![ieb assessment matters logo]

COMPUTER APPLICATIONS TECHNOLOGY: PAPER II

EXAMINATION NUMBER | | | | | | | | | | | | | |

Time: 3 hours   150 marks

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

1.   This question paper consists of 36 pages. Please check that your question paper is complete.

2.   The paper is divided into Section A (25 marks), Section B (75 marks) and Section C (50 marks).

3.   **Answer ALL the questions on the question paper and hand it in at the end of the examination. Remember to write your examination number in the blocks above.**

4.   Non-programmable calculators may be used.

5.   It is in your own interest to write legibly and to present your work neatly.

6.   Read the questions carefully. Take note of the verbs of the questions, such as explain, name, select, discuss, and identify; and answer accordingly.

7.   Give your answers in general terms e.g., use 'word processor' rather than 'Microsoft Word' or 'WordPerfect'. Use brand names only when asked.

8.   In general, a mark is allocated per fact. Therefore, a two-mark question would require two facts, and so on. One-word answers will not necessarily give you the mark. Write in full sentences.

9.   DO NOT USE CORRECTION FLUID.

10.   ONE additional page (page 36) is included at the end of the paper. If you run out of space for an answer, use this page. Clearly indicate the question number of your answer should you use this extra space.

FOR OFFICIAL USE ONLY:

MARKER TO ENTER MARKS BELOW

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	TOTAL
12	13	24	16	10	14	11	26	24	/150

MARKER/MODERATOR TO INITIAL BELOW

SECTION A

QUESTION 1

1.1   Select the **MOST APPROPRIATE** answer to each question. Write the letter of your choice next to each question number in the space provided.

   1.1.1   Which one of the following files could be downloaded as a podcast?

   A   Instructions.pdf
   B   Canyon.mp3
   C   Game.exe
   D   Party.bmp

1.1.1	

   (1)

   1.1.2   A major source of income for cell phone companies today is users …

   A   storing text files.
   B   using the diary function.
   C   downloading apps.
   D   storing music files.

1.1.2	

   (1)

   1.1.3   If an instruction is used repeatedly by a program, it is temporarily stored in a type of memory called ...

   A   a register.
   B   cache.
   C   storage.
   D   ROM.

1.1.3	

   (1)

   1.1.4   Which of the following types of software can be downloaded and used for a trial period after which the software must either be purchased or removed?

   A   Freeware
   B   Shareware
   C   Commercial software
   D   Adware

1.1.4	

   (1)

1.1.5   Which one of the following is **incorrect** to complete the following statement: An avatar refers to a user's …

    A   picture to identify a person in a 3D world.
    B   computer version generated by a 3D world.
    C   3D object that is printed by a virtual world.
    D   alter ego that is used online in a 3D world.

1.1.5	

(1)

1.1.6   What would the **most likely** cause be when your computer switches on, however, there seems to be no communication between the different hardware components?

    A   A faulty monitor power connection
    B   An incompatible mouse and keyboard
    C   Damaged or loosely connected cables
    D   EMI from an electric interference

1.1.6	

(1)

1.1.7   Which ONE of the following is the **most likely** reason why it may be necessary to use absolute addressing in a spreadsheet?

    A   When copying a graph/chart in a separate worksheet
    B   When copying and then using the paste special option
    C   When copying and using any date or time function
    D   When copying a formula or function to other cells

1.1.7	

(1)

1.2   Choose the **MOST APPROPRIATE** term/function (<u>underlined and given in brackets</u>) for each statement that follows. Write **ONLY** the term/function of your choice next to each statement number in the space provided.

     1.2.1   (<u>Encryption code/CAPTCHA</u>) is used to determine whether or not the computer is being operated by a robot.

1.2.1	

(1)

     1.2.2   (<u>Conditional formatting/Grouping</u>) can be used to automatically highlight specific values in a spreadsheet according to a rule.

1.2.2	

(1)

     1.2.3   (<u>Patches/Bugs</u>) are corrections to unintended flaws in software.

1.2.3	

(1)

     1.2.4   A (<u>check box/combo box</u>) allows the user to choose only one from a given set of options.

1.2.4	

(1)

     1.2.5   The (<u>primary memory/operating system</u>) is the most important program which controls all activities that take place in a computer.

