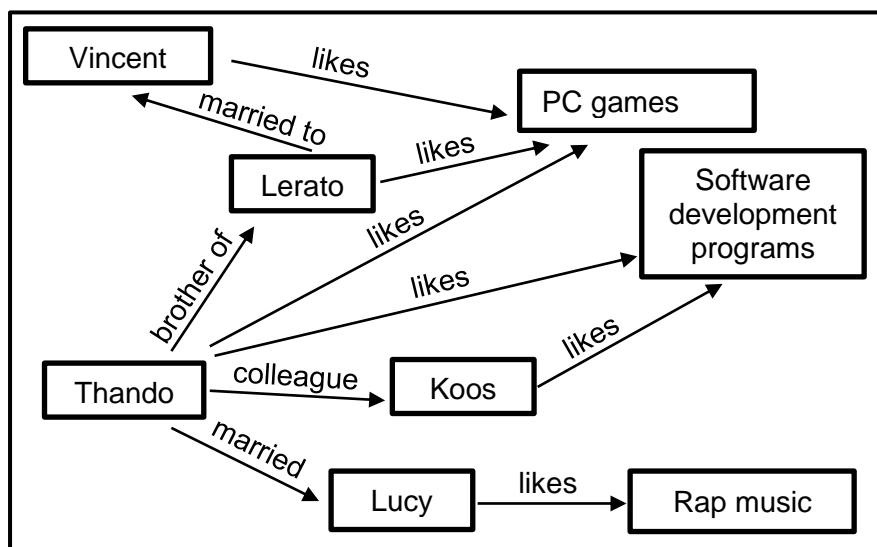
(2)
[15]

QUESTION 6: INFORMATION MANAGEMENT

- 6.1 Explain why it is important to use current information for research purposes and not to rely on information that is old. (1)
- 6.2 Give TWO possible negative effects on society as a result of research based on fake news. (2)
- 6.3 Discuss TWO reasons why you should NOT use blogs as sources for academic research. (2)
- 6.4 Surveys are commonly used to gather information.
- 6.4.1 Give ONE reason why you would conduct a survey instead of doing research on the internet. (1)
- 6.4.2 Give TWO different ways in which a survey can be done without the respondent being in the same physical place as the person who set the questions. (2)
- 6.5 State TWO considerations when designing a user-friendly and well-presented website. (2)
- [10]**

QUESTION 7: SOCIAL IMPLICATIONS

- 7.1 Give the term for a type of malware designed to encrypt or block access to your computer system and files until you pay a sum of money. (1)
- 7.2 Why do recruitment agencies check the social media accounts of jobseekers? (1)
- 7.3 Some free apps are not really free.
Give ONE reason to support the statement above. (1)
- 7.4 Explain how user-centred design (UCD) can be applied when creating an electronic form that will be used by partially sighted people. (2)
- 7.5 Give TWO measures to prevent cyber criminals from accessing a computer system. (2)
- 7.6 Study the diagram below that represents a group on social media.



- 7.6.1 What is the purpose of this diagram? (1)
- 7.6.2 Suggest a product that could be advertised for this particular social group. Motivate your answer. (2)

[10]

QUESTION 8: SOLUTION DEVELOPMENT

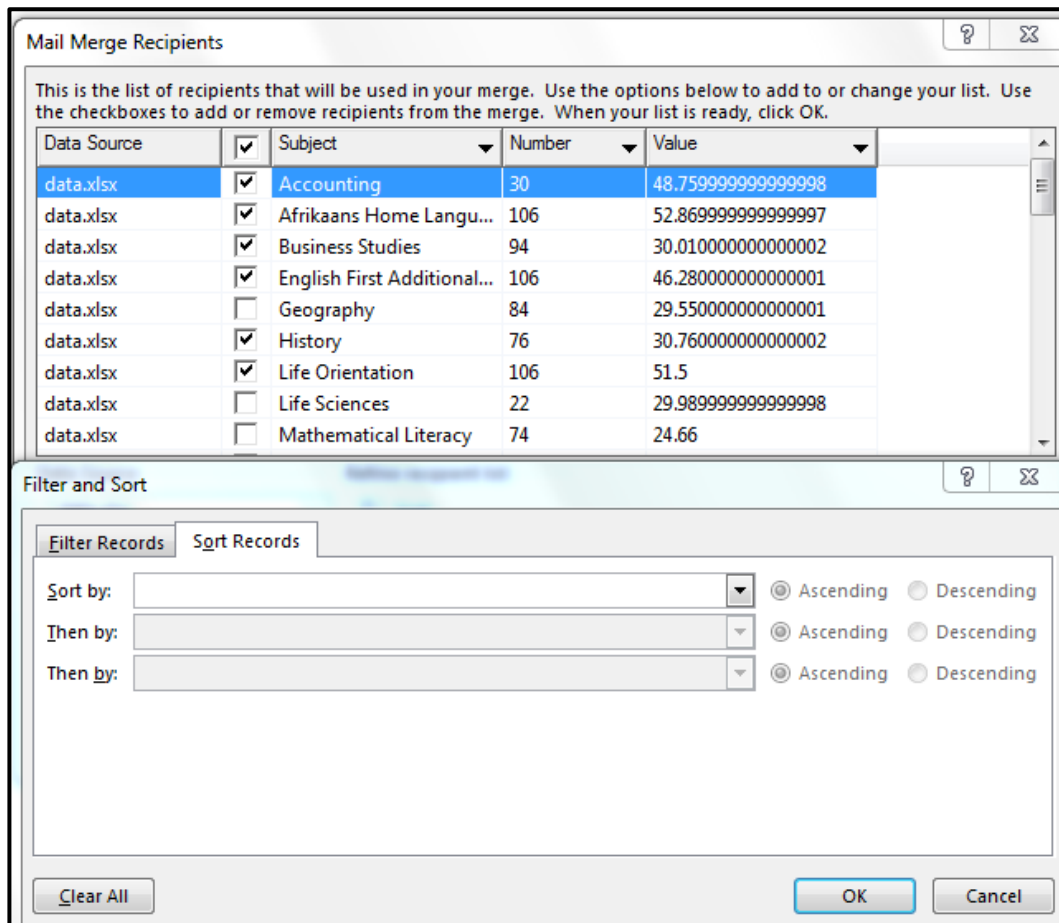
8.1 Give TWO reasons why you would use the hyphenation feature in a word processing document. (2)

