

Confidential



# basic education

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

## **SENIOR CERTIFICATE EXAMINATIONS/ NATIONAL SENIOR CERTIFICATE EXAMINATIONS**

**COMPUTER APPLICATIONS TECHNOLOGY P2**

**MAY/JUNE 2024**

**MARKS: 150**

**TIME: 3 hours**

**This question paper consists of 16 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; 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 type of chart is recommended to illustrate a trend over a period of time?
- A Bar chart
  - B Line chart
  - C Pie chart
  - D Bubble chart
- (1)
- 1.2 Combining multiple technologies into a single device is known as ...
- A point of sales.
  - B convergence.
  - C annexure.
  - D peripheral.
- (1)
- 1.3 A printer that can copy and scan is an example of a(n) ... device.
- A multifunctional
  - B multitasking
  - C multiprocessing
  - D input
- (1)
- 1.4 This step of the information cycle can only take place after the data and instructions are in the RAM of the device:
- A Input
  - B Save
  - C Output
  - D Processing
- (1)
- 1.5 NFC cannot be used for ...
- A unlocking your car doors.
  - B pairing accessories.
  - C connecting to a hotspot.
  - D paying for your groceries.
- (1)

- 1.6 The process of tricking users into following a hidden link on a web page is known as ...
- A click-jacking.
  - B spoofing.
  - C pharming.
  - D adware.
- (1)
- 1.7 A trend whereby objects and devices are connected to each other via the internet:
- A PAN
  - B LTE
  - C IoT
  - D MAN
- (1)
- 1.8 When an internet service is given a higher priority than other services, it is called ...
- A shaping.
  - B throttling.
  - C internet cap.
  - D bandwidth.
- (1)
- 1.9 A/An ... is normally the last step in a two-factor (two-step) authentication.
- A security question
  - B validation text
  - C username
  - D one-time pin (OTP)
- (1)
- 1.10 Which word processing feature cannot be used to make multiple changes at the same time, when formatting a document?
- A Styles
  - B Find and Replace
  - C Format Painter
  - D Themes
- (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 printout is an example of a ...	A	firewall
2.2	Data organised in a meaningful way	B	evidence
2.3	A device on a network that allows or prevents access to certain ports or communication channels	C	<ul>...</ul>
2.4	Distinguishes humans from bots on a website	D	joystick
2.5	The type of cable used to transmit high quality video and audio signals	E	e-mail address
2.6	Device used by hearing-impaired people	F	hard copy
2.7	HTML code to create a bulleted list	G	HDMI
2.8	A field property setting in Access that will ensure that a field cannot be left blank	H	information
2.9	A feature to ensure that a watermark only displays on the first two pages of a document	I	page break
2.10	A control on the Developer Tab best suited for use with open-ended questions	J	VGA
		K	section break
		L	<ol>...</ol>
		M	soft copy
		N	text form field
		O	default value
		P	vibrating panel
		Q	switch
		R	drop-down form field
		S	required
		T	CAPTCHA

(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
<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 Spyware is a banner or pop-up window that appears while you are browsing the internet. (1)
- 3.2 A data label is a visual indicator on a graph of related sets of values in a worksheet. (1)
- 3.3 An error in the program code is known as a Trojan. (1)
- 3.4 802.11 refers to a set of specific standards and protocols for a wireless network. (1)
- 3.5 A radio button group allows a user to select multiple options in a form. (1)

**[5]**

**TOTAL SECTION A: 25**

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

- 4.1 Study the advertisement of two different laptops below and answer the questions that follow.

LAPTOP A	LAPTOP B
<ul style="list-style-type: none"> <li>• Upgradeable to Windows 11</li> <li>• Office 365</li> <li>• 15.6-inch Full HD Display</li> <li>• 8 GB RAM and 1 TB SSD Storage</li> <li>• Intel Core i5 10300H Processor</li> <li>• NVIDIA GeForce GDDR6 GPU</li> <li>• Blue LED Backlit Keyboard</li> <li>• 720p Webcam with Privacy Shutter</li> <li>• M100 RGB Mouse</li> <li>• NOD antivirus 3 months</li> </ul>	<ul style="list-style-type: none"> <li>• Windows 11</li> <li>• Office 365</li> <li>• 15.6-inch Full HD Display</li> <li>• 16 GB RAM and 512 GB SSD Storage</li> <li>• AMD Ryzen 5 5600H Processor</li> <li>• NVIDIA GeForce 1650 GPU</li> <li>• HP Wide Vision 1024p Webcam</li> <li>• Wi-Fi 6 &amp; Bluetooth 5.2 combo</li> <li>• 1 micro SD Media Card Reader</li> <li>• Kaspersky 12 months</li> </ul>