1.2.5	

(1)

MARKER'S USE ONLY:	Total mark Q1	

QUESTION 2

2.1   Choose the term/concept in Column B that **BEST** match(es) the description in Column A. Write the letter of your choice next to each question number in the space provided, for example 2.1.0 Q.

	Column A	Column B
2.1.1	A means of checking that an e-commerce website is legitimate.	A. Cookies
2.1.2	An alternative scanning technology used to access information about a given topic.	B. Plug-and-play
2.1.3	Trying to locate a wireless network when using a laptop with relevant software and an antenna is known as …	C. Piggybacking
2.1.4	Technology that allows a device to be automatically installed when connected to a PC.	D. UPS
2.1.5	A network in which all computers/nodes are equally important.	E. Bluetooth
2.1.6	Information that a website stores about a user on the user's hard disk; this enables the website to remember details about the user when they next visit the website.	F. PSU
2.1.7	A software program that travels the web, locating and indexing websites for search engines.	G. Spyware
2.1.8	A/an … contains a transformer so that the motherboard will run at the correct voltage.	H. Biometrics
		I. Peer-to-peer
		J. URL lock
		K. QR code
		L. Client server
		M. Spider software
		N. Wardriving
		O. Ghost software
		P. USB

2.1.1	
2.1.2	
2.1.3	
2.1.4	
2.1.5	
2.1.6	
2.1.7	
2.1.8	

(1)

(1)

(1)

(1)

(1)

(1)

(1)

(1)

2.2   You are given the following list of abbreviations. Choose the **MOST APPROPRIATE** abbreviation for each question that follows. Write **ONLY** the abbreviation of your choice next to each statement number in the space provided.

RSS	AUP	HTTPS	OMR	ALU	PCI	EULA
OCR	RFID	GUI	CPU	CMOS	SSL	DPI

2.2.1   … provides a secure connection between Internet browsers and websites.

2.2.1	

(1)

2.2.2   … software is able to scan and recognise written text for editing purposes.

2.2.2	

(1)

2.2.3   A component in any computing system where most of the calculations take place is known as the …

2.2.3	

(1)

2.2.4   Rules and regulations for using a purchased piece of software.

2.2.4	

(1)

2.2.5   … is a form of wireless communication that incorporates tags and readers that communicate via radio waves.
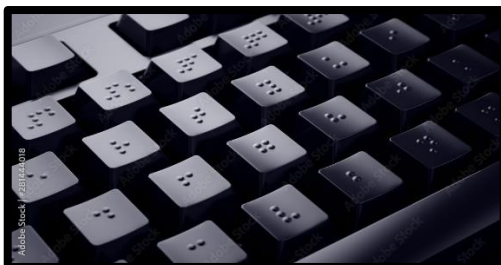
2.2.5	

(1)

MARKER'S USE ONLY:	Total mark Q2	

25 marks

SECTION B

QUESTION 3   SYSTEM TECHNOLOGIES

3.1   Complete the tables below by identifying the following images and stating their main function(s).

3.1.1

[<https://stock.adobe.com/br/images//>]	
Name of hardware	(1)
Main function	_____ _____ _____ (1)

3.1.2

[<https://www.istockphoto.com/photo/>]	
Name of hardware	(1)
Main function	_____ _____ _____ (1)

3.1.3

[<https://www.carousell.ph/p/>]	
Name of hardware	(1)
Main function	_____ _____ _____ (1)

3.1.4

[<https:// www.amazon.in/.../dp/B084WTG78D/>]	
Name of hardware	(1)
Main function	_____ _____ _____ (1)

3.2   You want to upgrade your current computer and came across the following specifications listed in an advertisement:

Processor	4th generation Intel® Core™ i7 quad-core [3.4GHz, 8MB Shared Cache]
Operating system	Windows 8.1 64 bit
Memory	16GB DDR3 - 1600MHz
Hard drive	2TB 7200 RPM SATA
Graphics	2GB AMD Radeon R7 240 [DVI, HDMI, & DVI to VGA]
Screen	23" LED Display

Figure 1
[<https:// researchgate.net/figure//>]

Identify the capacity of the secondary storage.

