Instructions and information
1. This question paper consists of three sections: Section A (25 marks), Section B (75 marks) and Section C – the integrated scenario (50 marks).
2. Answer all the questions.
3. Read the questions carefully, taking note of the mark allocations. In general, one mark is allocated per fact. A two mark question would therefore require two facts, and so on.
4. Number the answers according to the numbering system used on this question paper.
5. Leave a blank line after each sub-question.

SECTION A

Question 1
Identify the correct answer for each question. Write down only the number of each question, and next to it the single capital letter which represents the best answer, for example 1.11 A.

1.1 Which one of the following storage devices would show the highest performance improvement from a defragmentation operation?
A. Memory card  
B. Flash drive  
C. Hard drive  
D. SSD (Solid State Drive)  

1.2 In Access, calculations based on records can not be placed in a / the ...
A. report footer.  
B. detail section.  
C. group header.  
D. page footer.  

1.3 Which one of the following serves as both a mouse and a keyboard?
A. Trackball  
B. Touch screen  
C. Game controller  
D. Touchpad  

1.4 Which one of the following pagination options in Word is used to ensure that a paragraph will always remain on a single page (not be ‘split’ over two pages)?
A. Widow/Orphan control  
B. Keep with next  
C. Keep lines together  
D. Page break before  

(1)
1.5 To determine the maximum storage capacity of a drive you must first…
A. empty the Recycle Bin.
B. open the Task Manager.
C. defragment the drive.
D. right-click on the icon of the drive.

1.6 Which one of the following would not be a way to try to avoid the medical condition known as RSI?
A. Take regular breaks.
B. Ensure that the lighting is adequate.
C. Learn the keyboard shortcuts for common commands.
D. Ensure that input devices are all within easy reach.

1.7 Which one of the following files will most likely be created after using OCR software?
A. Converted.jpg
B. Converted.htm
C. Converted.mp4
D. Converted.txt

1.8 The best way to avoid the negative effects of a ransomware attack is to…
A. have good password policies.
B. not click on links in popups.
C. make regular backups.
D. make sure that the sites you visit are secure.

1.9 Which one of the following is not likely to be a trend in technologies of the future?
A. Longer battery life
B. Smaller physical size of devices
C. Fewer sensors
D. Cheaper technology

1.10 Which one of the following would definitely not appear in an advertisement for an SSD?
A. 1 TB
B. 5 Year Limited Warranty
C. 7200 revolutions per minute
D. Read speed: max. 3400 MB per second
Question 2

Write down only the number of the description from Column A, and next to it the correct matching capital letter from Column B, for example 2.11 T.

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1 A network connection method commonly used by people who are taking</td>
<td>A. iPad</td>
</tr>
<tr>
<td>advantage of a BYOD policy</td>
<td>B. Extension</td>
</tr>
<tr>
<td>2.2 A standard for the short-range wireless interconnection of mobile</td>
<td>C. AJAX</td>
</tr>
<tr>
<td>phones, computers, and other electronic devices.</td>
<td>D. ISP</td>
</tr>
<tr>
<td>2.3 A spreadsheet function that is applied to text data</td>
<td>E. Bot</td>
</tr>
<tr>
<td>2.4 A version of software made available for testing and removing bugs</td>
<td>F. GPS</td>
</tr>
<tr>
<td>, before the software goes on sale</td>
<td>G. iOS</td>
</tr>
<tr>
<td>2.5 A technology that makes geo-tagging possible</td>
<td>H. AVG</td>
</tr>
<tr>
<td>2.6 A type of business that offers web page hosting as one of its</td>
<td>I. Spam</td>
</tr>
<tr>
<td>services</td>
<td>J. GPU</td>
</tr>
<tr>
<td>2.7 An internet attack that tries to put a server out of action by</td>
<td>K. Open source</td>
</tr>
<tr>
<td>overwhelming it with requests for information</td>
<td>L. LEN</td>
</tr>
<tr>
<td>2.8 An operating system developed by the Apple company</td>
<td>M. Attribute</td>
</tr>
<tr>
<td>2.9 The part of a file name used to determine which program will</td>
<td>N. Patch</td>
</tr>
<tr>
<td>try to open the file, when you double-click on it</td>
<td>O. Bluetooth</td>
</tr>
<tr>
<td>2.10 A downloadable update used to fix software bugs</td>
<td>P. Upgrade</td>
</tr>
<tr>
<td></td>
<td>Q. WiFi</td>
</tr>
<tr>
<td></td>
<td>R. Denial of service</td>
</tr>
<tr>
<td></td>
<td>S. Beta</td>
</tr>
</tbody>
</table>
Question 3

State whether each of the following statements is TRUE or FALSE.
If the statement is FALSE, then write down the word ‘False’ and, next to it, the word(s) which should replace the underlined word(s) to make the statement TRUE.
(Note that no marks will be awarded if ‘False’ is given without a suggested replacement.)

