



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

COMPUTER APPLICATIONS TECHNOLOGY P2

NOVEMBER 2019

MARKS: 150

TIME: 3 hours

This question paper consists of 17 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 a line after EACH subquestion.
7. Generally, one mark is allocated per fact; a 2-mark question would therefore require TWO facts, etc.
8. Read the questions carefully and do NOT give more information than the question requires as this will NOT be marked.
9. All answers MUST be related to Computer Applications Technology.
10. Answers such as 'cheaper', 'slower'/'faster', easier, etc. will ONLY be accepted, if they are motivated.
11. Do NOT use brand names in 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 The CPU can easily be changed on a ...
- A sound card.
 - B hard drive.
 - C memory chip.
 - D motherboard. (1)
- 1.2 Which ONE of the following types of software allows you to try out a program before you buy it?
- A Freeware
 - B Malware
 - C Shareware
 - D Adware (1)
- 1.3 Any document saved on a computer is referred to as a ... copy.
- A hard
 - B soft
 - C backup
 - D cloud (1)
- 1.4 When a user presses a combination of keys on a keyboard to perform an action, it is called a ...
- A hyperlink.
 - B shortcut.
 - C function.
 - D paragraph. (1)
- 1.5 A ... is required for viewing a simulated world in 3D.
- A VR headset
 - B webcam
 - C 3D printer
 - D GPS device (1)

- 1.6 A file name ending with the ... file extension is a type of file that stores data in text-only format.
- A .exe
 - B .zip
 - C .pdf
 - D .csv
- (1)
- 1.7 A trend in technology that allows for household appliances to be connected to the internet:
- A https
 - B VoIP
 - C IoT
 - D IM
- (1)
- 1.8 Which ONE of the following options is NOT essential to allow for collaboration during M-Learning? Learners ...
- A can share and get feedback on their work in real time.
 - B must have the necessary computer skills.
 - C can access and connect to the internet at all times.
 - D must have the latest expensive portable technologies.
- (1)
- 1.9 A spreadsheet feature or a combination of features used to display values or data that meet certain criteria is known as ...
- A data validation.
 - B find and select.
 - C format and edit.
 - D sort and filter.
- (1)
- 1.10 Which ONE of the following options will display the symbol 'A' for a learner mark of 80 found in cell A1 of a spreadsheet?
- A = IF (A1=80, "A", "")
 - B = IF (A1=80, "", "A")
 - C = IF (A1<80, "A", "")
 - D = IF (A1>80, "A", "")
- (1)
[10]

QUESTION 2: MATCHING ITEMS

Choose a term/concept from COLUMN B that matches a 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 device that allows a computer to connect to a network	A	proprietary
2.2	The practice where an ISP gives preference to certain network services, e.g. e-mail	B	cyberbullying
2.3	Software where all the code is freely available	C	form
2.4	Using ICTs to work from home instead of travelling to work	D	VPN
2.5	A program that allows people to explore the World Wide Web	E	NIC
2.6	A public connection to the internet in restaurants and shops	F	interview
2.7	Tricking a user to follow a hidden link on a website	G	report
2.8	A one-on-one meeting where a person answers research questions	H	survey
2.9	A database object that displays one record at a time	I	throttling
2.10	The act of pretending to be someone else online	J	keylogging
		K	browser
		L	open-source
		M	keyboard
		N	teleconference
		O	shaping
		P	hotspot
		Q	HTML editor
		R	identity theft
		S	telecommuting
		T	click-jacking

(10 x 1)

[10]

QUESTION 3: TRUE/FALSE ITEMS

Indicate whether the following statements are TRUE or FALSE. Choose the answer and write 'true' or 'false' next to the question numbers (3.1 to 3.5) in the ANSWER BOOK. Correct the statement if it is FALSE. 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 only FALSE is written.

EXAMPLES:

QUESTION	ANSWER
The initial start-up instructions for a computer are stored in <u>ROM</u> .	True
<u>NFC</u> devices can connect to each other up to 10 metres apart.	False – Bluetooth

- 3.1 A LAN is a type of network that could connect offices in Durban and Cape Town. (1)
- 3.2 BYOD is a concept where employees are allowed to use their personal devices on a company network. (1)
- 3.3 A Trojan is a software program that allows the operating system to communicate with a hardware device. (1)
- 3.4 The defragment utility program can be used to delete temporary or unused files. (1)
- 3.5 Speech-to-text allows a user with hearing disabilities to access a voice note. (1)

[5]

TOTAL SECTION A: 25

SECTION B**QUESTION 4: SYSTEMS TECHNOLOGIES**

- 4.1 Name TWO input devices that can be found on a laptop computer, other than a touch screen. (2)
- 4.2 The user cannot see the full text while an e-mail is being typed on a touch screen device.
Give TWO reasons why this happens. (2)
- 4.3 Give TWO functions of a UPS. (2)
- 4.4 Discuss TWO reasons why a presenter would use a data projector instead of a monitor while presenting. (2)
- 4.5 State TWO advantages of HDMI cables over VGA cables for connecting a television to a computer. (2)
- 4.6 Give TWO reasons why 3D printers are not commonly used in a home office, other than the cost. (2)
- 4.7 The following system requirements are needed to install an office suite:
- 1 GHz or faster CPU
 - 2 GB or more RAM
 - 3 GB of available disk space
 - 1024x768 or higher
 - Windows 7 or later
- 4.7.1 Explain why it is INCORRECT to say that 1024x768 is the size of the monitor. (1)
- 4.7.2 Give the term used to describe the reason why this office suite will not run on an earlier version of the operating system specified above. (1)
- 4.8 Give TWO reasons why you would choose to buy an office suite instead of purchasing various applications by different software developers, other than the cost. (2)
- 4.9 Give TWO possible causes why an application stops responding. (2)
- 4.10 A picture was manipulated in a graphics editor and then saved.
Give TWO reasons why the saved picture now displays blurred or is unclear. (2)
- 4.11 Explain how convergence contributes to green computing. (2)

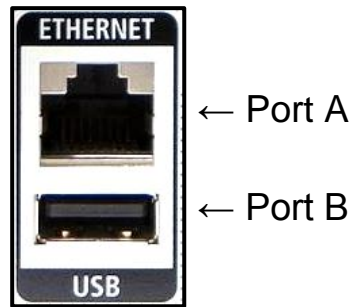
4.12 A television station is planning on replacing older analogue technology with technology for digital broadcasting.