(1)

3.3   The reason why your computer must be replaced is that it often crashes.

Give **TWO** reasons, apart from failure of non-critical components, why a computer would crash.

Reason 1:

(1)

Reason 2:

(1)

3.4   State **TWO** advantages of purchasing a laptop computer rather than a desktop computer.

Advantage 1:

(1)

Advantage 2:

(1)

3.5   In another advertisement, mention is made of a wireless keyboard and mouse.

3.5.1   Name **TWO** commonly used methods of connecting devices wirelessly.

(2)

3.5.2   Compare the two methods mentioned in Question 3.5.1 with regard to:

(a)   Range of pick-up:

(1)

(b)   Line of sight:

(1)

3.5.3   Also listed in the other advertisement is that the device has a dual operating system. What does this mean?

(1)

3.5.4   The following ports can be found on the device mentioned in the advert. State for each port whether it will enable input, output or both:

(a)   HDMI 1.4

(1)

(b)   Headphone jack

(1)

3.6   As the hard drive becomes full, it becomes slow and less responsive. Identify the type of utility software that could be used in order to solve the following problems:

    3.6.1 Speed up the computer.

    Name of utility software.

                                              (1)

    How will it solve the problem?

                                              (1)

    3.6.2 Free up space on the hard drive.

    Name of utility software.

                                                (1)

    How will it solve the problem?

                                              (1)

[24]

MARKER'S USE ONLY:	Total mark Q3	

QUESTION 4   INTERNET AND NETWORK TECHNOLOGIES

Bargains4U sells items and clothes online. In order to keep their business up to date, the employees use a range of communication tools.

4.1   You decide to set up a website for Bargains4U. Most customers will access the website either via a Wi-Fi connection or via a direct cable connected to a router. Explain how the customers could connect by using the two types of connections given below. In your answer you will also need to refer to the mobile restrictions experienced while using these two types of connections.

     4.1.1   Type of connection:

        Wi-Fi:

        Router:

        (2)

     4.1.2   Mobility restriction of the connection:

        Wi-Fi:

        Router:

        (2)

4.2   Potential customers are concerned about the security of networks while shopping online.

     4.2.1   State **TWO** precautions that customers can take to prevent unauthorised access to the files on the network.

        Precaution 1:

        (1)

Precaution 2:

(1)

4.2.2 State **TWO** guidelines for setting up secure passwords.

Guideline 1:

(1)

Guideline 2:

(1)

4.2.3 Name **TWO** problems directly related to hardware that may cause a customer to lose data while shopping online.

Problem 1:

(1)

Problem 2:

(1)

4.3 State the difference between a search engine like Google and a webpage like News24 by defining each concept.

Search engine:

(2)

Webpage:

_____

_____
                                                                                    (2)

4.4   While setting up the website for Bargains4U, a developer suggested the use of a chatbot to assist customers. A colleague was not sure what they mean by a chatbot because there are virtual/digital assistants that can assist customers.

        Discuss **TWO** differences between a chatbot and a virtual/digital assistant.

        Difference 1:

        _____

        _____
                                                                                    (1)

        Difference 2:

        _____

        _____
                                                                                    (1)
                                                                                  [16]

MARKER'S USE ONLY:	Total mark Q4	

QUESTION 5   INFORMATION MANAGEMENT

Figure 2

QuickTravel is an online travel agency where you can book hotel rooms, air travel, rental cars, and more through a single site. Booking everything together sometimes results in discounts. QuickTravel offers options from the largest number of airlines, hotels, car rental agencies, and more.

5.1   When customers make use of this online travel agency it is vital that quality data is needed for useful information to be extracted from a booking.

List **THREE** characteristics of quality data.

_____

_____

_____

(3)

5.2   Use the headings given below to explain the process that the travel agency will use to confirm a booking.

Input:

_____

_____

_____

(1)

Processing:

_____

_____

_____

(1)

Output:

_____

_____

_____

(1)

5.3   The following rule, to determine a child must be younger than 12 years old, was entered into a database to prevent inaccurate input:

<=0 OR >=12

Give **TWO** reasons why irrelevant or unusable data can still be entered.