Example 1: A printer is an example of an output device.
Answer: True

Example 2: A printer is an example of software.
Answer: False – hardware.

3.1 A throttled internet connection is one where preference is given to certain services (e.g. browsing), while other services (e.g. VoIP) are given less preference and are slower. (1)

3.2 Pharming is a type of attack in which a link offers to do one thing, but when you click on the link it actually does something else. (1)

3.3 Virtual reality is where the computer creates a ‘digital world’ for you to experience. (1)

3.4 Bandwidth is a measure of the speed at which data can be transferred – normally measured in Kbps or Mbps. (1)

3.5 Click-jacking is malware that encrypts data (making it unavailable) until you pay a fee to have your data released. (1)

SECTION B

Question 4: System Technologies

4.1 Consider the following specifications for a computer and answer the questions that follow (note that some of the specifications have been left out):

| . . . HD anti-glare screen |
| AMD . . . up to 3.4 . . . |
| . . . DDR4 . . . |
| Intel shared / integrated graphics |

4.1.1 What does the missing part of the specification for the screen describe, or refer to? (It is not necessary to give an actual value.) (1)

4.1.2 Give the unit in which the 3.4 specification (of the AMD item) is measured. (1)

4.1.3 What item does the DDR4 specification refer to? (1)

4.1.4 Assume the computer will be used for gaming or video editing. Suggest a hardware upgrade or ‘better alternative’, in terms of the ‘Intel shared / integrated graphics’ option. (1)
4.2 Explain the general concept of convergence, and specifically why an MP3 player is not an example of convergence. Also name a device that is a good example of convergence. (4)

4.3 Give TWO troubleshooting steps you could follow, to try to get a non-responding wired mouse to work. (2)

4.4 Consider the image below and answer the questions that follow.

![QR Code Image]

4.4.1 What name is given to this type of image? (1)

4.4.2 What device is typically used to ‘read’ the information contained in the image? (1)

4.5 What is the biggest advantage of having a multi-function printer in an office, besides the fact that it can perform various tasks? (1)

4.6 Give TWO drawbacks/limitations of web-based applications compared to locally installed applications. (2)

4.7 What is the most important question one needs to ask in deciding whether to buy a desktop computer or a laptop, besides any cost or space considerations? (1)

4.8 Explain why it might be better, in the long run, to purchase an entry-level desktop computer rather than an entry-level laptop, besides any cost considerations. (1)

4.9 A certain computer runs on a 32-bit Linux platform.

4.9.1 What type of system software does the term ‘platform’ refer to? (1)

4.9.2 What type of system software might be difficult to obtain, if one wished to install a new peripheral device (e.g. a scanner or a printer) on this computer? (1)

4.10 Give TWO reasons why SSDs are particularly suited to portable computers? (2)

4.11 Give ONE way in which a user can try to prevent files from becoming corrupted on a disk. (1)

4.12 What type of computer consumable product do the letters CMYK refer to? (1)

4.13 Give TWO technical reasons why a person might prefer to watch a movie on a monitor, rather than one where the image is produced by a data projector. (Ignore the ‘comfort’ of the person – seating, viewing angle, etc., and do not say simply ‘higher quality’). (2)
Question 5: Network and Internet Technologies and Implications

5.1 Give TWO technical advantages of using fibre, rather than ADSL, to connect to the internet, besides any issues relating to the speed or the cost of the connection. (2)

5.2 Give TWO internet connection technologies besides cable. (2)

5.3 Video conferencing is a way for people to communicate in real time with each other via a network.

5.3.1 Give the name (acronym) of the technology that allows people’s voices to be transmitted over a network. (1)

5.3.2 A person regularly experiences poor picture quality in video conferencing (the picture keeps ‘breaking up’). Suggest TWO solutions to this problem. (2)

5.3.3 Explain why it might be a good idea to use an uncapped connection if you do a lot of video conferencing. (2)

5.4 Give TWO advantages of cloud computing, besides

- issues relating directly to the hardware specifications of your computer or
- the fact that you don’t have to install any software to access the resources. (2)