4.12.1 Write down the general term for the process where broadcasting services are changed from analogue to digital technology. (1)

4.12.2 State TWO advantages of digital broadcasting technology for the viewers. (2)
[25]

QUESTION 5: INTERNET AND NETWORK TECHNOLOGIES

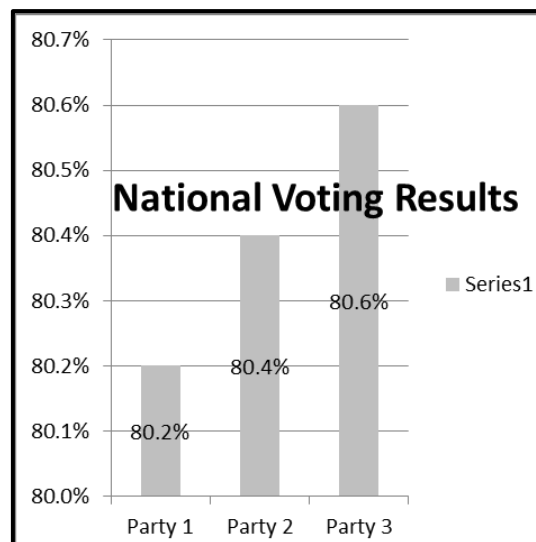
- 5.1 Give TWO advantages of connecting computers in a network rather than using stand-alone computers. (2)
- 5.2 Study the image below and answer the questions that follow.



- 5.2.1 Which port should a person use to connect a computer to a wired network? (1)
- 5.2.2 Explain how to connect a computer to a wireless network using one of the ports. (1)
- 5.3 Name the type of internet connection that uses light for data transmission. (1)
- 5.4 All users on a LAN have valid access rights, but when they attempt to log on with their correct passwords, they are unsuccessful. (1)
- Suggest ONE solution to this problem. (1)
- 5.5 Why does a video freeze (buffer) from time to time while streaming it from the internet? (1)
- 5.6 What is the purpose of the home page setting in a web browser? (1)
- 5.7 State TWO outcomes that can be achieved by clicking on a website hyperlink. (2)
- 5.8 Suggest TWO ways in which you can ensure better privacy on social media, such as Facebook or WhatsApp. (2)
- 5.9 Give TWO limitations of e-commerce. (2)
- 5.10 Name the technology used by banks and also the creators of ransomware to secure the exchange of information over the internet. (1)
- [15]**

QUESTION 6: INFORMATION MANAGEMENT

- 6.1 Refer to a formal written report, such as your PAT, and explain the purpose of an:
- 6.1.1 Abstract (1)
- 6.1.2 Introduction (1)
- 6.2 When you did research for your PAT, you found information on the topic that appeared to be suitable.
- Give TWO reasons why you CANNOT use some of this information in your report. (2)
- 6.3 Closed questions have a set of answers to choose from.
- 6.3.1 Discuss ONE limitation of using closed questions in a questionnaire. (1)
- 6.3.2 Give TWO benefits for a researcher when closed questions are answered electronically. (2)
- 6.4 Study the graph below that shows the final outcome of a national election and answer the question that follows.



Give THREE reasons why it is difficult to interpret the graph.

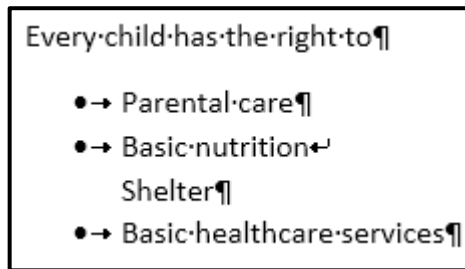
(3)
[10]

QUESTION 7: SOCIAL IMPLICATIONS

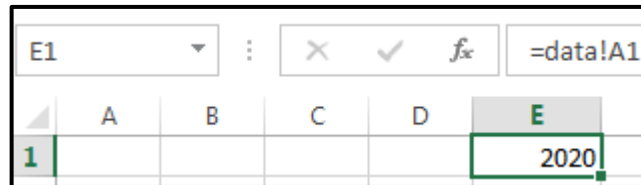
- 7.1 Many cases of internet addiction are reported.
- 7.1.1 Name TWO activities users engage in on the internet that could lead to addiction. (2)
- 7.1.2 Give TWO signs that may warn you that someone may have an internet or gaming addiction. (2)
- 7.2 State TWO potential ethical problems that arise when companies have access to big data. (2)
- 7.3 How can law enforcement authorities investigate suspected cyber criminals? (1)
- 7.4 Give ONE way in which social media is able to influence public opinion. (1)
- 7.5 State TWO negative effects of software piracy for software creators. (2)
- [10]**

QUESTION 8: SOLUTION DEVELOPMENT

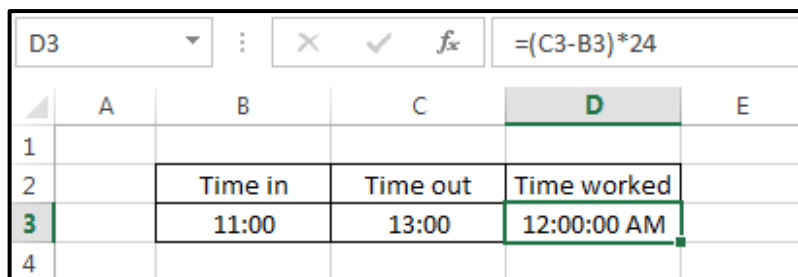
- 8.1 Give ONE benefit of using styles for headings in a long word processing document. (1)
- 8.2 Suggest TWO reasons for using section breaks in a word processing document. (2)
- 8.3 Name TWO word processing features that a reviewer can use to indicate suggested changes to the author of a document. (2)
- 8.4 Study the screenshot of a word processing document below.