- 4.1.1 Name the application suite advertised in both laptops. (1)
- 4.1.2 Give TWO reasons why an operating system is required. (2)
- 4.1.3 Suggest an alternative operating system for any of the laptops above. Motivate your answer. (2)
- 4.1.4 Identify a high-definition input device in the advertisement. (1)
- 4.1.5 Give ONE advantage of SSDs over HDDs in laptops. (1)
- 4.1.6 Give TWO reasons why you would recommend Laptop B. (2)
- 4.2 Define the term *resolution*. (2)
- 4.3 Name the process of creating folders and organising files to work more efficiently on a computer. (1)
- 4.4 Name TWO locations where you could create shortcuts to folders/applications on a computer. (2)
- 4.5 Give TWO disadvantages of using online storage as compared to local storage. (2)
- 4.6 Give ONE example of multitasking. (1)
- 4.7 Explain TWO ways in which to safeguard data from being deleted or altered. (2)
- 4.8 Briefly explain the purpose of drivers. (2)
- 4.9 Give TWO advantages for using web-based applications. (2)
- 4.10 Give TWO examples of Windows utility programs. (2)

**[25]**

**QUESTION 5: INTERNET AND NETWORK TECHNOLOGIES**

- 5.1 Give TWO reasons why buffering occurs when streaming a video. (2)
- 5.2 Discuss TWO reasons why having a server in a school network is advisable. (2)
- 5.3 Blogs and podcasts are websites designed for various purposes.
- 5.3.1 Explain what a *blog* is. (1)
- 5.3.2 Give TWO advantages of podcasts. (2)
- 5.4 State TWO factors that will impact internet data usage. (2)
- 5.5 Give TWO examples where grid computing can be used. (2)
- 5.6 State TWO guidelines to follow when communicating with teachers on social media. (2)
- 5.7 The principal is not receiving a specific e-mail with attachments from another school.
- Give TWO possible reasons why the service provider blocks the specific e-mail. (2)
- [15]**

**QUESTION 6: INFORMATION MANAGEMENT**

6.1 You have to collect data using a questionnaire from various learners in the province.

Which data collection tool would you recommend? Motivate your choice. (2)

6.2 Briefly explain what *information sifting* is. (1)

6.3 Thandi used an image from the internet in her PAT report. An extract of the report is shown below.

Renault registered a jump of 29,61% and grew its market share to 5,15%. The French is sixth in the most popular brand rankings for 2022. Volkswagen was the only brand in the top 10 to record less sales than the year before.

Chinese carmakers continued their impressive growth with Haval leading the way on 22 644 units. Making it the ninth most popular brand with a 4,28% market share. GWM's Steed and P-Series bakkies also remained popular. Both ranges shifted more than 4 000 units. Returning Chinese brand Chery recorded an impressive 8 013 units in the second half of 2022.



Electric-car sales rose 132% off a very low base to 506 units (from 2018 in 2021). The launch of new battery-powered models from Audi, BMW, Mercedes-Benz and Volvo was introduced.

6.3.1 How can she ensure that a description of the picture appears in the table of figures? (1)

6.3.2 Name TWO word processing features that can be used to give recognition to the sources. (2)

6.4 Briefly explain TWO ways in which a spreadsheet chart can enhance a PAT report. (2)

6.5 When formulating research questions, certain requirements need to be considered and evaluated.

Name TWO requirements when setting research questions. (2)  
**[10]**

**QUESTION 7: SOCIAL IMPLICATIONS**

- 7.1 Give TWO advantages of ICTs in society. (2)
- 7.2 Discuss TWO effects of having a malicious bot/zombie computer on a network. (2)
- 7.3 Information overload is a common occurrence these days.
- 7.3.1 Briefly explain the concept of *information overload*. (1)
- 7.3.2 State TWO ways in which information overload has an influence on a person's life. (2)
- 7.4 Identity theft has increased in recent years.
- 7.4.1 Briefly explain the term *identity theft*. (1)
- 7.4.2 State TWO ways in which you can avoid becoming a victim of identity theft. (2)
- [10]**

**QUESTION 8: SOLUTION DEVELOPMENT**

8.1 Spreadsheets are used to organise and analyse information.

8.1.1 What is the purpose of a COUNTA function? (1)

8.1.2 When would one use the SUMIFS function? (2)

8.1.3 When will the error message #REF! be displayed in an Excel spreadsheet? (1)

8.1.4 Data in a spreadsheet is usually sorted on cell values.

What other cell information can be used to sort data, excluding cell values? (1)

8.2 Suggest any THREE changes to the HTML code below to resemble the screenshot of the webpage. Indicate the line number of the HTML code and the suggested change.