8.2 A diagram using five different shapes was created in a word processing document.

How would you move this diagram to a new position in the document so that it moves as one complete diagram? (1)

8.3 How would you insert ALL the text from another long document into an existing word processing document without using the copy and paste method? (1)

8.4 Study the Mail Merge Recipients dialog box below and answer the questions that follow.

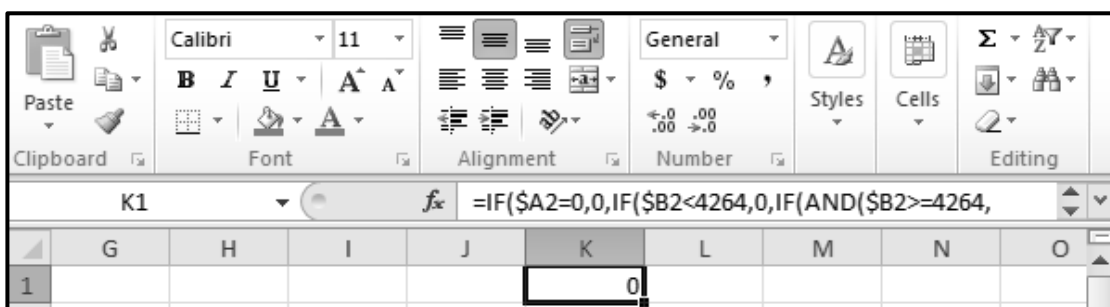


8.4.1 Explain the purpose of the 'Then by' option in the 'Filter and Sort' dialog box. (1)

8.4.2 Some records in the 'Subject' column have been excluded because they are not checked (ticked) in the 'Mail Merge Recipients' dialog box, as shown above.

Explain how you could achieve the same result without having to manually remove the ticks (uncheck) or to deselect certain check boxes. (2)

8.5 The spreadsheet window in the image does not show the full nested IF in the formula bar for **cell K1**, as shown below.



Explain TWO ways in which one would be able to see the whole function. (2)

8.6 In the image below, the cells in **column D** contain a function that refers to cells in **column C**.

	A	B	C	D
1			0012321	12321
2			05632	5632
3			00089648	89648
4				

Name the function that was used in **column D** to display the numbers in **column C** without the leading zeros. (1)

8.7 Which data type in a database table is associated with the entry of a picture into a field? (1)

8.8 A field in a database table requires the input of a number in the range from 100 to 200.

Which data validation technique would you use to ensure a value entered satisfies the criteria? (1)

8.9 Describe the output of the following HTML code by referring to the shape AND the element that will be displayed on the web page:

```
 (2)
```

8.10 What is the purpose of inserting a horizontal rule/line when creating a web page? (1)

[15]

TOTAL SECTION B: 75

SECTION C**QUESTION 9: INTEGRATED SCENARIO**

Your school has offered to take a leading role in using ICTs to assist learners to improve their results. Learners would be able to get assistance online or physically attend classes over weekends.

- 9.1 The school management wishes to purchase laptops for a computer centre to be used for self-study or research purposes.
- 9.1.1 How will the school's IT technician install software on the laptops if the school decides to purchase laptops that do NOT have CD/DVD drives? (2)
- 9.1.2 Name ONE hardware specification that could be used to prevent other people from being able to access and use a laptop. (1)
- 9.1.3 Explain the concept of *mobile learning* AND why it should be included in the assistance programme. (2)
- 9.1.4 A data projector cannot be connected to a laptop, although both devices work perfectly.
- Suggest ONE reason why the data projector cannot be connected to the laptop AND give a possible solution to address this problem. (2)
- 9.2 The school plans to create a spreadsheet for capturing class attendance data.
- 9.2.1 Which online system could the school use for learners to submit their attendance details so that teachers will automatically receive the responses in a spreadsheet? You may use a brand name in your answer. (1)
- 9.2.2 Suggest ONE spreadsheet feature that can be used to indicate a pattern in the attendance behaviour of the learners. (1)
- 9.2.3 The screenshot below shows how learner attendance for every weekend was captured in a spreadsheet.