- 8.4.1 Why do the non-printing symbols display in the document? (1)
- 8.4.2 Why does the word 'Shelter' appear without a bullet? (1)
- 8.5 How would you use the Page Break Preview of a spreadsheet to manipulate the number of rows or columns printed per page? (1)
- 8.6 What does the exclamation mark (!) in the formula bar for cell E1 indicate in the screenshot below? (1)



- 8.7 Study the screenshot below. The formula used in cell D3 to obtain the time worked is correct, although it is not displaying the correct answer. (1)



- What cell formatting must be applied to cell D3 to obtain the correct answer of 2 hours? (1)

8.8 The formula in cell B2 was copied down to calculate the VAT (cell E1) for all amounts in column A.

B2		✕ ✓ f _x		= \$A\$2*\$E1		
	A	B	C	D	E	F
1				VAT	0.15	
2	R 45.00	R 6.75				
3	R 65.00	R 0.00				
4	R 78.00	R 0.00				
5	R 23.00	R 0.00				

Identify TWO mistakes in the formula that prevent the values in the cell range B3 to B5 from displaying correctly. (2)

8.9 Consider the formula =[Price]*[Markup], used in a calculation in a database query or report.

Why are square brackets used in this formula? (1)

8.10 What would happen if a =COUNT(*) function was moved from the group footer to the report footer in a database? (1)

8.11 What needs to be done for the text 'December holidays' to display on a web browser tab?

```
<html>
  <head> December holidays
    <title> </title>
  </head>
  <body> </body>
</html>
```

(1)
[15]



TOTAL SECTION B: 75

SECTION C**QUESTION 9: INTEGRATED SCENARIO**

Your school is hosting a cooking competition where learners will cook in teams and be judged by professional chefs. Mobile kitchens will be set up on the sports field.

- 9.1 Computing devices will be used to display the recipes and to capture the results.

Study the specifications of the following two devices:

DESKTOP COMPUTER	TABLET
 <ul style="list-style-type: none"> • 2.4 GHz CPU • 8 GB DDR4 • 256 GB Solid State • 4 GB Video Card • 21" Monitor • 4 x USB ports • Integrated 10/100/1000 Network Port • Integrated HDMI port • FHD Webcam, 1920x1080 • SD Card Slot • On-site warranty 	 <ul style="list-style-type: none"> • 1300 MHz CPU • 2 GB RAM • 16 GB internal storage • Touch screen • 25.6 cm (10.1") display • Rear camera 8 MP • 4G standard LTE, Wi-Fi • Bluetooth version BT 4.0 • 2G standard, GSM, 4G • SD Card Slot

- 9.1.1 What is the speed of the faster processor when comparing the two devices? (1)
- 9.1.2 Why is the tablet more suitable for outdoor use? (1)
- 9.1.3 State TWO ways in which to extend the storage space of the tablet. (2)
- 9.1.4 Explain why the desktop computer is better for graphics processing by referring to its specifications, other than the CPU. (1)
- 9.1.5 Explain what an on-site warranty is AND why a tablet does not usually have an on-site warranty. (2)

- 9.2 Competitors can contact expert cooks in real time for assistance.
- 9.2.1 What is the advantage for competitors of being able to communicate with expert cooks in real time? (1)
- 9.2.2 Name TWO types of internet connections that would be suitable to use during this competition. (2)
- 9.2.3 Name TWO hardware devices necessary for video/web conferencing with an expert, other than network devices. (2)
- 9.3 A video taken during the competition will be published online after the event.
- 9.3.1 Name TWO e-communication services (online platforms) where these videos can be published. You may use brand names. (2)
- 9.3.2 Explain how a person could use a search engine to find a video of this cooking competition. (2)
- 9.3.3 Name TWO camera specifications that influence the quality of the videos, other than the sensor. (2)
- 9.3.4 Give TWO reasons for using file compression to reduce the file size. (2)
- 9.4 The scores from several judges will be captured in a spreadsheet.
- 9.4.1 State TWO features of a spreadsheet that will assist the user to capture the scores accurately. (2)
- 9.4.2 The total score for each team can be calculated using the following formula:
- $$=A1+A2+A3+A4$$
- Which spreadsheet function can be used to achieve the same result? (1)
- 9.4.3 Which spreadsheet function or combination of functions can be used on the data below to extract the score given by a particular judge (e.g. Judge 2) to a particular team (e.g. Team 2)?
- | | A | B | C | D |
|---|--------|---------|---------|---------|
| 1 | | Judge 1 | Judge 2 | Judge 3 |
| 2 | Team 1 | 94 | 98 | 87 |
| 3 | Team 2 | 87 | 90 | 74 |
| 4 | Team 3 | 91 | 92 | 80 |
| 5 | Team 4 | 90 | 94 | 81 |
- (1)
- 9.4.4 How can a judge ensure that the formatting applied to the spreadsheet does not change even if it is viewed on another computer with a different operating system or without a spreadsheet program? (1)

[25]

QUESTION 10: INTEGRATED SCENARIO

You are working as an assistant at the weather bureau during the holidays.