Reason 1:

_____

_____

(1)

Reason 2:

_____

_____

(1)

5.4   State **TWO** ways that the use of computers will assist QuickTravel in managing their information.

Way 1:

_____

_____

(1)

Way 2:

_____

_____

(1)

[10]

MARKER'S USE ONLY:	Total mark Q5	

QUESTION 6   **SOCIAL IMPLICATIONS**

6.1   Many cases of Internet addiction are reported.

        Name **TWO** activities users engage in on the Internet that could lead to addiction.

        Activity 1:

        _____
                                                                              (1)

        Activity 2:

        _____
                                                                              (1)

6.2   While accessing the Internet and connecting to multiple networks, people need to be made aware of their digital footprint. Discuss **ONE** example of a passive digital footprint and **ONE** example of an active digital footprint.

        Passive digital footprint:

        _____

        _____
                                                                              (1)

        Active digital footprint:

        _____

        _____
                                                                              (1)

6.3   Social media have been overflowing with fake news recently.

        Give **TWO** ways of verifying that news is not fake.

        Way 1:

        _____

        _____
                                                                              (1)

        Way 2:

        _____

        _____
                                                                              (1)

6.4   Give your opinion regarding the following statement by indicating whether you agree with it or not. Give **TWO** reasons to substantiate your answer:

'The Internet offers its users some privacy.'

Agree   ☐

Disagree   ☐

Reason 1:

_____

_____

(1)

Reason 2:

_____

_____

(1)

6.5   Many companies across the world have increasingly introduced computer systems into the office environment. This has had a big effect on employees.

Identify **TWO** cases in which technology has affected employees. In each case, explain why it has had an impact.

Case 1:

_____

Impact:

_____

_____

(2)

Case 2:

_____

Impact:

_____

_____

(2)

6.6   State **TWO** negative implications of 3-D printers.

Implication 1:

(1)

Implication 2:

(1)

[14]

MARKER'S USE ONLY:	Total mark Q6	

QUESTION 7   SOLUTION DEVELOPMENT

7.1   Some of the applications typically used in a small business are:

- Spreadsheet
- Word processing
- Database
- E-mail
- Web browser

Choose **TWO** of the applications from the list above and state the use or function of each of these two applications in a small business.

Application 1:

Name of application:

_____

Use or function:

_____

_____

_____

(1)

Application 2:

Name of application:

_____

Use or function:

_____

_____

_____

(1)

7.2   Mention **ONE** example of metadata that is stored with a word processing document.

_____

(1)

7.3   Study the spreadsheet below and answer the questions that follow.

	A	B
1	First name and surname	Position of space between first name and surname
2	Mary Smith	5
3	James Johnson	6
4	Tebogo Mahlangu	7
5		

Figure 3

7.3.1   Which **THREE** formatting features were used to create the heading in Cell **B1**?

Feature 1:

_____

Feature 2:

_____

Feature 3:

_____

(3)

7.3.2   Give only the name of the function that was used in column **B** to obtain the position of the space between the first name and the surname in column **A**.

_____

(1)

7.3.3   Give the most likely reason for obtaining the position of the space between the first name and the surname.

_____

_____

(1)

7.4   You are working at a restaurant during weekends for some extra money. The owner
       needs your help to calculate the wages for the waiters.

       The following formula was inserted in a query to calculate how many hours each
       waiter has worked:

                    Hours:([Log off] – [Log on]) * 24

       7.4.1   Identify the calculated field name created in the query.

       _____

                                                                              (1)

       7.4.2   What is the purpose of the square brackets, [ ], and the round brackets, ( ),
                in the formula above?

                Square brackets:

       _____

       _____

                                                                              (1)

                Round brackets:

       _____

       _____

                                                                              (1)
                                                                            [11]

MARKER'S USE ONLY:	Total mark Q7	

                                                                      75 marks

SECTION C

QUESTION 8   INTEGRATED SCENARIO

Figure 4

A handful of 3-D avocados from South Africa – fully equipped with microsensors and packed between real avocados – have just returned to the country after an international shipping trip. These fake avocados have collected valuable data about what happens to fresh produce on such a journey.