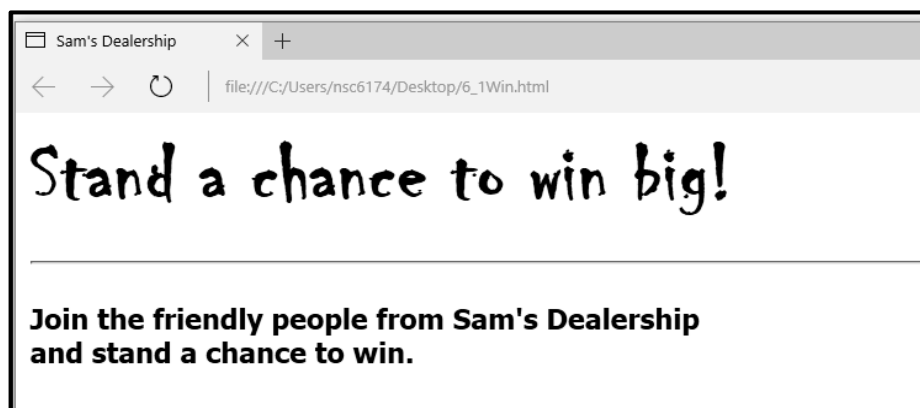
HTML CODE:

```

1 <html>
2   <head>
3     <title></title>
4   </head>
5
6   <body>
7     <font face="Tahoma">
8
9     <h2><font face="Chiller" size="10">Stand a
10    chance to win big!</font></h2>
11    <hr width = "50%" />
12    <h2>Join the friendly people from Sam's
13    Dealership and stand a chance to win.</h2>
14  </body>
15 </html>

```

WEB PAGE:



(3)

- 8.3 The database application is used to create forms, reports and queries.
- 8.3.1 A textbox was changed to a combo box on a form, but no values are visible in the combo box.  
Give TWO reasons why the values for the combo box do not appear. (2)
- 8.3.2 Give TWO examples of functions that can be used in a report footer. (2)
- 8.3.3 Study the screenshot of two different queries.

**Query 1**

Field:	NumberOfNights	Amount	DOB
Table:	tbAccom	tbAccom	tbAccom
Sort:			
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:	<=5	<800 Or >2000	Is Null
or:			

**Query 2**

Field:	NumberOfNights	Amount	DOB
Table:	tbAccom	tbAccom	tbAccom
Sort:		Ascending	
Show:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:	<=5	<800	Is Null
or:		>2000	

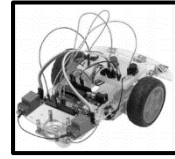
Explain how the result of Query 2 will differ from Query 1 when executed.

(3)  
[15]

**TOTAL SECTION B: 75**

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

The school has begun a Robotics Club. The club will host competitions, different speakers and exhibitions on robotics. You are requested to assist the teacher with admin and purchases for the Robotics Club.



- 9.1 The Robotics Club wants to buy new desktop computers for members to learn basic computers skills.
- 9.1.1 Give THREE hardware specifications to consider when buying a computer for basic computer skills.
- NOTE:** Exclude any peripherals, such as mouse, keyboard, etc. (3)
- 9.1.2 Suggest TWO factors to consider when selecting an operating system. (2)
- 9.1.3 Give TWO reasons why you would suggest a wireless network for the club. (2)
- 9.1.4 The club needs printouts done in colour.
- Give TWO other criteria, besides colour and cost, that you would use when selecting a printer. (2)
- 9.1.5 One of the club members read about a printer's duty cycle.
- Explain what a *duty cycle* is. (2)
- 9.2 The teacher decided to use a database to keep track of equipment allocated to the Robotics Club.
- 9.2.1 Recommend a suitable optical storage media for making a backup of the database. (1)
- 9.2.2 Name ONE factor to consider when selecting a primary key field in a database table. (1)
- 9.2.3 Why would the teacher use an input mask when capturing cellphone numbers? (1)
- 9.2.4 Give an alternative method to capture dates rather than typing the dates in the table. (1)

9.3 The school will host a competition in June 2024. The competition will be promoted on a weblog.

9.3.1 Give ONE other type of website to post details about the competition. Motivate your choice.

**NOTE:** Do NOT give specific examples of websites. (2)

9.3.2 A competition video is posted on the school's website. Users are prompted to install an add-on/plugin.

Give TWO reasons why an add-on/plugin is needed. (2)

9.3.3 The following URL appears long and untidy:

[https://www.schoolrobotics/robotics+for+kids&sa=X&sca\\_esv=8b94fdf9c54254b4&hl=enUS&source=univ&tbm=shop&tbo=u&ved=1t:686...](https://www.schoolrobotics/robotics+for+kids&sa=X&sca_esv=8b94fdf9c54254b4&hl=enUS&source=univ&tbm=shop&tbo=u&ved=1t:686...)

Suggest TWO other ways of displaying the URL link. (2)

9.3.4 The results of the competition are captured in a spreadsheet.

Suggest ONE spreadsheet feature for ranking contestants according to the highest scoring. (1)

9.4 The Robotics Club received an interactive whiteboard as a donation.

9.4.1 What is an *interactive whiteboard*? (1)

9.4.2 Give TWO disadvantages of an interactive whiteboard. (2)

**[25]**

**QUESTION 10: INTEGRATED SCENARIO**

You have been invited to join the Historical Society.