	A	B	C	D	E	F
1	Name	Grade	01/05/2021	08/05/2021	15/05/2021	22/05/2021
2	B Khawula	10	Y	Y	Y	Y
3	S Peterson	10	Y	N	Y	Y
4	J Cele	10	Y	Y	N	Y

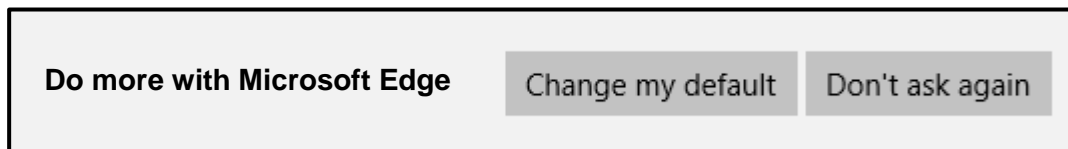
- Give ONE spreadsheet function that can be used to determine the number of learners that were absent on a specific date. (1)

- 9.3 Give TWO reasons for setting up a network in the computer centre. (2)
- 9.4 Internet access will be provided in the computer centre.
- 9.4.1 Discuss TWO reasons why the school should use a fibre connection for internet access in the computer centre. (2)
- 9.4.2 State TWO ways to ensure that learners do not abuse the internet access. (2)
- 9.5 Teachers plan to use video conferencing to conduct online lessons with learners.
- 9.5.1 Name TWO hardware devices each computer must have to enable video conferencing. (2)
- 9.5.2 Give TWO examples of software that can be used to conduct video conferencing. You may use brand names in your answer. (2)
- 9.5.3 State ONE way in which learners can reduce their data usage during a video conference. (1)
- 9.6 The school management will need to report on the success of the intervention programme.
- 9.6.1 The school secretary prepared a text document in a spreadsheet program.
Give TWO reasons why a spreadsheet program is less suitable than a word processor for this task. (2)
- 9.6.2 Which View option in a word processor will allow the secretary to see the headings and move the cursor quickly to the position of a heading in the document? (1)
- 9.6.3 Give ONE word processing feature that can be used to acknowledge sources in a document. (1)
- [25]**

QUESTION 10: INTEGRATED SCENARIO

The school principal asks you to do research and suggest ways to reduce the impact of load shedding on the ICT equipment at the school.

- 10.1 When you started searching for solutions on the internet, the following message appeared:



- 10.1.1 Explain the reason for the message to change the default browser. (1)
- 10.1.2 Name the operating system associated with the Edge browser. (1)
- 10.1.3 Give TWO ways in which you would evaluate information found on a website. (2)
- 10.1.4 You found a suitable website on load shedding solutions, but did not have time to read it immediately.
- Which browser feature would you use so that you can access that website quickly in future? (1)
- 10.2 The school principal asked you to research possible UPS solutions for the computer centre during load shedding.
- 10.2.1 State TWO functions of a UPS. (2)
- 10.2.2 Explain the purpose of a two-step authentication process if the UPS is bought and paid for online. (1)
- 10.2.3 Give ONE example of a two-step authentication notification during online purchases. (1)
- 10.2.4 Name the device that must be connected to the UPS to ensure that the computer centre will have internet connectivity during load shedding. (1)
- 10.3 The school principal wishes to explore ways of connecting to the internet during load shedding.
- 10.3.1 Name the wireless technology that will allow internet access via communication towers that have battery backup. (1)
- 10.3.2 State TWO ways in which to verify that the school can connect to the internet via a specific connection using communication towers with a battery backup. (2)

10.4 You downloaded the power provider's load shedding schedule to see how your school and home area are affected.

Study the screenshot below and answer the questions that follow.

LOAD SHEDDING SCHEDULE															
Time slot		Stages with areas affected			Days of the month										
					1	2	3	4	5	6	7	8	9	10	
01:00	04:00	Stage 4	Stage 3	Stage 2	Stage 1	1	4	7	1	2	5	8	2	3	6
				2x areas		3	6	9	3	4	7	1	4	5	8
			3x areas			5	8	2	5	6	9	2	6	7	1
			4x areas			7	1	4	7	8	2	5	8	9	3
Today		My Work Area						3							
8		My Home Area						7							

10.4.1 How is it possible that **row 63** appears directly after **row 7** in the screenshot? (1)

10.4.2 Explain why the content of **cell B65** is NOT displayed as a date even though the formula `'=DAY(TODAY())'` was used. (1)

10.4.3 What spreadsheet feature could have been used to format multiple cells in the range **G4:P7** all at once? (1)

10.5 Some people prefer a load shedding app that will send alerts if there are changes on the load shedding schedule.

10.5.1 Which app on your smartphone allows you to download and install more apps? You may use a brand name in your answer. (1)

10.5.2 Which technology will the app use to automatically give you the schedule for the area you are currently in? (1)

10.5.3 State TWO ways in which teachers can avoid wasting teaching and learning time when using a computer when they know when there will be load shedding. (2)

10.6 Suggest how electricity used by ICTs at your school can be reduced.

In your answer, use the following aspects:

- Hardware
 - Software
 - User behaviour
- (3)

10.7 Certain programs on the school computers need to run automatically during the day.

Which utility can be used to ensure that these programs do NOT run during load shedding times?

(1)

10.8 The anti-malware program is set to update as soon as the computer centre comes online after load shedding to prevent possible infections.

