COMPUTER APPLICATIONS TECHNOLOGY: PAPER I

Time: 3 hours   150 marks

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

1.   This question paper consists of 17 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.

4.   Number your answers exactly as they appear in the question paper.

5.   Non-programmable calculators may be used.

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

7.   Read the questions carefully. Take note of the wording of the questions, i.e. explain, name, select, discuss, identify, etc. and then answer accordingly.

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

9.   In general, a mark is allocated per fact. So a two-mark question would require two facts, and so on.

SECTION A

QUESTION 1

1.1   Choose the correct TERM in Column B which **BEST** fits the statement in Column A. Write down **ONLY** the word of your choice next to each question number.

Column A		Column B	
1.1.1	The infrastructure usually set up by the state for the transmission of data throughout a country	A	Link Rot
1.1.2	Downloading a file from the Internet from more than one server at a time	B	Hyperlink
1.1.3	A software program that travels the web, locating and indexing websites for search engines	C	Backbone
1.1.4	Increasing the speed of the CPU by increasing the CPU core voltage supplied	D	Spider Software
1.1.5	When the shortcut to another website or page is permanently unavailable	E	Torrenting
1.1.6	The unit of speed of a typical CPU	F	MB
		G	Streaming
		H	Ghost Software
		I	Overlocking
		J	Pipelining
		K	GHz

(6)

1.2   You are given the following list of Three Letter Acronyms (TLAs). Choose the **MOST** appropriate acronym for each question that follows. Ensure that you number each of your answers correctly. You must ONLY write down the chosen acronym next to the question number.

DTP	OCR	LCD	CRT	RAM	ROM
RSI	PDF	DOC	PCI	SSL	OEM

1.2.1   An earlier type of monitor that resembles an old style television set.   (1)

1.2.2   It provides a secure connection between Internet browsers and websites.   (1)

1.2.3   A file format that allows the sharing of files with others who do not have the same software or who work on different hardware platforms, e.g. Windows, Linux, Apple Mac, etc.   (1)

1.2.4   This software is able to scan and recognise written text for editing purposes.   (1)

1.2.5   An injury caused by continuously doing the same physical action over and over again.   (1)

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QUESTION 2

Select the **MOST** appropriate answer to each question. Write down **ONLY** the letter of your choice next to each question number.

2.1   Which one of the following is an aid that is more appropriate for physically disabled computer users?

      A   Ergonomic keyboard
      B   Mouse
      C   Voice activated microphone
      D   Printer

2.2   *Cloud storage* refers to …

      A   shared data storage on a central server usually managed by a hosting company.
      B   the DVD drive in a laptop.
      C   software that allows a user to copy and send their data over a network.
      D   a set of linked hard drives in a computer.

2.3   A typical *Blu-ray* drive uses … to read data.

      A   magnetic fields
      B   electric fields
      C   sound waves
      D   laser light

2.4   What would be the most likely cause of your computer switching on but not operating correctly?

      A   A faulty power supply
      B   An incompatible mouse and keyboard driver
      C   Loose cable connections on the motherboard
      D   EMI from a nuclear explosion

2.5   The term *avatar* refers to a user's …

      A   representation in a virtual world.
      B   fake name on a social network site.
      C   login name and password details.
      D   backup copies of important documents.

2.6   Which one of the following would be classified as *cybercrime*?

      A   Stealing your USB memory stick
      B   Using someone else's login details to read news articles
      C   Making copies of commercial software for which you have no licence
      D   Breaking into a bank's network and increasing your bank balance

2.7   Which one of the following functions from a spreadsheet program would be most appropriate to solve the following problem?

Problem: You are given three columns, the first column contains the name of an article of clothing, the second column describes whether the article of clothing is for a male or female and the third column states the number available. You need to calculate how many articles of clothing you have for males.