- 10.1 The weather bureau must purchase a printer for office use.
- Name TWO specifications to consider when purchasing a printer, other than cost. (2)
- 10.2 The computers at the weather bureau should be protected from power surges.
- 10.2.1 What kind of damage can a power surge do to a computer? (1)
- 10.2.2 Suggest TWO environmentally friendly ways in which to dispose of a damaged computer. (2)
- 10.3 Strict security measures should be put in place by the network administrator so that not all employees have access to the server at the weather bureau.
- 10.3.1 Name the type of user that works with high-end hardware and software. (1)
- 10.3.2 The network administrator sets up access rights and a firewall.
- Give TWO reasons why physical access to the server room should be restricted as well. (2)
- 10.3.3 Give TWO reasons why the network administrator disabled the unused USB ports on the employees' computers. (2)
- 10.4 Discuss TWO benefits of grid computing for the weather bureau. (2)
- 10.5 The network administrator should always keep the software on the computers of the weather bureau updated.
- 10.5.1 A weather analysis application is returning incorrect results after a recent update.
- Give a term for the cause of the problem AND suggest a solution. (2)
- 10.5.2 Give TWO reasons why the network administrator may not want an operating system to automatically download and install updates on the networked computers. (2)

10.6 Backing up is important so that data is not lost.

10.6.1 Give TWO reasons why the weather bureau should make automatic backups. (2)

10.6.2 Suggest TWO guidelines to be included in the policy for making backups at the weather bureau, other than making regular backups or setting automatic backups. (2)

10.7 Each weather station must embed the location where photographs were taken into these photographs.

10.7.1 What technology allows for obtaining accurate location data? (1)

10.7.2 Give the term for the data embedded into a picture file that provides the location of where a photograph was taken. (1)

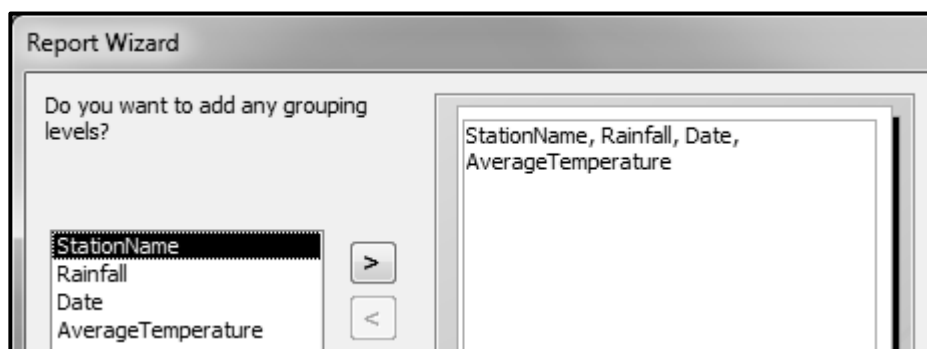
10.8 The following database table structure was created to capture daily temperatures:

StationID	Short Text
StationName	Short Text
Coordinates	Short Text
Date	Date/Time
AverageTemperature	Number
Rainfall	Number

10.8.1 Only numbers will appear in the **StationID** field, e.g. 3452, 0198, 187.

Why is the data type of this field Short Text and not Number? (1)

10.8.2 The following screen appeared during the creation of a report:



What steps should be followed to show a list of the rainfall values in ascending order for each station? (2)

[25]

TOTAL SECTION C: 50
GRAND TOTAL: 150



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COMPUTER APPLICATIONS TECHNOLOGY P2

NOVEMBER 2019

MARKING GUIDELINES

MARKS: 150

These marking guidelines consist of 20 pages.

SUGGESTIONS AND RECOMMENDATIONS TO MARKERS

- Revisit the questions and the marking guideline 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 guideline.
 - Ask yourself or your senior marker if the response could 'fit' into the marking guideline before allocating the correct marks to the candidate.
 - Accept correct answers that are expressed differently, e.g. the marking guideline states 'slow' and the candidate 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/STATE: mark the first number of instances required, e.g. the first TWO facts if the candidate presents a list of FIVE facts and 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	D	✓	1
1.2	C	✓	1
1.3	B	✓	1
1.4	B	✓	1
1.5	A	✓	1
1.6	D	✓	1
1.7	C	✓	1
1.8	D	✓	1
1.9	D	✓	1
1.10	A	✓	1
Total: [10]			

QUESTION 2: MATCHING ITEMS

2.1	E	✓	1
2.2	O	✓	1
2.3	L	✓	1
2.4	S	✓	1
2.5	K	✓	1
2.6	P	✓	1
2.7	T	✓	1
2.8	F	✓	1
2.9	C	✓	1
2.10	R	✓	1
Total: [10]			

QUESTION 3: TRUE/FALSE ITEMS

(Note to marker: In Question 3.1, 3.3, and 3.4 candidates need to provide both the word 'False' and the correct term, e.g. motherboard, in order to get the mark.)

3.1	False, WAN ✓ /MAN	1
3.2	True ✓	1
3.3	False, driver ✓	1
3.4	False, (Disk) Cleanup ✓	1
3.5	True ✓	1
		[5]

TOTAL SECTION A: 25

SECTION B**QUESTION 4: SYSTEMS TECHNOLOGIES**

4.1	<p><i>TWO input devices found on a laptop computer</i></p> <p>(1) Keyboard/Keypad (2) Touch pad/Track pad (3) Microphone (4) Camera/Webcam (5) Fingerprint scanner (6) Track point/Pointing stick</p> <p style="text-align: right;">✓✓ (Any two)</p>		2
4.2	<p><i>TWO reasons why all text on a touch screen device does not display</i></p> <p>(1) On-screen keyboard is blocking the text (2) Font size is too large (zoomed)/Screen size is too small (3) More than one app is opened which takes up screen space (4) Text is scrolled out of view/Auto-rotation is not turned on</p> <p style="text-align: right;">✓✓ (Any two)</p>		2
4.3	<p><i>TWO functions of a UPS</i></p> <p>(1) Provides temporary backup power during power failures/dips✓ to save work (2) Protects the computer from power surges/fluctuations/dips✓</p>		2
4.4	<p><i>TWO reasons for using a data projector instead of a monitor</i></p> <p>(1) The display can be used for large groups of people (2) Image size can be varied (3) Can display on a variety of surfaces (4) Data projector is easier to move/carry around (Comparable sizes)</p> <p style="text-align: right;">✓✓ (Any two)</p>		2
4.5	<p><i>TWO advantages of HDMI cables over VGA cables</i></p> <p>(1) Digital signal results in better audio/video quality (higher resolution)/HDMI enables better quality images/display (2) Transmits both audio and video data (3) Faster data transfer</p> <p style="text-align: right;">✓✓ (Any two)</p>		2
4.6	<p><i>TWO reasons why 3D-printers are not commonly used in home offices</i></p> <p>(1) Not multifunction: cannot scan/copy/cannot print on paper (2) Home office users generally do not need to print 3D models (3) Emissions may possibly be toxic (smelly/odour)</p> <p style="text-align: right;">✓✓ (Any two)</p>		2