Name the type of malware that tricks users into clicking on an item that hides a link to another website.

(1)

[25]

TOTAL SECTION C: 50
GRAND TOTAL: 150



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GRADE 12

COMPUTER APPLICATIONS TECHNOLOGY P2

NOVEMBER 2021

MARKING GUIDELINES

MARKS: 150

These marking guidelines consist of 20 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 the 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.
 - Accept correct answers that are expressed differently, e.g. the marking guidelines states 'slow' and the learner responds with 'not fast'.
- Beware of overlapping answers to a specific question. In general, ONE mark is awarded per fact.
- Do not choose answers on the candidate's behalf. Where a question requires a candidate to LIST or NAME mark the first number of answers/facts required, e.g. the first TWO facts if the candidate presents a list of FIVE facts when only TWO facts were required, even if presented in paragraph format.
- Questions requiring longer answers must be regarded as a single unit. Marks can be awarded if correct statements are found anywhere in the paragraph.

SECTION A

QUESTION 1: MULTIPLE-CHOICE

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

QUESTION 2: MATCHING ITEMS

2.1	J	✓	1
2.2	K	✓	1
2.3	N	✓	1
2.4	A	✓	1
2.5	G / L	✓	1
2.6	B	✓	1
2.7	T	✓	1
2.8	H	✓	1
2.9	C	✓	1
2.10	D	✓	1
Total: [10]			

QUESTION 3: TRUE/FALSE ITEMS

(Note to marker: In Question 3.1, 3.2, 3.3, and 3.4 candidates need to provide the correct term, e.g. motherboard, in order to get the mark. Award the mark if the correct answer is given without the word FALSE. No mark will be awarded if only the word FALSE is given without a correct answer.)

3.1	False, HTTP ✓/ HTTPS	1
3.2	True ✓ /False, Chatrooms/Forums	1
3.3	False, Shaping ✓ /Network tuning	1
3.4	False, Minimise ✓	1
3.5	True ✓	1
		[5]

TOTAL SECTION A: 25

SECTION B**QUESTION 4: SYSTEMS TECHNOLOGIES**

4.1	<p><i>Purpose of a product key</i></p> <p>(1) To be able to use/access the software (2) Register/Activate the software for legal use/Prevent piracy/To ensure that only legal copies of the software are installed/obtained/bought (3) Required to complete the installation of software/The program will most likely not open past the product key page, or it might run but have only limited functionality (4) Can regulate the number of installations done under a licence ✓ (Any one)</p>		1
4.2	<p><i>TWO differences between a laptop and smartphone user interface</i></p> <p>(1) Interface options: Smartphone user interface usually offers fewer options/Smaller screen size means fewer interface options <i>(Accept more than one <u>specific example</u> of interface options, e.g. smartphone has no taskbar, hamburger menus vs stacked menus, etc.)</i> (2) Orientation: Smartphones commonly used in portrait mode/Laptops commonly used in landscape mode/Smartphone can easily change between portrait and landscape orientation (3) User interaction: Only touch screen available on smartphones/Touch screen and mouse pointer navigation/keyboard on laptop ✓✓ (Any two)</p>		2
4.3	<p><i>TWO ways to repair a flash drive</i></p> <p>(1) Format the flash drive ✓ (2) Click 'Yes' when automatically prompted to repair a flash drive ✓ /Use a repair utility, e.g. ScanDisk, etc.</p>		2
4.4.1	<p><i>Function of a driver</i></p> <p>Software/Program ✓ that allows the operating system to control/communicate with hardware ✓</p>	2	3
4.4.2	<p><i>The process of how Plug-and-Play works</i></p> <p>The operating system installs/configures a driver automatically ✓ /The plug-and-play device starts working as soon as it is plugged in.</p>	1	
4.5	<p><i>Device to transfer photos without connecting camera to computer</i></p> <p>Card Reader ✓ /Card slot</p>		1

4.6	<p>Outputs given by health trackers</p> <p>(1) Step counter (2) Where and when you exercise (3) Distance covered during sporting activities (4) How much sleep you get (5) Heart rate (6) Calories burnt (7) Oxygen (saturation) level (8) History of activities (9) Blood pressure, etc.</p> <p style="text-align: right;">✓✓ (Any two)</p> <p><i>(Note to marker: Accept any valid response concerning outputs)</i></p>		2
4.7.1	<p>TWO reasons the document displays differently on friend's PC</p> <p>(1) The same application as the one in which the document was created is not installed on the receiver's computer/Used a different application (2) It is not opened in the same version in which it was created/Did not use compatibility options (3) The friend's PC does not have the same font set as that of the sender (4) No default printer is set on the friend's PC</p> <p style="text-align: right;">✓✓ (Any two)</p>	2	
4.7.2	<p>ONE way to ensure a document will display as created</p> <p>1) Save the document as a pdf 2) Save the document in a picture format</p> <p style="text-align: right;">✓ (Any one)</p>	1	3
4.8	<p>TWO reasons why using online applications/software is popular</p> <p>(1) Sharing and collaboration made easier/possible (2) No need to have the software installed (3) Can be used on any computer with a browser and internet connection (4) Latest software/features are available without upgrading the software (5) Less storage/processing requirements for local computer (6) No need to update constantly</p> <p style="text-align: right;">✓✓ (Any two)</p>		2
4.9	<p>TWO reasons why smartphone cameras have not made dedicated cameras obsolete</p> <p>(1) Generally, less optical zoom available on a smartphone (2) Dedicated camera produces better picture quality (3) Image sensors/ISO better on dedicated cameras (4) External flashes can be added to a dedicated camera (5) Option to change lenses, e.g. Wide angle/Better lens quality</p> <p style="text-align: right;">✓✓ (Any two)</p>		2