This is the first time that 3-D fruit has travelled overseas with microsensors to collect data, says Professor Wynand Steyn, head of the civil engineering department at the University of Pretoria.

The study is part of a research project in which the research team uses the department's unique smAvo and smaTo (Smart Avocado and Smart Tomato) sensor platforms to monitor the entire value chain from the farm to where the products land on shop shelves.

Solutions are developed so that the products do not lose quality along the distribution chain.

The 3-D printed 'avocados' have water-resistant soft outer coverings, so that they can more accurately register the data that needs to be captured. Their sensor systems were developed using off-the-shelf components and microcontrollers. They are the product of an approach developed at UP and called 'civiltronics' by the researchers. This combines civil engineering with chemical manufacturing, electronics, computer science, programming, and the Internet of Things.

[<https://www.news24.com/citypress/business/avos-gohi-tech-20210625>]

8.1   The Internet of Things (IoT) is one way of obtaining information.

        8.1.1   Briefly explain the term Internet of Things.

        _____

        _____

        _____
                                                                                          (2)

        8.1.2   Name **TWO** advantages of the Internet of Things.

                  Advantage 1:

        _____

        _____
                                                                                          (1)

                  Advantage 2:

        _____

        _____
                                                                                          (1)

8.2   With this new technology the university wants to keep the community up to date with the progress of using such technology. They decided to make use of a blog.

        Suggest **TWO** ways in which they can attract or maintain the community's interest in reading the blog.

        Suggestion 1:

        _____

        _____
                                                                                          (1)

        Suggestion 2:

        _____

        _____
                                                                                          (1)

As part of the development of this technology the university is organising a videoconference to speak to farmers who have been involved in the process and who have tested the smAvo and smaTo.

The farmers will get together for the conference in a conference hall which can seat 200 people.

8.3   Give **TWO** benefits of connecting with these farmers via videoconferencing rather than using a normal telephone call.

Benefit 1:

_____

_____

(1)

Benefit 2:

_____

_____

(1)

8.4   Name **ONE** other way of electronic communication that can be used to connect with these farmers that will offer the same benefits as videoconferencing.

_____

(1)

8.5   Name **ONE** software application, other than Skype, that can be used for videoconferencing.

_____

(1)

8.6   A laptop with the following specifications will be used as the device to facilitate the videoconferences.

CPU	Intel Core i5 (sixth generation or newer) or equivalent
Operating system	Microsoft Windows 10 Professional x64
RAM	8GB (upgradable to 16GB)
Hard drive size	500GB (Speed 7,200 rpm)
Hard drive type	SATA Hard Drive
Display size	14.1
Resolution	1 600 × 900
Video memory	1GB
Wi-Fi	802.11a/g/n
Ports	(excluding USB) FireWire 400, Ethernet, VGA
USB ports	4
Card slots	4-in-1 card reader
Warranty/Support	One-year standard parts and labour

8.6.1   Why is it advisable to upgrade the RAM to 16GB? Explain your answer.

(1)

8.6.2   The size of the laptop's display is only 14.1 inches, which is too small for everyone in the conference hall to view.

8.6.2.1   What can be done to make it possible for everyone in the hall to see the videoconference? Discuss **TWO** possible solutions.

Solution 1:

(1)

Solution 2:

(1)

8.6.2.2   There is no HDMI port available. What does 'HD' in the abbreviation HDMI stand for? Explain why it is important for videoconferencing to have such a port.

HD stands for:

_____

(1)

Explanation:

_____

_____

(1)

8.6.3   Other than the devices that were discussed in Question 8.6.2, name **TWO** essential devices (not mentioned in the specifications above) that need to be added to make the videoconferencing possible.

_____

_____

(2)

8.6.4   Why is it significant to have a '4-in-1' card reader slot?

_____

_____

(2)

8.7   As the data is collected from the smAvo and smaTo, there are data capturers available to capture all the data onto the system. One of the data capturers complained about RSI.

Define the term RSI and provide a solution the university can put in place to prevent RSI.