5.5 Give TWO disadvantages of using an email system to share files, irrespective of the number of recipients you can simultaneously send a message to. (2)

5.6 Connecting to someone else’s network without their permission is a criminal offence.

5.6.1 Explain why it may be easier for a criminal to gain access to a wireless network, than to a cabled network. (1)

5.6.2 How can one try to ensure that a criminal will not be able to access a wireless network without permission? (1)

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Question 6: Information Management and Integrated Skills

6.1 Give ONE feature of a spreadsheet that can be used to process data into information, besides applying functions and formulas. (1)

6.2 Give TWO ways in which data which is not in digital format can be converted into digital format. (2)

6.3 Explain why, when so much information can be obtained from online sources such as websites, it is still often necessary to obtain information through the use of questionnaires or surveys. (1)
Consider **Question A** and **Question B** below, which form part of a questionnaire sent to parents and teachers. Then answer the questions that follow.

RESPONDENT (tick one):  PARENT □  TEACHER □

**Question A:** Which of the following internet connection methods do you use?  
(Choose ONE option by circling ONE number)  
- Fibre optic cable  1  
- 3G / 4G   2  

**Question B:** In your opinion, what is the single most important reason why people should be able to connect to the internet?  
(Write your answer in the space below)  
..................................................................................................................................................................................................................................................................................................................  

6.4.1 Explain why the data obtained from the responses to **Question A** could result in poor quality information.  
(2)

6.4.2 The type of respondent and the data obtained from **Question A** were entered in a spreadsheet.  
Give ONE example of information that could be obtained by applying the COUNTIFS function to this data, rather than by applying the COUNTIF function.  
(1)

6.4.3 People can answer anything for **Question B**.  
What do you need to do to get these answers into a format that will be useful in a spreadsheet analysis?  
(1)

6.5 Give ONE reason for inserting a citation in a document.  
(1)

6.6 Give ONE example of information that is commonly included on the cover page of a report, besides the title of the report.  
(1)

[10]

**Question 7: Social Implications**

7.1 Give ONE example of a control in an Access form that reduces the chance that the data captured will be inaccurate.  
(1)

7.2 Describe the function of virtual assistant software e.g. SIRI (what it allows one to do) and give ONE example of how it can benefit a specific type of disabled user.  
(3)

7.3 Electronic or e-learning is increasingly being used today.  

7.3.1 Give ONE way in which e-learning software can motivate one to learn.  
(1)

7.3.2 Explain why using online content promotes green computing.  
(1)
7.4 What general term is given to the type of theft that takes place when people collect data that they will try to use to impersonate (‘pretend to be’) someone else online? (1)

7.5 Give TWO things you should do (or not do), to prevent malware from being installed on your computer, besides using updated anti-malware software and not clicking on links in popups. (2)

7.6 Explain why even the most secure password provides a potentially lower level of security than that offered by biometric security. (1)

Question 8: Solution Development

8.1 What is the potential risk, when working with Track Changes in Word, of using the ‘Accept All Changes’ command? (1)

8.2 The finishing times for a cycle race are stored in cells E5:E45 in an Excel spreadsheet. Briefly describe TWO changes that must be made to the function below in order to return the second fastest time. Also rewrite the function in the way it should appear.

```excel
=MAX(2, E5:E45)
```

(3)

8.3 For which category of disabled user is it important to use Word's Accessibility Checker? (1)

8.4 Write down the result of the Excel function =ROUNDUP(99.5782,2). (1)

8.5 Name the Excel function used to insert the current date and time in a cell, for example 21-Feb-2019 12:09. (1)

8.6 What is the advantage of the fact that Excel stores dates and times as numbers (and not as text)? (1)

8.7 Which data type in Access can be used to store a file created in the Paint program? (1)

8.8 Why would one export an Excel spreadsheet to an Access database? (1)

8.9 The validation rule shown below was set on the OrderDate field in a database.

```
<=Date()
```

Write down a suitable validation text that could be used to accompany (‘go with’) this validation rule, i.e. an error message that would be displayed if the user tried to enter data that is not in accordance with the rule. (1)

8.10 A logo must appear at the top of each page in an Access report. In which section of the report (in Design View) must the logo be placed? (1)
8.11 The following criterion appeared in the FirstName field of a query in Access:

Like "A*"

Describe what the first names of people will 'look like' (what the first names will consist of), of the records that are extracted by using this query. Give 3 examples to support your explanation. (2)

8.12 Give one reason to use the HTML ALT tag when creating a webpage. (1)

SECTION C

Your school has decided to 'computerise' the school library in order to streamline the various library functions. There will also be a computer section, where users can access computers to do research and perform other computing tasks. The computers will be networked and internet access provided.