4.10	<p><i>TWO reasons to use voice recognition software</i></p> <p>(1) Assist people with special needs/visual impairments to use a computer (2) Speech to text software can make for easier/convenient data capturing (3) Can be used for security purposes to identify people/Biometric purposes (4) Enables hands-free operation of the device</p> <p style="text-align: right;">✓✓ (Any two)</p>		2
4.11	<p><i>TWO problems associated with 3D printing</i></p> <p>(1) Printing process is slow (2) Unhealthy odours/smells given off (3) Not all objects may have the strength/quality of their counterparts made in a factory (4) Can be more expensive to manufacture compared to bulk manufacturing (5) Companies may lose sales for certain items/parts (6) Dangerous weapons can be easily made by anyone (7) Filament running out/break during a print could affect quality</p> <p style="text-align: right;">✓✓ (Any two)</p> <p><i>(Note to marker: Accept any valid response, e.g. noisy, etc.)</i></p>		2
4.12.1	<p><i>TWO disadvantages of pop-ups, other than being distracted</i></p> <p>(1) May slow downloading of a website (2) Uses bandwidth/data (3) May contain malware/redirect to a malicious website (4) May contain scamming links/adverts (5) Certain features of websites may not work correctly (6) Sometimes difficult/impossible to close a pop-up on a mobile device</p> <p style="text-align: right;">✓✓ (Any two)</p> <p><i>(Note to marker: Accept references to adware.)</i></p>	2	
4.12.2	<p><i>Reason for pop-up blocker not blocking all pop-ups automatically</i></p> <p>1) Some pop-ups are needed for the functioning of the website 2) User has allowed certain pop-ups</p> <p style="text-align: right;">✓ (Any one)</p>	1	3
			[25]

QUESTION 5: INTERNET AND NETWORK TECHNOLOGIES

5.1	<p><i>TWO advantages of grid computing</i></p> <p>(1) Large processing tasks are shared over many computers/Enormous processing power (2) The failure of one computer will not affect processing tasks (3) Scaling of processing power is easy (4) Uses idle resources (cost effective) (5) Not necessary to invest in expensive equipment for tasks requiring large processing power</p> <p style="text-align: right;">✓✓ (Any two)</p>		2
5.2.	<p><i>TWO similarities between VoIP and streaming</i></p> <p>(1) Both technologies support video and/or sound/Both require similar hardware (2) Both technologies support adjusting quality (compression settings/various codecs) (3) Both technologies run over the internet/Both require high speed internet connection/high bandwidth (4) Both technologies run in real time</p> <p style="text-align: right;">✓✓ (Any two)</p>		2
5.3.1	<p><i>Technology represented by the image</i></p> <p>IoT ✓ /Internet of Things</p>	1	3
5.3.2	<p><i>Representation of arrows in IoT image</i></p> <p>Communication/data flow ✓ between the devices and the cloud/internet /Connection to the internet</p>	1	
5.3.3	<p><i>ONE concern regarding IoT</i></p> <p>(1) Can be hacked/Loss of privacy/Security issues (2) IoT technology is dependent on reliable connectivity/cloud services</p> <p style="text-align: right;">✓ (Any one)</p>	1	
5.4	<p><i>Purpose of a browser add-on</i></p> <p>To add extra functionality ✓ that is not ordinarily available in the browser</p> <p><i>(Note to marker: Accept specific examples, e.g. blocks ads, enables faster navigation, etc.)</i></p>		1
5.5	<p><i>ONE reason to adjust the home page settings in a browser</i></p> <p>Have a certain website load automatically when opening the browser ✓/ Default page to load</p>		1

5.6	<p><i>TWO disadvantages of deleting browser history and cache (end-user perspective)</i></p> <p>(1) Pages (you visit frequently) take longer to load (2) Additional bandwidth/data is used to download resources again (3) You may not remember the sites you visited in the last week/month/year (4) Unable to track browser activity of a user</p> <p style="text-align: right;">✓✓ (Any two)</p>		2
5.7	<p><i>Concept of 'cap'</i></p> <p>Limit placed on the amount of data ✓ a user may use over a certain period ✓, e.g. a calendar month</p>		2
5.8	<p><i>TWO benefits of synchronising the calendar in an e-mail client</i></p> <p>(1) The calendar will be updated/can be edited on other devices (2) Online meeting invites from e-mail appear automatically in the calendar (3) Calendar can push/notify you of important activities</p> <p style="text-align: right;">✓✓ (Any two)</p>		2
			[15]