A   =SUMIF()
B   =COUNTIF()
C   =VLOOKUP()
D   =SUM()

[14]

25 marks

SECTION B

QUESTION 3   SYSTEM TECHNOLOGIES

3.1   Study the following photographs of different devices that could be connected to or form part of a typical computer. (**Figures 1 – 5**)

3.1.1

Figure 1

3.1.2

Figure 2

3.1.3

Figure 3

3.1.4

Figure 4

3.1.5

Figure 5

Draw the following table in your Answer Book. You are then required to identify the device by writing in the name of each of the devices in the second column and their MAIN function in the third column. Note: When filling in the function, think of what makes that particular device unique.

Question Number	Name of Device	Main Function
3.1.1		
3.1.2		
3.1.3		
3.1.4		
3.1.5		

(10)

3.2   There are a number of ways to protect your computer from unauthorised external sources accessing it.

      3.2.1   Give **ONE** *hardware* method.   (1)

      3.2.2   Give **ONE** *software* method.   (1)

3.3   Sipho's cellphone contract is about to expire and he has been offered the following two **SMARTPHONES**, if he upgrades to a new contract

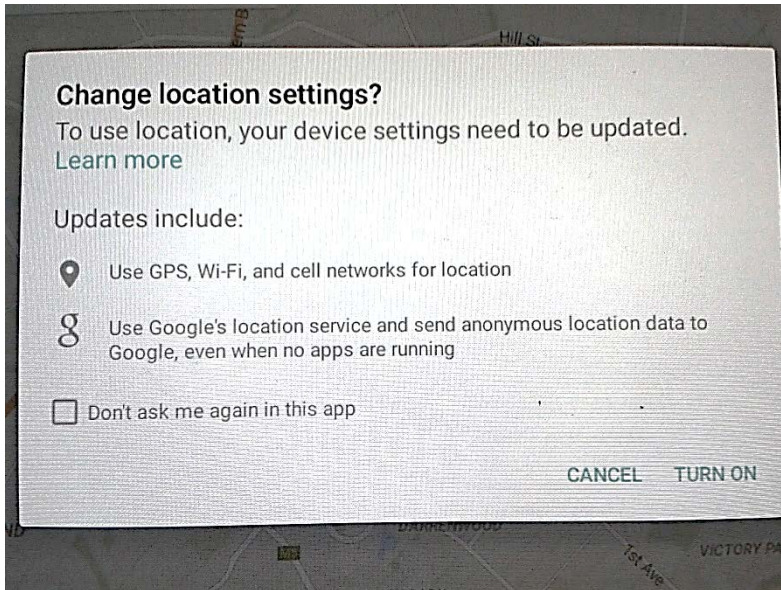|	
Option A – Samsung Galaxy Note Edge	
Option B – Samsung Galaxy S5 Mini Smartphone Gold	

[Source: <www.vodacom.co.za>]

      3.3.1   Give **TWO** features that clearly distinguish between a smartphone and an ordinary cellphone.   (2)

      3.3.2   Sipho considers buying a laptop instead of a smartphone.

              Give **TWO** reasons why Sipho should rather buy a smartphone instead of a laptop.   (2)

3.4   Sipho decides to get the Samsung Galaxy S5 Mini and installs the Google Maps app (program). When he runs the app for the first time the following screen appears.

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

3.4.1   Give **ONE** advantage of switching this option on.   (1)

3.4.2   Give **ONE** reason why switching this option on would **NOT** be a good idea.   (1)

3.5   When purchasing a new computer, you need to consider the memory specifications.

3.5.1   What is the difference between primary memory and secondary memory?   (2)

3.5.2   Give one example of each of the following:

(a)   primary memory   (1)

(b)   secondary memory   (1)

3.5.3   Explain why the amount (size) of primary memory available to the CPU is important when considering the operation of the computer.   (2)

3.5.4   Users often partition the hard disk drive in their computers. Give **TWO** benefits of partitioning a hard drive disk.   (2)

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QUESTION 4   INTERNET AND NETWORK TECHNOLOGIES

[Source: <http://cdn.bgr.com>]

Pics4U sells selfie sticks online, so that people can take better selfies (pictures of oneself). In order to keep their business up-to-date the employees use a range of communication tools.