4.7.1	ONE reason why 1024x768 does not refer to size of the monitor 1024x768 refers to the resolution and NOT the physical screen size/display ratio/Screen size is given in inches✓	1	
4.7.2	Term used to describe why software will not work on an earlier version of the OS Compatibility✓	1	2
4.8	TWO reasons for purchasing an office suite rather than applications by various software developers (1) Office suite/Applications will have a similar GUI/environment (2) Easy to share data between applications/Integration of data (3) All applications are available from a single installation (4) Only single update required for all applications ✓✓ (Any two)		2
4.9	TWO causes for an application to stop responding (1) Lack of system resources , e.g. Not enough RAM to run application/Lack of disk access/Too many applications running in the background/Application is in the process of updating (2) Lack of network access/connectivity (3) Hardware malfunction , e.g. faulty RAM, CPU overheating, etc. (4) Corruption of the software /Faulty software/Software bug (5) Malware, e.g. Virus infection, Hacking software ✓✓ (Any two) (Note to marker: Allocate two marks if the candidate gives two valid points in the same bullet, e.g. Faulty RAM and faulty CPU.)		2
4.10	TWO reasons why a picture becomes blurred or is unclear (1) The picture size was increased/Pixilation (2) It was saved at a lower resolution (3) It was saved in a different file format (4) Aspect ratio was changed (5) Sharpness/Softness/Contrast of the picture was adjusted (6) Graphic effects were applied ✓✓ (Any two)		2
4.11	How convergence contributes to green computing Fewer devices means: (1) fewer resources/materials being used (in the manufacturing process) (2) less going to landfills/less e-waste (3) fewer emissions (e.g. in manufacturing/transport) (4) less power/electricity being consumed ✓✓ (Any two)		2

4.12.1	Term for analogue broadcast changed to digital broadcast (Digital) migration✓	1	
4.12.2	TWO advantages of digital broadcasting technology for the viewer (1) Sharper picture/video/higher resolution/Support HD devices (2) Streaming/video on demand (3) Better quality sound (4) More television channels available (5) Music/Radio channels also available (6) The availability of other services, e.g. optional languages/subtitles/parental lock, etc. (7) Electronic programming guide ✓✓ (Any two)	2	3
			[25]

QUESTION 5: INTERNET AND NETWORK TECHNOLOGIES

5.1	<p>TWO advantages of networked computers over stand-alone computers</p> <ul style="list-style-type: none"> (1) Sharing of hardware (2) Installing/Sharing of applications (3) Sharing of documents/files (4) Enables communication between computers (5) Centralised/Improved security is possible (6) Updates can be shared/centralised (7) Device management (8) Sharing of internet connectivity (9) Backups can be centralised (10) Centralised data <p style="text-align: right;">✓✓ (Any two)</p>		2
5.2.1	<p>Port to connect computer to a wired network</p> <p>Port A/Ethernet port✓</p> <p><i>(Note to marker: Accept Port B together with a motivation, e.g. adaptor.)</i></p>	1	
5.2.2	<p>Way to connect to a wireless network</p> <p>(Wireless) dongle✓ in Port B</p> <p>OR</p> <p>Router/modem in Port A/B</p> <p><i>(Note to marker: Do not accept Port A or B only.)</i></p>	1	2
5.3	<p>Type of connection that uses light for data transmission</p> <p>Fibre✓ /Li-Fi</p>		1
5.4	<p>ONE solution for users to log on to a LAN</p> <ul style="list-style-type: none"> (1) Switch the server/switch on (2) Refresh the user accounts/Restart the server/computer/switch/Create new user accounts/Roll back the server to previous settings (3) Plug the network cable in (4) Faulty hardware: Replace the damaged network cable/Switch/Port (5) Review user permissions (NOT passwords)/firewall/timed access (6) Clean virus infection on the server <p style="text-align: right;">✓ (Any one)</p>		1
5.5	<p>ONE reason why buffering occurs while streaming a video</p> <ul style="list-style-type: none"> (1) There is not enough bandwidth/High internet traffic (2) ISP throttled your connection (3) Problems with the streaming server (4) Poor signal strength/Connection was interrupted <p style="text-align: right;">✓ (Any one)</p>		1

5.6	Purpose of a home page setting in a browser Automatically loads a (favourite) web page every time the browser is started✓/Acts as an indirect bookmark		1
5.7	TWO outcomes from clicking on a website hyperlink (1) (Automatically) directs a user to other pages/sections of the website/other websites (2) Opens the e-mail interface (3) Can initiate/trigger file downloads/link to multimedia files (4) Could result in a dialog box, e.g. Error message ✓✓ (Any two)		2
5.8	TWO ways to ensure privacy on social media: Facebook/WhatsApp (1) Ensure that only authorised people can see the posts/content/Use privacy settings (2) Disable cookies (3) Disable/Restrict access to 3rd party apps/Disable sharing of data with social network service provider, if possible (4) Block users that you do not want to communicate with (5) Hide/Do not share personal details (6) Disable the 'share location' feature ✓✓ (Any two)		2
5.9	TWO limitations of e-commerce (1) Items cannot be tried out before purchase (2) Requires some form of banking account/Usually cannot transact in cash (3) Not all services can be purchased through online stores, e.g. haircut, medical visits, etc. (4) Relies on internet connectivity (5) Digital skills (6) Warranty claims can be difficult (7) Can be impersonal (8) May be exposed to fraud/scams (9) Possible delay in delivery ✓✓ (Any two)		2
5.10	Technology used to secure data Encryption✓ /SSL/TLS		1
			[15]