QUESTION 6: INFORMATION MANAGEMENT

6.1	Reason to use current information for research purposes Older sources may contain information that is no longer relevant/ accurate/valid/credible ✓		1
6.2	TWO negative effects as a result of information based on fake news (1) Can create misunderstandings on important social issues (2) May lead to wrong decision-making (3) Can negatively affect the health of those who base medical decisions on fake information (4) Can harm the reputation of an individual or a company (5) Can negatively affect the emotional well-being/mental health of people, as they become fearful/mistrusting/depressed, etc. ✓✓ (Any two) (Note to marker: Accept valid examples, e.g. vaccination resistance, job losses, riots, etc.)		2
6.3	TWO reasons NOT to use blogs for academic research (1) Blogs may contain unsubstantiated opinions of people (2) Bloggers are <u>not</u> necessarily <u>experts</u> in a field of study (3) Could be biased and contain inaccuracies (4) Blogs may not have been peer reviewed (5) Comments made by other people on the blog may not be academically sound ✓✓ (Any two)		2
6.4.1	ONE reason to use a survey instead of the internet for research Unique information is only available from a group of people ✓ /Surveys are used to gather information that cannot be found elsewhere/Get the opinions of people/community	1	
6.4.2	TWO ways to conduct a survey without both parties being present (1) Over the phone/VoIP (2) Video calls (3) Instant messaging/WhatsApp (4) E-mail (5) Social media platforms, e.g. Facebook, etc. (6) Links to online platforms e.g. Survey Monkey, Google Forms, Microsoft Forms (7) Postal service ✓✓ (Any two)	2	3

6.5	<p><i>TWO considerations for designing a user-friendly website</i></p> <p><i>Readability:</i></p> <p>(1) Content should be well/logically organised</p> <p>(2) Choice of colours should be pleasing/Contrast should not obscure the content</p> <p>(3) Font size/font style/font type</p> <p>(4) Language suited target audience/Correct spelling and grammar</p> <p><i>Layout:</i></p> <p>(5) Images should be meaningful and well sized</p> <p>(6) White space between content</p> <p>(7) Typography</p> <p>(8) Layout should be easy to read/consistent in terms of font and colour themes, etc.</p> <p><i>Navigation:</i></p> <p>(9) Easy/Consistent navigation between pages/Working links</p> <p><i>Accessibility:</i></p> <p>(10) Alt text</p> <p style="text-align: right;">✓✓ (Any two)</p> <p><i>(Note to marker: Accept the categories as valid answers AND other valid answers linked to the categories.)</i></p>		2
			[10]

QUESTION 7: SOCIAL IMPLICATIONS

7.1	Malware that encrypts a computer system until a payment is made Ransomware ✓		1
7.2	ONE reason job seekers' social media accounts are checked (1) To check a jobseeker's work or study history/track record (2) To confirm evidence of claims made on the job-seeker's CVs (3) To do a background check on the type of character and social activity of the job-seeker ✓ (Any one)		1
7.3	ONE reason why some free apps are not really free (1) The apps generate an income through advertising (2) The apps sometimes ask users to pay to activate additional features/In-app purchases (3) Could be for a trial period after which payment is expected ✓ (Any one)		1
7.4	Ways to apply UCD to an electronic form for the partially-sighted (1) Text should be larger (2) Images or illustrations should be large enough and clear (3) Layout and structure of the form should be well spaced and user friendly (4) Consistent use of styles and sequence of objects for a text reader (5) Add alternative text to explain the content of images (6) Use a high display contrast between foreground and background colours (7) Add custom sounds/voice prompts (Note to marker: Do NOT accept references to text-to-speech which is not part of the design process) ✓✓ (Any two)		2
7.5	TWO measures to prevent hackers from accessing a PC (1) Use a firewall/antivirus (2) Use (strong) passwords/Use a password manager (3) Never share passwords/personal details with others (4) Use biometric security (5) Run regular updates to fix software vulnerabilities ✓✓ (Any two)		2

7.6.1	<i>The purpose of the social diagram</i> The social mind map/diagram shows relationships ✓ /connections/likes/ preferences/associations	1	3
7.6.2	<i>Product most likely to be advertised to this social group</i> <i>Product:</i> PC games ✓ /Software development programs/Music/Hardware devices for gaming, etc. <i>Motivation:</i> Advertisements will be based on what people like ✓ <i>(Note to marker: Accept specific valid examples of products.)</i>	2	
			[10]

QUESTION 8: SOLUTION DEVELOPMENT

8.1	<p>TWO reasons for using the hyphenation feature in word processing</p> <p>(1) Creates more uniform spacing between words/Creates a more consistent line length (2) Allows long words to be broken over two lines (3) Could reduce the length of a document/Saves paper</p> <p style="text-align: right;">✓✓ (Any two)</p>		2
8.2	<p>Move a diagram containing multiple shapes as one object</p> <p>(1) Use the Group feature/Group objects/Join the objects together before moving them (2) Use the Snipping Tool/Print Screen to make it a picture/screenshot (3) Use the Drawing Canvas feature (4) Select all objects and drag/move as a diagram</p> <p style="text-align: right;">✓ (Any one)</p>		1
8.3	<p>Way to insert text into an existing document without using 'copy and paste' method</p> <p>Insert text from file, select object and then text from file ✓</p>		1
8.4.1	<p>Purpose of the 'Then by' option in the Filter and Sort dialog</p> <p>It allows for a second or third level of sorting ✓</p>	1	3
8.4.2	<p>How to exclude records without deselecting check boxes</p> <p>Filter Records ✓ with any VALUE condition that is greater than 29.99 ✓</p>	2	
8.5	<p>TWO ways to view the whole function</p> <p>(1) Click on the drop down arrow at the end of the formula bar (2) Click on <i>fx</i> to the left of the formula bar (3) Expand the formula bar by dragging down the bottom edge (4) Use Ctrl ~ to reveal the function (and expand the column) (5) Insert an apostrophe before the formula and increase the column size, if necessary (6) Press F2 or double click cell K1</p> <p style="text-align: right;">✓✓ (Any two)</p>		2
8.6	<p>Name of the function used in column D</p> <p>VALUE✓</p> <p>(Note to marker: Accept TRUNC/TEXT/INT)</p>		1