Question 9: Integrated Scenario

9.1 Give ONE advantage and ONE disadvantage of purchasing entry-level computers in general. (2)

9.2 Access to the computers must be strictly controlled.

9.2.1 For what hardware-related reason may it not be possible to use a screen lock pattern to 'lock' these entry-level computers? (1)

9.2.2 Give ONE reason why a screen lock pattern is not a very secure way to 'lock' a computer. (1)

9.2.3 Briefly describe ONE other way to control access to a computer, besides using screen lock patterns. (1)

9.3 The librarian wishes to enter a large amount of text using her tablet.

9.3.1 How can a PAN (Personal Area Network) be implemented to make her task easier? (1)

9.3.2 The librarian uses an online Typing Tutor software package to improve her typing skills. Give TWO general advantages of online training using tutoring software, apart from the fact that it can improve one’s skills. (2)

9.3.3 Give the type of software she could use to enter text by just ‘talking’ to the tablet. (1)

9.3.4 The librarian saved the document she was working on with the name **AUP_Brightside_High**.

Briefly describe what an AUP document is likely to contain (what the document is 'about'). (1)

9.4 Give TWO advantages of implementing an RFID system to identify ('capture') items moving in and out of the library, as opposed to using a barcode system. (2)
9.5 Suggest an output device that could be made available to allow different users in the library to listen to different podcasts at the same time, without disturbing each other. (1)

9.6 A printer must be purchased for the library.

9.6.1 Give TWO ways in which the (correct) use of a printer can promote green computing, besides using less paper. (2)

9.6.2 Consider the printer specifications below and answer the questions that follow.

- Up to A3
- Surge protector included
- Print speed up to 20 ....

(a) What does the ‘A3’ specification refer to? (1)
(b) What is the function of a surge protector? (1)
(c) Give the unit in which printing speed is measured. (1)

9.7 It was decided to install an SSD (Solid State Drive) in some computers.

9.7.1 Explain why it is better (makes more 'sense') to install an SSD in a computer that is used for video editing, than in one that is used for word processing. (1)

9.7.2 The librarian would like to have an external SSD drive as well, but there are no spare USB ports available on her computer. Make a suggestion to solve her problem. (1)

9.8 The input devices must be well chosen.

9.8.1 Explain why the devices should be ergonomically designed. (1)

9.8.2 Give ONE feature of an ergonomically designed keyboard. (1)

9.8.3 Give a type of keyboard that can be used by someone who is blind. (1)

9.9 A program they want to install on one of the computers is platform specific and has a minimum memory requirement of 4 GB. The computer currently has 4 GB memory.

9.9.1 Explain what ‘platform-specific' means in this context. (1)

9.9.2 Make a hardware recommendation which, if accepted, will enable the program to run more effectively (run faster) on this computer. (1)

9.9.3 Give ONE other hardware component that is commonly listed in the system requirements for software, besides memory (RAM) and disk space. (1)

9.10 Some of the computers have Word 2007 installed, while others have Word 2016.

9.10.1 Briefly describe the problem that often arises from using different versions of software installed within the same organisation. (1)

9.10.2 Give a way to solve the problem referred to in question 9.10.1, besides upgrading or changing the software. (1)

9.11 Reminder letters in PDF format will be sent to users who have outstanding library fines. What is the general advantage of using the PDF format to distribute documents? (1)
9.12 The latest version of a certain program was installed on one of the computers. Each time the program is opened, the computer reboots – even if no other application software is running.

9.12.1 Explain why using the Task Manager would not be an appropriate way to solve this problem. (1)

9.12.2 Give ONE other way to try to solve this problem. (1)

9.13 Internet access is obtained via an ADSL router.

9.13.1 Which feature of a router allows users to connect to the internet using their mobile devices? (1)

9.13.2 Give ONE reason why learners might prefer to connect their mobile devices to the internet via the router, as opposed to using a cellular connection method such as 3G/4G. (1)

9.14 Learners are not allowed to use real-time messaging apps while in the library.

9.14.1 Give ONE example of a real-time messaging app. (1)

9.14.2 Give the most likely reason for this restriction, besides the risk of dangers from other people that the learners might be exposing themselves to. (1)

9.15 Learners are allowed to use their own portable computing devices in the library, provided these devices cannot make cellphone calls.