QUESTION 6: INFORMATION MANAGEMENT

6.1.1	Purpose of an abstract A brief summary/overview/outline of the report✓	1	
6.1.2	Purpose of an introduction (1) To give a (description of the) purpose of the report (2) To give background information about the topic (3) To give a brief idea of what the researcher did/research process was to solve the problem ✓ (Any one) <i>(Note to marker: Do not accept 'target audience'.)</i>	1	2
6.2	TWO reasons for information not being suitable (1) The author is not an authority on the topic/Cannot obtain bibliographical information (2) The information is too old (3) Information in the document was found to be plagiarised (4) The information is biased (5) The information is contradictory (6) Information cannot be cross-referenced (7) The information is very limited and does not adequately cover the topic ✓✓ (Any two)		2
6.3.1	ONE limitation of closed questions in a questionnaire (1) Limited options may lead to skewed data (2) Options may be biased towards a point of view (3) Respondent may want to give an answer not in the list/Limits possible responses that could be given by the respondent (4) No indications of whether the respondent understood the questions ✓ (Any one)	1	
6.3.2	TWO benefits for a researcher when closed questions are answered electronically (1) Easier to process/analyse responses in a graph/spreadsheet/database (2) The creation of graphs can be automated (3) Can read all responses/Bad handwriting is not an issue/Do not have to retype the responses/Fewer errors in data (4) Data capturing can be automated (5) Easy to share data with others/publish dataset (6) Data validation of responses can be done (7) Possible response times are quicker (8) Higher return rate is possible ✓✓ (Any two)	2	3

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6.4	<p><i>THREE reasons why the graph is difficult to interpret</i></p> <p>(1) The title obscures the content of the graph/The title may make it difficult to see detail/interpret the graph</p> <p>(2) The graph shows a big difference in the bars but values are very close</p> <p>(3) The combined percentages go well beyond 100%/It is not obvious that the graph displays parts of a whole/A pie chart would be more suitable</p> <p>(4) The Y-axis starts at 80% rather than 0%/Incorrect upper and lower limits of the Y-axis</p> <p>(5) The legend has a meaningless label</p> <p>(6) Axes are not labelled</p> <p style="text-align: right;">✓✓✓ (Any three)</p>		3
			[10]

QUESTION 7: SOCIAL IMPLICATIONS

7.1.1	<p>TWO activities on the internet that could lead to addiction</p> <ul style="list-style-type: none"> (1) Social networking/Constantly checking messages (2) Checking profiles of others (3) (Online) gaming (4) Watching inappropriate content/pornography (5) (Online) shopping/(online) auctions (6) Watching (online) videos (7) (Online) dating (8) (Online) gambling <p style="text-align: right;">✓✓ (Any two)</p>	2	
7.1.2	<p>TWO warning signs of internet addiction</p> <ul style="list-style-type: none"> (1) Withdrawal from/Dislike of social activities/Isolation (2) Obsessed with their internet activities/Spend all their time at the computer/Constant need for data (3) Mental health issues/Depression/Anxiety/Aggression/Withdrawal (4) Physical symptoms: Repetitive stress injuries/Carpal Tunnel Syndrome/Headaches/Fatigue (5) Secretive behaviour with computing devices (6) Truancy/Absence from school/work <p style="text-align: right;">✓✓ (Any two)</p> <p><i>(Note to marker: Allocate two marks even if candidate lists two points from the same bullet.)</i></p>	2	4
7.2	<p>TWO potential ethical problems of companies accessing big data</p> <ul style="list-style-type: none"> (1) Breach of privacy: Use of data for certain purposes/tasks without permission, e.g. selling people's data profiles to third parties for marketing (2) Use of personal data to target/tempt specific people into making unnecessary purchases (3) Companies may exploit data/Unfair bias becomes the accepted norm (4) Lack of security controls/Open to cyber-attacks <p style="text-align: right;">✓✓ (Any two)</p>		2
7.3	<p>ONE way law enforcement authorities could trace cyber criminals</p> <ul style="list-style-type: none"> (1) Track/Trace/Check on the internet activities of users, e.g. visiting questionable sites, posting offensive comments, etc. (2) Internet activities leave behind data (breadcrumbs/History/cookies) that can be traced (3) Profile users based on their internet activities (4) Information provided by victims <p style="text-align: right;">✓ (Any one)</p>		1

7.4	<p>ONE way in which social media is able to influence public opinion</p> <p>Posts (opinions) made by influencers/celebrities/authorities/companies on social media manipulate/could influence public opinion/behaviour both positively or negatively ✓</p> <p><i>(Note to marker: Accept any realistic response related to the influence of social media, e.g. Fake news, trending posts/comments, etc.)</i></p>		1
7.5	<p>TWO negative effects of software piracy for creators</p> <p>(1) Software manufacturers lose revenue/Loss of sales (2) Discourages the creation of new software/Can affect the quality of new software developed (3) Possible job losses (4) Reputational damage because users are unaware of malware in the pirated software</p> <p style="text-align: right;">✓✓ (Any two)</p>		2
			[10]