8.7	Data type for image in a database field OLE (Object) ✓ /Attachment		1
8.8	Data validation <u>technique</u> to enter a valid number in a number range Validation rule ✓		1
8.9	Describe output of the HTML code Browser will display a picture/image ✓ with a square ✓ shape (Note to marker: Accept 250 (high) x 250 (wide) instead of square)		2
8.10	Purpose of horizontal rule/line in HTML To divide/separate/accent sections in a web page ✓		1
			[15]

TOTAL SECTION B: [75]

SECTION C**QUESTION 9: INTEGRATED SCENARIO**

9.1.1	<p>How to install software on a computer without a CD/DVD drive</p> <p>(1) Install from software downloaded from the internet (2) Install from a CD/DVD using an external CD/DVD drive (3) Install from a flash drive/SD Card (4) Install from an external HDD (5) Install from a ghosted computer (6) Install from a shared folder on a network/from the cloud</p> <p style="text-align: right;">✓✓ (Any two)</p>	2	
9.1.2	<p>ONE hardware specification to limit access to a laptop</p> <p>(1) Fingerprint reader (2) Webcam (3) Biometric device (4) Microphone</p> <p style="text-align: right;">✓ (Any one)</p>	1	
9.1.3	<p>The concept of mobile learning</p> <p>Mobile learning is a form of education conducted and delivered on mobile (handheld) computing devices ✓ via the internet</p> <p>Reason to include mobile learning in the intervention programme</p> <p>(1) Can be done on any (handheld) device with internet access (2) Can be done anywhere/No need to attend school for classes (3) Can be done anytime (4) Enhances the learning experience</p> <p style="text-align: right;">✓ (Any one)</p>	2	
9.1.4	<p>ONE reason why data projector cannot connect to a laptop</p> <p>(1) Data projector and laptop ports are not compatible (2) Faulty cable (3) The wireless connection is switched off/Devices are not paired</p> <p style="text-align: right;">✓ (Any one)</p> <p>Solution</p> <p>(1) Use an adaptor/ Use a wireless connection (2) Replace the cable (3) Switch on wireless connection/Pair devices</p> <p style="text-align: right;">✓ (Any one)</p> <p>(Note to marker: The solution must match the reason.)</p>	2	7

9.2.1	<p>Online system for teachers to automatically receive attendance details submitted by learners in a spreadsheet</p> <p>Google/Microsoft Forms ✓</p> <p>(Note to marker: Accept any valid online electronic platform, e.g. D6 Communicator, etc.)</p>	1	
9.2.2	<p>ONE spreadsheet feature to indicate a pattern</p> <p>(1) Graphs/charts (2) Conditional formatting (for learners who do not attend regularly) (3) Sorting/Filtering</p> <p>✓ (Any one)</p>	1	
9.2.3	<p>ONE spreadsheet function to determine number of learners absent on a particular date</p> <p>COUNTIF ✓</p>	1	3
9.3	<p>TWO reasons for setting up a network in a computer centre</p> <p>(1) Enable communication between computers in the network (2) Sharing of devices such as printers (3) Sharing of files/software/data (4) Access to each computer can be controlled and monitored/Classroom management software can be used (5) Internet connection can be shared (6) Centralised data management system (7) Sharing updates (8) Improves security</p> <p>✓✓ (Any two)</p>		2
9.4.1	<p>TWO reasons to use a fibre connection for internet access</p> <p>(1) Fibre offers high speed for streaming and downloading files (2) Large bandwidth to accommodate many users accessing the internet simultaneously (3) More reliable/stable internet connection (4) Cheaper per GB for uncapped options/Cost effective (5) The signal is not easily affected by surrounding electrical noise (6) Not affected by lightning strikes</p> <p>✓✓ (Any two)</p>	2	4