- 10.1 The Historical Society is planning a tour in September. Members must plan and prepare to travel wisely.
- 10.1.1 State TWO safety measures to consider when using your mobile device at an airport/hotel. (2)
- 10.1.2 Why is it important to remove any metadata from photos that will be publicly visible on websites? (1)
- 10.1.3 Multiple small donations from online volunteer contributors will be received to assist members with the cost of travelling.  
What term describes this process? (1)
- 10.1.4 Give TWO advantages of using video conferencing. (2)
- 10.2 The Historical Society uses Fourth Industrial Revolution (4IR) equipment when viewing and visiting historical sites.
- 10.2.1 Name TWO devices needed to experience virtual reality (VR). (2)
- 10.2.2 The use of virtual reality equipment can negatively impact on a person's health.  
Name TWO negative health issues that one can experience. (2)
- 10.2.3 How does augmented reality (AR) enhance the experience for the members when visiting historical sites? (2)
- 10.2.4 Name a technology that forms part of the 4IR, excluding IoTs. (1)
- 10.3 Members need to use a strong password to sign into their accounts.  
State THREE criteria that can be used to create a strong password. (3)
- 10.4 While on tour, members will receive a brochure on cryptocurrency.
- 10.4.1 Give TWO advantages of using cryptocurrency. (2)
- 10.4.2 Cryptocurrency transactions are linked or chained together in a blockchain.  
Briefly explain what a *blockchain* is. (2)

- 10.5 While on tour, the group will use a self-driving bus.
- 10.5.1 Give TWO reasons why members would prefer NOT to use a self-driving bus. (2)
- 10.5.2 Autonomous vehicles are known for being used in the collecting of big data.
- Briefly explain what *big data* is. (3)  
**[25]**
- TOTAL SECTION C: 50**  
**GRAND TOTAL: 150**



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## **SENIOR CERTIFICATE EXAMINATIONS/ NATIONAL SENIOR CERTIFICATE EXAMINATIONS**

**COMPUTER APPLICATIONS TECHNOLOGY P2**

**MAY/JUNE 2024**

**MARKING GUIDELINES**

**MARKS: 150**

**These marking guidelines consist of 19 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	B	✓	1
1.3	A	✓	1
1.4	D/C	✓	1
1.5	C	✓	1
1.6	A	✓	1
1.7	C	✓	1
1.8	A	✓	1
1.9	D	✓	1
1.10	C	✓	1
<b>Total: [10]</b>			

#### QUESTION 2: MATCHING ITEMS

2.1	F	Hardcopy	✓	1
2.2	H	Information	✓	1
2.3	A	Firewall	✓	1
2.4	T	CAPTCHA	✓	1
2.5	G	HDMI	✓	1
2.6	P	Vibrating panel	✓	1
2.7	C	<ul> ... </ul>	✓	1
2.8	S	Required	✓	1
2.9	K	Section break	✓	1
2.10	N	Text Form Field	✓	1
<b>Total: [10]</b>				

**QUESTION 3: TRUE/FALSE ITEMS**

(Note to marker:

- In Question 3.1, 3.2, 3.3 and 3.5 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.
- Do NOT award the mark if only the word FALSE is given without a correct answer.)

3.1	False – Adware ✓	1
3.2	False – legend ✓	1
3.3	False – bug ✓	1
3.4	True ✓	1
3.5	False – check box ✓	1
		<b>[5]</b>

**TOTAL SECTION A: 25**



4.1.6	<p><b>TWO reasons for Laptop B</b></p> <p>(1) Latest operating system - Windows 11  (2) More RAM compared to Laptop A - 16 GB RAM  (3) Better Webcam – 720p vs 1024p  (4) Bluetooth 5.2  (5) Wi-Fi 6  (6) Micro SD media card reader  (7) Antivirus - Kaspersky 12 months</p> <p style="text-align: right;">✓✓ (Any two)</p>	2	9
4.2	<p><b>Definition of resolution</b></p> <p>Resolution refers to image quality: ✓ the number of pixels an image is made of ✓</p>		2
4.3	<p><b>Process for housekeeping tasks</b></p> <p>File management ✓</p>		1
4.4	<p><b>Two locations to create shortcuts</b></p> <p>(1) Desktop  (2) Taskbar  (3) Start menu  (4) Quick access in File Explorer  (5) Within another folder</p> <p style="text-align: right;">✓✓ (Any two)</p>		2
4.5	<p><b>TWO disadvantages of online storage</b></p> <p>(1) Dependent on having an internet connection  (2) Additional cost for uploading and downloading files  (3) Security and privacy concerns with some service providers  (4) Fee for additional storage space  (5) Service providers may close down and your data may be lost</p> <p style="text-align: right;">✓✓ (Any two)</p>		2
4.6	<p><b>ONE example of multitasking</b></p> <p>(1) Auto spellcheck while typing  (2) Listen to music while working  (3) Printing while continuing typing, etc.</p> <p style="text-align: right;">✓ (Any one)</p> <p><i>(Note to marker: Accept any valid answer where two or more tasks are done simultaneously on a device)</i></p>		1