QUESTION 8: SOLUTION DEVELOPMENT

8.1	<p>ONE benefit of using styles for headings in a long WP document</p> <p>(1) Easy to create a table of contents/Enables the use of automatic table of contents (2) Consistent format of headings/Professional layout of document (3) Easy to modify/update multiple headings at the same time</p> <p style="text-align: right;">✓ (Any one)</p> <p><i>(Note to marker: Only accept time saving when motivated.)</i></p>		1
8.2	<p>TWO reasons for using sections breaks</p> <p>(1) Different headers and footers can be applied to a document (2) Different page numbering can be applied in one document (3) Watermarks can be inserted on only some pages in one document (4) Various page settings, e.g. page orientations/paper sizes/margins/borders can be applied to one document (5) Various column layouts can be applied to one document (6) Different vertical alignment options can be applied in one document</p> <p style="text-align: right;">✓✓ (Any two)</p>		2
8.3	<p>TWO word processing features used by a reviewer</p> <p>(1) Tracking/Track changes/Markup (2) Comments (3) Use highlighting/use different colour fonts/strikethrough to indicate suggested changes</p>		2
8.4.1	<p>ONE reason for the display of non-printing symbols</p> <p>Show/Hide feature is activated/Show formatting, e.g. spaces, tabs, etc. ✓</p>	1	2
8.4.2	<p>Reason why there is no bullet next to 'Shelter'</p> <p>Soft return/enter was used/Pressed Shift+Enter/Did not press the Enter key on its own/It is part of the bulleted text ✓</p>	1	
8.5	<p>How to use Page Break Preview in a spreadsheet</p> <p>Drag the (blue) page break ✓ with the mouse to customise the printable area</p>		1

8.6	Purpose of the exclamation mark in a spreadsheet Exclamation mark indicates a reference to another sheet/workbook/The cell A1 is in the 'data' worksheet✓		1
8.7	Cell format of a time answer in a spreadsheet General/Number✓		1
8.8	TWO mistakes in a formula preventing correct autofill (1) The reference to cell A2 should not be an absolute reference/The row reference cell A2 should not be an absolute cell reference/It should be A2 or \$A2✓ (2) There should be absolute cell referencing (\$) in cell E1/Cell E1 should be a complete absolute cell reference/It should be \$E\$1✓ (Note to marker: Allocate one mark for reference to absolute cell referencing without specifying the cells.)		2
8.9	Purpose of square brackets in a database calculation Square brackets reference a field (name) ✓ or a table (Note to marker: Accept reference to extract a value from a column. Do not accept 'Column heading' per se.)		1
8.10	Effect of moving =Count(*) from DB group footer to report footer The function will count all the values ✓ of all the records in the table/report instead of just the values of a group/It results in only one answer at the end of the report		1
8.11	Tag for text to appear on the web browser tab Move the text 'December Holidays' to between the title tags✓ (Note to marker: Accept <title> December holidays </title>.)		1
			[15]

TOTAL SECTION B: 75

SECTION C**QUESTION 9: INTEGRATED SCENARIO**

9.1.1	Speed of the faster CPU 2.4 GHz✓	1	
9.1.2	ONE reason for the tablet being more suitable for outdoor use (1) A tablet is portable/Not dependent on external power source (2) The tablet is LTE/4G/Wi-Fi enabled (3) Can be easily tilted/moved around to avoid glare ✓ (Any one)	1	
9.1.3	TWO ways to extend the storage space of the tablet (1) Use an SD Card/memory card (2) Use an (OTG) flash drive/external hard drive (3) Use an online/cloud storage service ✓✓ (Any two)	2	
9.1.4	ONE reason for the desktop computer being better for graphics processing (1) Has a (dedicated) video/graphics card (2) Has more RAM ✓ (Any one)	1	
9.1.5	Explanation of an on-site warranty The manufacturer will arrange for pickup or repair the device at the client's premises✓ Reason why tablets do not have on-site warranties Tablets are small/portable enough for the owner to easily take it back to the store✓	2	7

9.2.1	ONE advantage of real-time communication Interaction/Help is immediate/No delays in messages✓	1	
9.2.2	TWO types of internet connection needed during the competition (1) Satellite (2) Cellular (3G, 4G, 5G, LTE) (3) Wi-Fi/Wireless ✓✓ (Any two)	2	
9.2.3	TWO hardware devices used for video conferencing (1) Webcam/Camera (2) Speakers/Earphones/Headphones (3) Microphone (4) (Bluetooth) Headset (5) Monitor/Screen/Projector (6) Smartphone/Computer/Tablet ✓✓ (Any two)	2	5
9.3.1	TWO online platforms to publish videos (1) YouTube (2) School's website/other websites (3) Blogs/Vlogs (4) WhatsApp/WeChat/Telegram (group) (5) Facebook (6) Instagram (7) Snapchat (8) TikTok (9) Twitter (10) Vimeo, etc. ✓✓ (Any two)	2	
9.3.2	How to locate a video on the internet (1) Use the word ' video ' in the search string✓/Set search type to video/video tab (advanced search) (2) Search string must include the school name /cooking competition name /dish name /video name ✓	2	

9.3.3	<p><i>TWO specifications of a camera that influence video quality other than the sensor</i></p> <p>(1) Resolution/Megapixels (2) Colour depth (3) (Quality of the) lens (4) Optical (vs digital) zoom (5) Frame rate (6) ISO rating (7) File formats available for saving (8) Video stabilisation/Shudder is reduced (9) Speed of the memory card, etc.</p> <p style="text-align: right;">✓✓ (Any two)</p>	2	
9.3.4	<p><i>TWO reasons for compressing video files</i></p> <p>(1) To decrease the amount of data used when sharing files/Limited bandwidth for sharing files (2) Possible limited storage space on the device/cloud service (3) Faster uploading</p> <p style="text-align: right;">✓✓ (Any two)</p>	2	8
9.4.1	<p><i>TWO spreadsheet features for accurate data capturing</i></p> <p>(1) Data validation/Drop down list (2) Lock cells/Protect cells (3) Conditional formatting (4) Freeze panes</p> <p style="text-align: right;">✓✓ (Any two)</p>	2	
9.4.2	<p><i>An alternative way to add values in a range</i></p> <p>Use the SUM ✓ function</p>	1	
9.4.3	<p><i>Function to lookup data</i></p> <p>VLOOKUP/HLOOKUP/XLOOKUP✓</p> <p><i>(Note to marker: Accept an answer that uses MATCH and INDEX together.)</i></p>	1	
9.4.4	<p><i>ONE way to make a spreadsheet document available on any OS</i></p> <p>(1) Save as PDF (2) Print to PDF (3) Save/Convert a screenshot to any picture format</p> <p style="text-align: right;">✓ (Any one)</p>	1	5
			[25]