Definition (do not simply expand the abbreviation):

_____

_____

(2)

Solution:

_____

_____

(1)

8.8   During the design of the smAvo and smaTo devices, the university tried to contribute towards green computing.

Suggest **TWO** other ways of contributing to green computing in this project.

Suggestion 1:

_____

_____

(1)

Suggestion 2:

_____

_____

(1)

8.9   This project has been implemented for the collection of data to make informed decisions.

Discuss any **TWO** pieces of data that could be collected by these 3-D avocados.

Data piece 1:

_____

_____

(1)

Data piece 2:

_____

_____

(1)

[26]

MARKER'S USE ONLY:	Total mark Q8	

QUESTION 9   INTEGRATED SCENARIO (continued)

9.1   The research team who were part of this first shipping trip to the Netherlands used a digital camera to capture some photos for their research. The digital camera that they used contains a microprocessor. The camera's specification includes:

- 20-megapixel resolution
- 32 gigabyte memory card
- autofocus facility.

9.1.1   A more expensive model of the camera has 40-megapixel resolution. Why would it be an advantage to use the 40-megapixel resolution camera?

(1)

9.1.2   How could the 40-megapixel resolution be a disadvantage in the given scenario?

(1)

9.1.3   Name the type of memory that is used to save information on the 32 gigabyte memory card.

(1)

9.1.4   Give **ONE** benefit of using the type of memory identified above.

(1)

9.1.5   Which two words were the term pixel formulated from?

(1)

9.1.6   Apart from autofocus, describe one other feature you would expect to see on a digital camera controlled by a microprocessor.

(1)

9.2   Due to the fact that the team must stay in contact with the university, it was decided to invest in smartphones.

The following two smartphones were available to choose for the team members:

Option A – Galaxy A73	**Figure 5** [<https://www.samsung.com/za/smartphones/>]
Option B – Vivo V25	**Figure 6** [<https://www.mytfgworld.com/pdp/vivo-v25>]

9.2.1   Give **TWO** features that clearly distinguish a smartphone from an ordinary cell phone.

Feature 1:

_____

_____
                                                                (1)

Feature 2:

_____

_____
                                                                (1)

9.2.2   The researchers consider buying a laptop instead of a smartphone.

Give **TWO** reasons why it would be better to rather buy a smartphone.

Reason 1:

_____

_____
(1)

Reason 2:

_____

_____
(1)

9.2.3   The researchers decide to get the Galaxy A73 and install the Google Maps app (program). When one of the team members, Christo, runs the app for the first time the following screen appears.
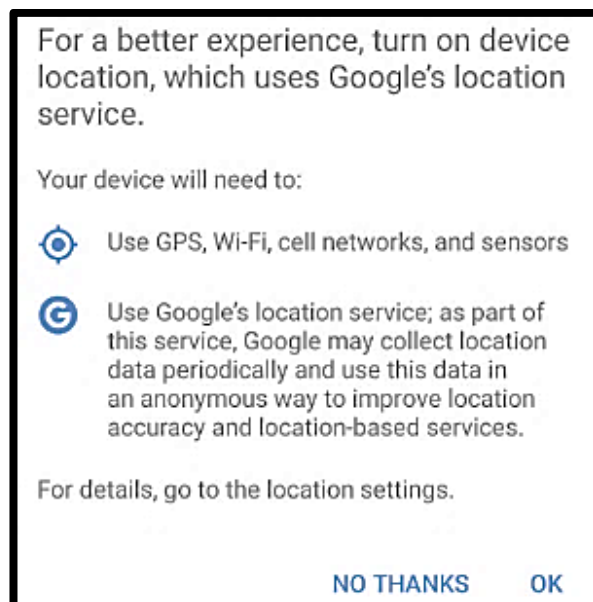

For a better experience, turn on device location, which uses Google's location service.

Your device will need to:

⊙   Use GPS, Wi-Fi, cell networks, and sensors

Ⓖ   Use Google's location service; as part of this service, Google may collect location data periodically and use this data in an anonymous way to improve location accuracy and location-based services.

For details, go to the location settings.