4.1   You are given the following tasks that need to be done. In each case, state the best communication method for the required task.

      4.1.1   Basic and administrative correspondence with online clients.   (1)

      4.1.2   Sending an urgent message to a supplier.   (1)

      4.1.3   Telling customers about the new selfie stick that will be available next month.   (1)

      4.1.4   Setting up a supporters' page.   (1)

4.2   The designer/manufacturer of the selfie stick is based in China and wants to discuss ideas for new products with you. You suggest that to facilitate this, a video conference is set up. Give **TWO** advantages of using video conferencing for your discussion with the selfie stick designer/manufacturer.   (2)

4.3   You decide to set up a website for Pics4U. Most customers will access the website either via a Wi-Fi connection or via a direct connection to a router. Explain the **TWO** types of connections under the following headings:

      4.3.1   Communications medium   (2)

      4.3.2   Mobility of the connection   (2)

4.4   Pics4U is a small start-up company that does not have the finances to setup and manage a full LAN for their employees. You suggest that they set up a VPN.

      4.4.1   What is a VPN? (You will get no marks for simply expanding the acronym.)   (2)

      4.4.2   Give **TWO** examples of where a VPN would be useful for the employees of Pics4U.   (2)

      4.4.3   Do you need any special hardware other than the network connection for the VPN? (**Yes/No**)   (1)

4.5   When setting up a networking connection, a technician has to know the different protocols available for data transfer.

      4.5.1   What is a protocol?   (2)

      4.5.2   Sometimes you may see an *https* protocol in a URL. What does the '*s*' say about the website?   (1)

      4.5.3   Give **TWO** examples of a protocol. (You may **NOT** use the protocol mentioned in **Question 4.5.2**.)   (2)

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QUESTION 5   INFORMATION MANAGEMENT

Eskom is a public utility company in South Africa. It generates approximately 95% of the electricity used by the country. However, they do not have sufficient generation capacity to supply the 42 000 MW required. Therefore, load-shedding has been applied in four stages. Stage 1 allows Eskom to cut 1 000 MW from the network, Stage 2 allows for 2 000 MW to be cut, Stage 3 allows for up to 3 000 MW to be cut and Stage 4 allows for 4 000 MW to be cut.

Eskom supplies electricity either directly to customers or to municipalities who in turn sell it to their residents.

To ensure that load-shedding is shared fairly by all South Africans, Eskom needs to continuously monitor the state of electricity generation. This is done using computers at all power stations and at the control centre.

5.1   Give **TWO** data items that each power station needs to provide as input to the load-shedding program at Eskom's contact centre.   (2)

5.2   What **ONE** piece of data will Eskom need from the municipalities and their direct customers?   (1)

5.3   How will Eskom process this data?   (2)

5.4   What information will be outputted from the load-shedding program?   (1)

5.5   Give the term for the step-by-step set of instructions that will be used to create the program followed by Eskom's computers?   (1)

5.6   5.6.1   Suggest **ONE** commercially available program type, which could be used by Eskom, to achieve the output in **Question 5.4**. (Do not give a brand name.)   (1)

      5.6.2   Justify your answer in **Question 5.6.1** with **ONE** supporting argument.   (1)

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QUESTION 6   SOCIAL IMPLICATIONS

6.1   The new *Star Trek* video game was just released and many parents refuse to allow their children to play the game. They say that it leads to physically lazy learners, addicted to gaming. Counter this argument by giving **TWO** reasons why game playing can be of benefit to learners.   (2)

6.2   You love the new *Star Trek* game and so install your friend's copy onto your computer as well. Give **TWO** reasons why what you have done is illegal.   (2)

6.3   Mbulelo lives in Johannesburg and spends a lot of time on electronic communication with his friends. He is part of the 'Information Age'. Jaco lives on a rural farm just outside Pofadder, and when he wants to get hold of his friends, he usually rides his bike to their homes or sends a message with someone. His community lacks many of the basic electronic systems that Mbulelo has access to.