9.4.2	<p>TWO ways to ensure learners do not abuse the internet access</p> <p>(1) Block certain sites and services that use high bandwidth/questionable content, e.g. YouTube, BitTorrent, etc./Set parental controls</p> <p>(2) Limit the time learners can spend on the internet</p> <p>(3) Limit the amount of data each learner can use through the server/Issue access tokens</p> <p>(4) Do not allow learners to access the internet via their smartphones/Block devices on Wi-Fi</p> <p>(5) Use internet monitoring software, e.g. Classroom Spy</p> <p>(6) Use proxy software</p> <p style="text-align: right;">✓✓ (Any two)</p>	2	
9.5.1	<p>TWO hardware requirements for video conferencing on each PC</p> <p>(1) Webcam/Camera</p> <p>(2) Speakers/Headphones/Earbuds/Airpods</p> <p>(3) Microphone</p> <p style="text-align: right;">✓✓ (Any two)</p>	2	
9.5.2	<p>TWO examples of video conferencing software</p> <p>(1) Zoom</p> <p>(2) Microsoft Teams</p> <p>(3) Google Meet</p> <p>(4) Skype, etc.</p> <p style="text-align: right;">✓✓ (Any two)</p>	2	5
9.5.3	<p>ONE way to reduce data usage during a video conference</p> <p>Switch off their video when the teacher is presenting ✓ /Reduce the resolution/quality of the video</p>	1	
9.6.1	<p>TWO reasons a spreadsheet is less suitable for a text document</p> <p>1) Cannot set the paragraph and line spacing</p> <p>2) Cannot use referencing features such as footnotes, cross-referencing, TOC or bibliography, etc.</p> <p>3) Challenging to set printing for this type of document in a spreadsheet</p> <p>4) Cumbersome to type text in rows and use the merge feature to create space for that text</p> <p>5) A spreadsheet is used to store, manipulate/calculate and analyse data</p> <p style="text-align: right;">✓✓ (Any two)</p>	2	
9.6.2	<p>View option in a word processor that allows for quick movement to the position of a heading in a document</p> <p>The Navigation Pane ✓ /Find (Ctrl+F)</p>	1	
9.6.3	<p>Word processing feature used to acknowledge sources</p> <p>Bibliography ✓ /Citations</p>	1	4
			[25]

QUESTION 10: INTEGRATED SCENARIO

10.1.1	Reason for displaying the message to change the default browser (1) There is another browser installed as the default (2) To encourage the user to use Microsoft Edge ✓ (Any one)	1	
10.1.2	Operating system associated with the Edge browser (Microsoft) Windows ✓	1	
10.1.3	Two ways to evaluate information on a website (1) Check that the information is current/up to date/relevant (2) Check the reputation/authority of the author (3) Check that the information is free of bias/objective (4) Check that the same information appears elsewhere ✓✓ (Any two)	2	
10.1.4	Browser feature to access recently visited websites quickly Favourites ✓ /Bookmarks/History/Add to Home Screen/Create a shortcut	1	5
10.2.1	TWO functions of a UPS (1) Provide backup power (2) Prevents damage to devices as a result of electrical surges/Equalises under or over electrical current (3) Will alert the user to shut down safely/save work (4) Can shut down/restart the equipment automatically ✓✓ (Any two)	2	
10.2.2	Purpose of a 2-step authentication (1) To prevent fraud/theft (2) To ensure that the owner of the credit card/bank account is the one who is transacting/To ensure that it is not a bot transacting ✓ (Any one)	1	
10.2.3	Example of a notification during a 2-step authentication PIN/OTP/code that was sent by SMS/e-mail ✓ (Note to marker: Accept the CAPTCHA prompt.)	1	
10.2.4	Device to be connected to the UPS to ensure internet connectivity Router ✓ /Modem	1	5

10.3.1	Wireless technology using towers with battery backup Cellular ✓ technology, e.g. 3G/4G/LTE/5G	1	
10.3.2	TWO ways to verify network connection via towers with battery backup (1) Check a network coverage map ✓ (2) Test the internet connectivity ✓ <i>(Note to marker: Accept any valid answers related to 10.3.1 even if 10.3.1 is incorrect.)</i>	2	3
10.4.1	Reason for row 63 appearing directly after row 7 (1) The rows (between row 7 and row 63) are hidden (2) Freeze panes (set on row 8 and the user scrolled down to row 63) was used ✓ (Any one)	1	
10.4.2	Reason why cell B65 displays incorrectly even if function is correct Cell B65 is not formatted as Date ✓ /Is formatted as General/Number	1	
10.4.3	Spreadsheet feature to format multiple cells simultaneously Conditional formatting ✓	1	3
10.5.1	Source of apps on a smartphone (1) (Apple/Samsung/Amazon) App store (2) (Google/Android) Play (Store) (3) (Huawei) App gallery, etc. ✓ (Any one)	1	
10.5.2	Technology used to give load shedding schedule for your area Push technology ✓ /GPS	1	
10.5.3	TWO ways teachers can avoid wasting teaching and learning time during load shedding (1) Do not plan lessons that use ICTs/electrical equipment during load shedding times (2) Swop periods with other teachers that will not require ICTs if their lessons fall outside of load shedding times (3) Teachers and learners could use laptops that are fully charged to enable them to work for a few hours (4) Use backup/generator/battery/solar power ✓✓ (Any two)	2	4

10.6	<p>Ways to reduce electricity used by ICTs (NOTE: Allocate only ONE mark per aspect)</p> <p>Hardware: Buy energy efficient hardware, e.g. low power CPU, etc. ✓</p> <p>Software: Enable Sleep Mode when PC is not active for a period of time, etc. ✓</p> <p>User Behaviour: End user should shut down PC when not in use, etc. ✓</p>		3
10.7	<p>Utility to ensure certain tasks do not run during load shedding times</p> <p>(Task) Scheduler ✓</p>		1
10.8	<p>Malware that tricks users to click on an item with a hidden link</p> <p>Clickjacking ✓</p>		1
			[25]

TOTAL SECTION C: 50
GRAND TOTAL: 150