QUESTION 10: INTEGRATED SCENARIO

10.1	<p><i>TWO specifications to consider when buying a printer</i></p> <p>(1) Resolution/DPI/Quality of the printouts (2) Printer speed/PPM (3) Connectivity options, e.g. Wireless, USB, etc. (4) Printer capacity (industrial level)/Duty cycle (5) Multifunction ability, e.g. copying, scanning, etc. (6) Paper size/Borderless printing (7) User interface options (8) Duplex/Two-sided printing option (9) Colour/Monochrome printing (10) Printing technology, i.e. size and number of ink tanks, toner, etc. (11) Paper tray capacity</p> <p style="text-align: right;">✓✓ (Any two)</p>	2	2
10.2.1	<p><i>ONE kind of damage to a computer from a power surge</i></p> <p>(1) Hardware damage, e.g. to power supply, motherboard, etc. (2) Corruption/Loss of data</p> <p style="text-align: right;">✓ (Any one)</p>	1	
10.2.2	<p><i>TWO ways to dispose of a computer in an environmentally friendly way</i></p> <p>(1) Recycle the components (2) Use a service provider/retailer that disposes of e-waste (3) Re-use/sell/donate working components</p> <p style="text-align: right;">✓✓ (Any two)</p>	2	3
10.3.1	<p><i>Type of user that uses high-end hardware and software</i></p> <p>Super/Power user✓</p>	1	
10.3.2	<p><i>TWO reasons to restrict access to the server room</i></p> <p>(1) Additional layer of access control for employees (2) To prevent burglaries/theft of data/hardware (3) To prevent physical damage/vandalism/tampering with the network</p> <p style="text-align: right;">✓✓ (Any two)</p>	2	
10.3.3	<p><i>TWO reasons for blocking USB ports</i></p> <p>(1) Theft of data/Unauthorised copying of data (2) Flash drives often carry viruses (3) Prevents employees from attaching other devices (4) Prevents employees from bringing in games/personal documents/software, etc.</p> <p style="text-align: right;">✓✓ (Any two)</p>	2	5

10.4	<p>TWO benefits of grid computing</p> <p>(1) Large processing tasks are shared over many computers/Enormous processing power (2) Can use existing resources/No need to buy an expensive supercomputer (3) The failure of one computer will not affect processing of tasks (4) Scaling of processing power is easy (5) Uses idle resources</p> <p style="text-align: right;">✓✓ (Any two)</p>		2
10.5.1	<p>Cause of the software problem</p> <p>Bug ✓</p> <p>Solution</p> <p>(1) System restore/Roll back to previous date/time where the software worked properly (2) Install a patch/service pack (from the vendor website) (3) Re-install the software</p> <p style="text-align: right;">✓ (Any one)</p> <p><i>(Note to marker: Accept 'Glitch' as the cause with 'Restart' as the solution.)</i></p>		2
10.5.2	<p>TWO reasons why OS updates should <u>NOT</u> automatically download on networked computers</p> <p>(1) Automatic updates may use a lot of bandwidth (2) Automatic updates may use a lot of storage space (3) Updates may slow down the network/Computers may restart automatically to install updates during times when they are in use (4) Updates may cause the computers/network to become unstable/May cause compatibility issues with existing software/ Possible introduction of bugs (5) OS updates may not be needed by the users</p> <p style="text-align: right;">✓✓ (Any two)</p> <p><i>(Note to marker: Do not accept any answer related to data usage and cost.)</i></p>	2	4

10.6.1	<p>TWO reasons for <u>automatic</u> backups</p> <p>(1) Saves time due to scheduled backups/No user intervention required for backups (2) Ensures backup is always/regularly/timeously done/Employees may forget if done manually (3) Time/schedule backups when computers are not in use</p> <p style="text-align: right;">✓✓ (Any two)</p> <p><i>(Note to marker: Do NOT accept reasons for a backup that is NOT automatic.)</i></p>	2	
10.6.2	<p>TWO guidelines in the policy for making backups, other than making regular backups or setting automatic backups</p> <p>(1) Only backup when computers are not being used (2) Do not store backups in the same location as the original data/Specify location of backups (3) Specify a storage medium (4) Backup to multiple types of media (5) Do incremental backups to save space/data/Only backup recent data and not everything (6) Do not backup software/programs that can be reinstalled (7) Encrypt sensitive data on backup/Ensure changes cannot be made to the backup (8) Testing of backups (9) Responsible person for backups</p> <p style="text-align: right;">✓✓ (Any two)</p>	2	4
10.7.1	<p>Technology that is used to obtain location data</p> <p>GPS✓</p>	1	
10.7.2	<p>Term for the data that is embedded in a picture file</p> <p>Metadata✓ /Geotagging</p>	1	2
10.8.1	<p>Why the data type of StationID is Short Text</p> <p>(1) No calculations will be done (2) The zero at the start of the number will display/In a Number data type the zero at the start of the number will not display (3) It may be a code in which the numbers carry a specific meaning</p> <p style="text-align: right;">✓ (Any one)</p>	1	
10.8.2	<p>How to sort rainfall values in ascending order per station</p> <p>(1) Group by StationName✓ (2) Sort by Rainfall✓</p>	2	3
			[25]

TOTAL SECTION C: 50

GRAND TOTAL: 150