4.7	<p><b>TWO ways to safeguard data</b></p> <p>(1) Make regular/automatic backups/archive  (2) Store backups in offsite locations  (3) Add restricted access rights to the data (password/encrypt, etc.)  (4) Make files read-only  (5) Three generations of data are kept on backups</p> <p style="text-align: right;">✓✓ (Any two)</p>		2
4.8	<p><b>Purpose of drivers</b></p> <p>Drivers allow communication ✓ between hardware/device and the operating system ✓</p>		2
4.9	<p><b>TWO advantages of web-based applications</b></p> <p>(1) Can access from anywhere/any time/any device  (2) Updated automatically/regularly/access to new features  (3) Allows for sharing/collaboration amongst users  (4) Make use of the service provider's processing power  (5) Provide security  (6) No need to install/buy software/Save space on the local device  (7) No compatibility issues</p> <p style="text-align: right;">✓✓ (Any two)</p>		2
4.10	<p><b>TWO examples of utility programs</b></p> <p>(1) Disc Cleanup  (2) Antivirus  (3) Backup/Recovery  (4) Defragment/System optimise  (5) Error checking/Scan disc/System config  (6) File/Device Management  (7) Compression tools  (8) Task scheduler  (9) Recycle bin</p> <p style="text-align: right;">✓✓ (Any two)</p>		2
			<b>[25]</b>

**QUESTION 5: INTERNET AND NETWORK TECHNOLOGIES**

5.1	<p><b><i>TWO reasons why video buffers while streaming</i></b></p> <p>(1) Not enough bandwidth/High resolution video  (2) Bad/Slow connection  (3) Too much traffic on the network  (4) Throttling/Shaping  (5) Limited processing power/outdated hardware  (6) Background applications running using processing power  ✓✓ (Any two)</p>		2
5.2	<p><b><i>TWO reasons to use a server in a school network</i></b></p> <p>(1) Sharing of hardware resources  (2) Sharing of software resources  (3) Improved security/Control user access  (4) Network administration  (5) Centralised storage/Access files from any workstation  (6) Provide specialised functions (i.e. intranet)  ✓✓ (Any two)</p>		2
5.3.1	<p><b><i>Definition of a blog</i></b></p> <p>(1) Websites that are updated often with the most recent entry at the top  (2) A website that posts short informal/formal stories about any topic that is updated regularly  (3) A website that contains information like diary or journal entries  ✓ (Any one)</p>	1	
5.3.2	<p><b><i>TWO advantages of podcasts</i></b></p> <p>(1) Ways to directly communicate with audience (stream or downloaded)  (2) Allows users to listen at recorded material after broadcast  (3) Wide range of topics  (4) Can listen to it through various mediums – smartphones, etc.  (5) Save on traveling cost/distributing and production cost  (6) Accessible for people with disabilities – visually impaired people  (7) Can listen any time and place – during your commute, doing house chores, etc.  ✓✓ (Any two)</p>	2	3

5.4	<p><b>TWO factors that impact internet data usage</b></p> <p>(1) The time you spend online  (2) What you do on the internet e.g. shopping, gaming, content creator  (3) Quality/resolution of streaming/downloading  (4) Size of uploading/downloading files  (5) CAP limits influence the user's habits  (6) Line speed (bits per second)/Throttling  (7) Proxy server  (8) Number of devices connected to the internet  (9) Background services/processes running on the device (e.g. automatic updates/synchronisation/cloud backups)</p> <p style="text-align: right;">✓✓ (Any two)</p>		2
5.5	<p><b>TWO uses for grid computing</b></p> <p>(1) Weather forecasting  (2) Earthquake simulation  (3) Complex calculations performed in science experiments  (4) Scientific/Genetic and cancer research  (5) Financial analysis  (6) Engineering and design  (7) Gaming and entertainment</p> <p><i>(Note to marker: Accept any other relevant answer)</i></p> <p style="text-align: right;">✓✓ (Any two)</p>		2
5.6	<p><b>TWO guidelines for communicating with teacher on social media</b></p> <p>(1) Use good language and sentence construction  (2) Keep content relevant/clear and concise  (3) Do not use all uppercase  (4) Message in acceptable hours  (5) Be polite and respectful</p> <p style="text-align: right;">✓✓ (Any two)</p>		2
5.7	<p><b>TWO reasons why ISP block certain e-mails</b></p> <p>(1) Attachment seen/marked as malicious  (2) Attachment seen/marked as spam  (3) Attachment is too large  (4) Flagged file extensions used e.g. .exe  (5) Unrecognised file extensions used</p> <p style="text-align: right;">✓✓ (Any two)</p>		2
			<b>[15]</b>