Give ONE device that the learners are allowed to use (besides a laptop or notebook), and ONE device that they are not allowed to use (besides a phablet).

Distinguish between the ‘allowed’ and the ‘not allowed’ device in your answer. (2)

9.16 There has been a suggestion to use the school computers to participate in the grid computing project Einstein@Home. Grid computing is the use of widely distributed computer resources to reach a common goal.

Give ONE reason why it might not be a good idea, from the point of view of the school, to use the school computers for grid computing. (1)

9.17 The computers must be protected against malware.

9.17.1 Give TWO tips/guidelines towards ensuring that anti-virus software will be most effective in preventing viruses from being installed on the computers. (2)

9.17.2 Give ONE example of anti-virus software. (1)

9.17.3 Explain why it is not necessary to install separate anti-spyware software on the computers. (1)
9.18 The librarian received the email shown below. Study the contents of the email and answer the questions that follow.

```
Dear Client

You have a pending credit payment on your account. Click here to login and fix account restrictions and enable in-flow off payments.

Thank You
Standard Bank Notification
```

9.18.1 Give TWO reasons to support the case that the email was not sent by Standard Bank. (2)

9.18.2 Name the specific social engineering technique that the above email represents. (1)

9.18.3 The librarian clicked on the link in the email. The address bar of the browser displayed the following:


Give TWO ways in which the contents of the address bar of a site that is encrypted for security would differ from the contents of the address bar shown above. (2)

9.19 Each learner registered in the Readers are Leaders programme is given a 3-digit number (e.g. 326), which is used to reserve a 'Time Slot' on one of the computers.

Study the spreadsheet below, which records the reservations for a number of learners for a typical week, and answer the questions that follow.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reservations</td>
<td>Computer 1</td>
<td>Computer 2</td>
<td>Computer 3</td>
<td>Computer 4</td>
<td>Computer 5</td>
<td></td>
</tr>
<tr>
<td>Mon 13:45–14:30</td>
<td>326</td>
<td>326</td>
<td>377</td>
<td>436</td>
<td>256</td>
<td></td>
</tr>
<tr>
<td>Mon 14:45–15:30</td>
<td>470</td>
<td>370</td>
<td>476</td>
<td>396</td>
<td>379</td>
<td></td>
</tr>
<tr>
<td>Mon 15:45–16:30</td>
<td>Available</td>
<td>407</td>
<td>365</td>
<td>533</td>
<td>467</td>
<td></td>
</tr>
<tr>
<td>Tue 13:45–14:30</td>
<td>375</td>
<td>404</td>
<td>490</td>
<td>328</td>
<td>587</td>
<td></td>
</tr>
<tr>
<td>Tue 14:45–15:30</td>
<td>478</td>
<td>474</td>
<td>338</td>
<td>272</td>
<td>352</td>
<td></td>
</tr>
<tr>
<td>Tue 15:45–16:30</td>
<td>529</td>
<td>Available</td>
<td>404</td>
<td>348</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thu 13:45–14:30</td>
<td>572</td>
<td>429</td>
<td>404</td>
<td>530</td>
<td>504</td>
<td></td>
</tr>
<tr>
<td>Thu 14:45–15:30</td>
<td>575</td>
<td>448</td>
<td>462</td>
<td>557</td>
<td>586</td>
<td></td>
</tr>
<tr>
<td>Thu 15:45–16:30</td>
<td>453</td>
<td>400</td>
<td>Available</td>
<td>492</td>
<td>341</td>
<td></td>
</tr>
<tr>
<td>Fri 13:45–14:30</td>
<td>457</td>
<td>401</td>
<td>280</td>
<td>423</td>
<td>504</td>
<td></td>
</tr>
<tr>
<td>Fri 14:45–15:30</td>
<td>221</td>
<td>243</td>
<td>314</td>
<td>519</td>
<td>545</td>
<td></td>
</tr>
</tbody>
</table>
9.19.1 Which facility of a spreadsheet can be used to determine whether a learner has made more than one reservation, without using a function or a formula? (1)

9.19.2 Describe in your own words what information can be obtained from the following formula, applied to the data above.

\[=\text{COUNTA(C2:G12)} - \text{COUNT(C2:G12)}\] (1)

9.19.3 Name a function which, applied to the data in the spreadsheet above, will give the same answer as the formula in question 9.19.2 AND write the function down as it would appear in the spreadsheet. (1)

[50]

TOTAL: 150