NO THANKS   OK

Figure 7
[<https://stackoverflow.com/>]

The smartphone has an option for tracking Christo's location. This option can be switched either on or off.

Give **TWO** advantages of Christo switching on the location option.

Advantage 1:

_____

_____
(1)

Advantage 2:

_____

_____

(1)

9.3   The team leader wants to help his team members to improve their word processing skills as they need to type their findings in a report using a word processor.

Help him to answer their questions.

9.3.1   One of the members indicated that a word processing document that he sent to Christo could not be opened by him as he does not have the same program.

What is the best file format to save the document in so that it can be opened and edited using most word processors?

_____

(1)

9.3.2   Give **TWO** reasons why one would make use of bookmarks.

Reason 1:

_____

_____

(1)

Reason 2:

_____

_____

(1)

9.3.3   Explain what a citation in Microsoft Word refers to.

_____

_____

(1)

9.3.4   What word processing feature should be used to allow both portrait- and landscape-orientated pages in the same document?

_____

(1)

9.4   The team members want to import their data into a spreadsheet to analyse their data. Identify **THREE** problems in the wizard below that will affect the quality of data when the import process is completed.
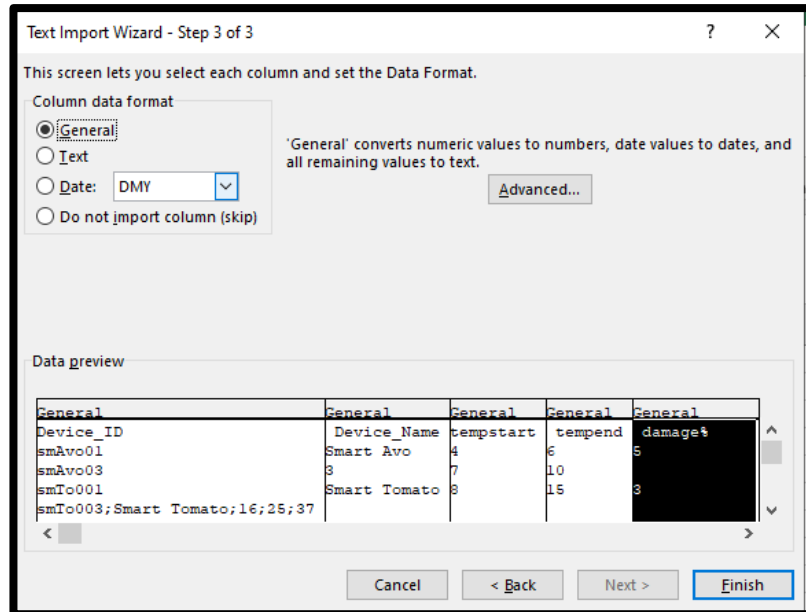

Figure 8

Problem 1:

_____

_____
(1)

Problem 2:

_____

_____
(1)

Problem 3:

_____

_____
(1)

9.5   Information was imported into a database table as shown below:

Device_ID	Device_name	Temp_start	Temp_end	Damage_%
smAvo01	Smart Avo	4	6	5
smAvo02	Smart Avo	4	8	8
smAvo03	Smart Avo	3	7	10
smTo001	Smart Tomato	8	15	3
smTo002	Smart Tomato	10	12	1
smTo003	Smart Tomato	16	25	35

9.5.1   How many records have been created in the above database?

_____

(1)

9.5.2   What data type will be used for the Damage_% field?

_____

(1)

9.6   The html code

```
<table border='3'>
    <tr>
        <td>Cell 1</td>
        <td>Cell 2</td>
    </tr>
    <tr>
        <td>Cell 3</td>
    <tr>
</table>
```

displays the following table in the browser:

Figure 9

How would you correct the third line of code (in bold) so that the table will display as shown below?

Figure 10

_____

_____

(2)
[24]

MARKER'S USE ONLY:	Total mark Q9	

50 marks

Total: 150 marks

ADDITIONAL SPACE (ALL QUESTIONS)

REMEMBER TO CLEARLY INDICATE AT THE QUESTION THAT YOU USED THE ADDITIONAL SPACE TO ENSURE THAT ALL ANSWERS ARE MARKED.