**QUESTION 6: INFORMATION MANAGEMENT**

6.1	<p><b>Recommend data collection tool</b></p> <p><b>Example</b></p> <p>(1) Electronic form (e.g. Google, Microsoft, etc.) ✓ (Any one)</p> <p><b>Reason</b></p> <p>(1) Easy to share/obtain/distributed  (2) Quicker feedback/turnaround time/collection time  (3) Data is already captured  (4) More likely to up to date  (5) Easier to correlate/analyse/find data, etc</p> <p>✓ (Any one)</p>			2
6.2	<p><b>Definition of sifting information</b></p> <p>(1) The finding of relevant information  (2) To sort out what is useful or valuable information to solve a certain problem</p> <p>✓ (Any one)</p>			1
6.3.1	<p><b>Table of Figures</b></p> <p>Captions ✓</p>		1	
6.3.2	<p><b>Source recognition feature</b></p> <p>(1) Citation  (2) Bibliography  (3) Footnote/Endnotes  (4) Caption</p> <p>✓✓ (Any two)</p>		2	3
6.4	<p><b>TWO ways spreadsheet charts can enhance a PAT</b></p> <p>(1) Visual representation of data  (2) Easy to read and understand/Simple to interpret  (3) Easy to see what happens at specific intervals/View trend analysis  (4) Supports the findings, etc.</p> <p>✓✓ (Any two)</p>			2
6.5	<p><b>TWO requirements when setting research questions</b></p> <p>(1) Type of questions (facts, exploring, informative, predictive)/  Level of the questions – level 1, 2, 3 etc.  (2) Variety/number of different (level) questions  (3) Relevant to a specific topic/issue</p> <p>✓✓ (Any two)</p>			2
				<b>[10]</b>

**QUESTION 7: SOCIAL IMPLICATIONS**

7.1	<p><b>TWO advantages of ICT's on the society</b></p> <p>(1) Global communication  (2) E-learning/M-learning  (3) Extended business opportunities  (4) Health care  (5) Comfortable living  (6) Increase productivity  (7) Ease of travel arrangements, etc.</p> <p><i>(Note to marker: Accept any valid answer)</i></p> <p style="text-align: right;">✓✓ (Any two)</p>			2	
7.2	<p><b>TWO effects of a bot/zombie computer</b></p> <p>(1) Spreading spam/phishing e-mail  (2) Launching DDoS attacks/slow system performance  (3) Bots can steal sensitive information  (4) Sell information to competitors  (5) Gather personal information/Collect information  (6) Spread viruses and malware/may lead to loss of data</p> <p style="text-align: right;">✓✓ (Any two)</p>			2	
7.3.1	<p><b>Definition of information overload</b></p> <p>(1) Overwhelming content  (2) Too much information to process</p> <p style="text-align: right;">✓ (Any one)</p>			1	
7.3.2	<p><b>TWO impacts of information overload</b></p> <p>(1) Unable to cope with volume/difficulty focusing  (2) Can cause stress/anxiety/health related issues  (3) Lead to limiting social interactions  (4) Feelings of helplessness  (5) Leads to unproductivity  (6) Impact job satisfaction  (7) Affects decision making</p> <p style="text-align: right;">✓✓ (Any two)</p>			2	3
7.4.1	<p><b>Describe Identity theft</b></p> <p>(1) Illegally obtain/Stealing personal information  (2) Impersonating a person</p> <p style="text-align: right;">✓ (Any one)</p>			1	

7.4.2	<b><i>TWO ways to prevent identity theft</i></b>  (1) Don't give out your personal information (2) Protect personal documents like e-mail (3) Use good security like firewalls/user names/passwords (4) Antivirus/Antispyware (5) Secure browser/Select secure websites  <p style="text-align: right;">✓✓ (Any two)</p>	2	3
			<b>[10]</b>

**QUESTION 8: SOLUTION DEVELOPMENT**

8.1.1	<p><b>Use COUNTA function</b></p> <p>(1) Count all cells containing data/any value (2) Count all non-empty cells</p> <p style="text-align: right;">✓ (Any one)</p>	1	
8.1.2	<p><b>SUMIFS function</b></p> <p>Used when adding is based on multiple criteria ✓ in the same or different ranges ✓</p>	2	
8.1.3	<p><b>#REF! error message</b></p> <p>(1) Function refers to deleted/moved rows/columns (2) Function copied and pasted/refers to a non-existing cell</p> <p style="text-align: right;">✓ (Any one)</p>	1	
8.1.4	<p><b>Sorting data in spreadsheet</b></p> <p>(1) Font colour (2) Cell colour (3) Cell icon (4) Conditional formatting icon</p> <p style="text-align: right;">✓ (Any one)</p>	1	5
8.2	<p><b>THREE corrections in HTML</b></p> <p>(1) Line 3 – Title text 'SAM's dealership' is missing (2) Line 10 – Remove width attribute/width="100%" (3) Line 9/11 – Header larger/smaller (4) Line 11 – Missing the break &lt;br/&gt; tag</p> <p>(Note to marker: Accept examples of alignment)</p> <p style="text-align: right;">✓✓✓ (Any three)</p>		3
8.3.1	<p><b>TWO reasons why no values appear in combo box</b></p> <p>(1) Row source type was not linked to value list (2) No values were entered into the row source/cells of the wizard (3) No values in the field of the Table/Query</p> <p style="text-align: right;">✓✓ (Any two)</p>	2	

8.3.2	<p><b>TWO examples of functions</b></p> <p>(1) Sum                  (2) Average (AVG)                  (3) Max                  (4) Min                  (5) Count                  (6) Date/Now</p> <p style="text-align: right;">✓✓ (Any two)</p>	2													
8.3.3	<p><b>Difference between queries</b></p> <table border="1"> <thead> <tr> <th>Query 1</th> <th>Query 2</th> <th>Mark</th> </tr> </thead> <tbody> <tr> <td>Shows all the fields</td> <td>Shows <i>Amount</i> and <i>DOB</i> fields <b>OR</b> Does not show <i>NumberOfNights</i> field</td> <td>✓</td> </tr> <tr> <td>① (<i>NumberOfNights</i> &lt;=5) AND (<i>Amount</i> &lt;800 OR <i>Amount</i> &gt;2000) AND (<i>DOB</i> is Null)</td> <td>② ((<i>NumberOfNights</i> &lt;=5) AND (<i>Amount</i> &lt;800) AND (<i>DOB</i> is Null)) OR (<i>Amount</i> &gt;2000)</td> <td>✓</td> </tr> <tr> <td>No sorting</td> <td>Sorting on <i>Amount</i> field</td> <td>✓</td> </tr> </tbody> </table> <p>① Query 1 displays all records where <i>Amount</i> less than 800 or greater than 2000 and the <i>NumberOfNights</i> is less and equal to 5 and <i>DOB</i> is empty</p> <p>② Query 2 show all records where:</p> <ul style="list-style-type: none"> <li>• <i>Amount</i> more than 2000 whether <i>DOB</i> is empty or not and ignores <i>NumberOfNights</i>; or</li> <li>• <i>Amount</i> less than 800 where the <i>NumberOfNights</i> is less and equal to 5 and <i>DOB</i> is empty.</li> </ul>	Query 1	Query 2	Mark	Shows all the fields	Shows <i>Amount</i> and <i>DOB</i> fields <b>OR</b> Does not show <i>NumberOfNights</i> field	✓	① ( <i>NumberOfNights</i> <=5) AND ( <i>Amount</i> <800 OR <i>Amount</i> >2000) AND ( <i>DOB</i> is Null)	② (( <i>NumberOfNights</i> <=5) AND ( <i>Amount</i> <800) AND ( <i>DOB</i> is Null)) OR ( <i>Amount</i> >2000)	✓	No sorting	Sorting on <i>Amount</i> field	✓	3	7
Query 1	Query 2	Mark													
Shows all the fields	Shows <i>Amount</i> and <i>DOB</i> fields <b>OR</b> Does not show <i>NumberOfNights</i> field	✓													
① ( <i>NumberOfNights</i> <=5) AND ( <i>Amount</i> <800 OR <i>Amount</i> >2000) AND ( <i>DOB</i> is Null)	② (( <i>NumberOfNights</i> <=5) AND ( <i>Amount</i> <800) AND ( <i>DOB</i> is Null)) OR ( <i>Amount</i> >2000)	✓													
No sorting	Sorting on <i>Amount</i> field	✓													
			<b>[15]</b>												

**TOTAL SECTION B: 75**

**SECTION C**

**QUESTION 9: INTEGRATED SCENARIO**

9.1.1	<p><b>THREE hardware specifications for basic computer</b></p> <p>(1) Processor capabilities – CPU                  (2) Storage type/capacity – HDD/SSD                  (3) Amount of RAM                  (4) Connectivity options (WIFI; Bluetooth; NFC, USB; etc.)                  ✓✓✓ (Any three)</p>	3	
9.1.2	<p><b>TWO factors for selecting an operating system</b></p> <p>(1) Compatibility to hardware/system requirements                  (2) Ease of use/familiarity                  (3) (Cost) Free-/Open-source                  ✓✓ (Any two)</p>	2	
9.1.3	<p><b>TWO reasons to use wireless network</b></p> <p>(1) Mobility                  (2) No need for cables/No clutter of cables                  (3) Ease of connection when in range of any wireless connection                  (4) Easy to add devices, etc.                  ✓✓ (Any two)</p>	2	
9.1.4	<p><b>TWO other criteria for printer selection (besides colour and costs)</b></p> <p>(1) Resolution/DPI/Quality of the printouts                  (2) Printer speed/PPM                  (3) Connectivity options, e.g., wireless, USB, etc.                  (4) 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) Type of printer                  (10) Printing technology, i.e., size and number of ink tanks, toner, etc.                  (11) Printer capacity (industrial level)/Paper tray capacity                  (12) Amount of RAM                  (13) OCR Software                  (14) Warranty, etc.                  ✓✓ (Any two)</p>	2	
9.1.5	<p><b>Explain the duty cycle of a printer</b></p> <p>Maximum amount of print outs per month ✓ without the printer getting damaged or failing ✓</p>	2	11



9.3.4	<p><b>Spreadsheet feature</b></p> <p>(1) Sorting (2) Filtering (3) Conditional formatting</p> <p style="text-align: right;">✓ (Any one)</p>	1	
9.4.1	<p><b>Definition of an interactive whiteboard</b></p> <p>Combination of input and output technologies ✓</p> <p><i>(Note to marker: Accept valid description)</i></p>	1	
9.4.2	<p><b>TWO disadvantages of an interactive whiteboard</b></p> <p>(1) Specialised software/equipment is required (2) Needs additional training (3) Susceptible to outside input (cloths/dust, etc.) (4) Expensive to maintain (5) Technical glitches: Needs to be calibrated/connectivity issues/software malfunctions (6) Health issues (e.g. eye strain)</p> <p style="text-align: right;">✓✓ (Any two)</p>	2	3
			<b>[25]</b>

**QUESTION 10: INTEGRATED SCENARIO**

10.1.1	<p><b>TWO safety measures using mobile device at a hotel or airport</b></p> <p>(1) Do not access private content in a public area  (2) Be aware of criminals  (3) Make sure the connection to the hotspot is secure/Look for a secure network/lock icon  (4) Activate VPN</p> <p style="text-align: right;">✓✓ (Any two)</p>	2	
10.1.2	<p><b>Reason to remove metadata from public photos</b></p> <p>(1) Location can be tracked  (2) Prevent stalking  (3) Model and make of equipment are listed, etc.</p> <p style="text-align: right;">✓ (Any one)</p>	1	
10.1.3	<p><b>Financial fundraising from volunteers</b></p> <p>Crowd funding ✓</p>	1	
10.1.4	<p><b>TWO advantages of video conferencing</b></p> <p>(1) Able to connect people, in one meeting/session, from different locations all over the world  (2) Real-time connection with family and friends at home  (3) Have conversations where they can all see each other while they are in different locations  (4) Save on travelling and accommodation cost</p> <p style="text-align: right;">✓✓ (Any two)</p>	2	6
10.2.1	<p><b>TWO devices needed to experience Virtual Reality</b></p> <p>(1) Head gear/Helmet with screen/VR Goggles  (2) Headphones  (3) Gaming console  (4) Smartphones/Mobile device  (5) Gloves/Body suit with sensors/controllers  (6) Box/Room/Simulation environment (moving floor/treadmill, etc.)</p> <p style="text-align: right;">✓✓ (Any two)</p>	2	

10.2.2	<p><b>Negative effect of Virtual Reality</b></p> <p>(1) Motion sickness/Cyber sickness  (2) Blurred vision/Eye strain  (3) Headache  (4) Muscle fatigue  (5) Injuries (Neck/Back strain, etc.)  (6) Unable to distinguish between reality and fiction</p> <p style="text-align: right;">✓✓ (Any two)</p>	2	
10.2.3	<p><b>Use of Augmented Reality</b></p> <p>Takes physical world and adds/overlays objects/graphics ✓ on a digital interface within the real world ✓</p> <p><i>(Note to marker: Also accept an example with an explanation)</i></p>	2	
10.2.4	<p><b>4IR technology excluding IoT</b></p> <p>(1) AI  (2) 3D-printing  (3) Genetic engineering  (4) Quantum computing, etc.</p> <p><i>(Note to marker: Accept any relevant example)</i></p> <p style="text-align: right;">✓ (Any one)</p>	1	7
10.3	<p><b>Criteria of strong password</b></p> <p>(1) Uppercase and lowercase letters  (2) Includes numbers  (3) Special characters  (4) Eight or more characters</p> <p style="text-align: right;">✓✓✓ (Any three)</p>		3
10.4.1	<p><b>TWO advantages of using crypto currency</b></p> <p>(1) Able to send and receive worldwide  (2) Minimal or no 'banking' charges  (3) Accepted worldwide  (4) Inflation protection  (5) Secure method of banking/transactions</p> <p style="text-align: right;">✓✓ (Any two)</p>	2	
10.4.2	<p><b>Explanation of blockchain</b></p> <p>Sequence of blocks/groups/records of transactions ✓  Cannot be removed or altered ✓</p>	2	4

10.5.1	<p><b>Reasons for not using self-driving bus</b></p> <p>(1) No control/Possible accidents  (2) Vulnerable to possible hacking  (3) Possible electronic malfunction  (4) Possible machine errors  (5) Trust issues</p> <p style="text-align: right;">✓✓ (Any two)</p>	2	
10.5.2	<p><b>Definition of Big data</b></p> <p>It is very large (structured and unstructured) data sets ✓ that are analysed using computers ✓ to reveal trends and associations ✓</p>	3	5
			<b>[25]</b>

**TOTAL SECTION C: 50**

**GRAND TOTAL: 150**