6.3.1   What is the phrase given to describe the difference in Mbulelo's and Jaco's access to electronic communications?   (1)

6.3.2   Discuss **TWO** ways in which you, as a concerned South African citizen, can help Jaco to bridge this difference in access to electronic communication.   (2)

6.3.3   Give **THREE** ways in which you can help to be environmentally friendly through your computing.   (3)

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QUESTION 7   SOLUTION DEVELOPMENT

Your exams are nearly over so you start to plan your holiday at year's end.

You set up a spreadsheet worksheet as follows:

	A	B	C	D	E	F	G	H	I
1				Holidays For You					
2	Description	Cost per Item	Number Needed	SubTotal	Discount Package	Discount %	Total Costs	Total Costs + VAT	VAT Rate
3	Flight	R 5 500.00	2	R 11 000.00	1	10	R 9 900.00	R 11 286.00	14
4	Hotel Days	R 1 785.00	6	R 10 710.00	2	15	R 9 103.50	R 10 377.99	
5	Transport	R 2 500.00	2	R 5 000.00	1	10	R 4 500.00	R 5 130.00	
6	Entertainment	R 3 000.00	1	R 3 000.00	1	10	R 2 700.00	R 3 078.00	
7	Food	R 3 895.00	1	R 3 895.00	2	15	R 3 310.75	R 3 774.26	
8	Miscellaneous	R 1 500.00	1	R 1 500.00	0	0	R 1 500.00	R 1 710.00	
9							Total to be Saved	R 35 356.25	

7.1   What function of the spreadsheet was used to spread the heading 'Holidays For You' across the cells A1 : H1?   (1)

7.2   You would like to restrict the discount package to only one of four options, namely 0, 1, 2, or 3. What **TWO** form controls can be used to do this?   (2)

7.3   7.3.1   Many of the columns are rather wide. This is due to the heading being so wordy. Give **TWO** methods you can use to shrink the column width without losing any part of the heading.   (2)

        7.3.2   The data for the actual percentage obtained for each discount package is stored on another worksheet. What suitable function could be used to get that information onto this worksheet, without simply copying and pasting?   (1)

        7.3.3   The 'Total Costs + VAT' have been calculated using a 14% VAT rate. This VAT value has been stored in cell I3. Write down the full formula that will be used to calculate the 'Total Costs + VAT' for the first item in cell H3. This formula will be autofilled for the rest of column H.   (3)

7.4   What is the technique of 'freezing' a cell address into a formula or function called?   (1)

[10]

75 marks

SECTION C

SCENARIO

Sello Imfundo has just been appointed as Assistant to the Minister of Basic Education in South Africa and has been tasked with rolling out tablets and their use in all high schools in the country. He knows that you have just completed your schooling, having taken Computer Applications Technology as a Senior Certificate subject. He asks you to advise him on this huge undertaking.

All the required hardware and software, both needed and wanted, will have to be sourced. The Minister also wants every school to have Internet access.

[Source: <http://news.bbcimg.co.uk/media/images>]

QUESTION 8   INTEGRATED SCENARIO

8.1   Sello logs on at <www.pricecheck.co.za> and receives the following specifications and costs for three different tablets.

Samsung Galaxy Tab 4 7" 8 GB Tablet with Wi-Fi and 3G White

R2 199,00

Display size	7"
Resolution	800 × 1 280
Installed memory	32 GB
Manufacturer	Samsung
Model Number	T231
Operating Systems	Android
Processor	1.2 GHz Quad Core
RAM	1.5 GB
Camera Resolution (Rear)	3.15 Megapixels
Camera Resolution (Front)	1.3 Megapixels
Comms	802.11 a/b/g/n
HD	Full
Bluetooth	4.0

Apple iPad Air 32 GB 9.7" Tablet with Wi-Fi and 4G
R7 699,00

Bluetooth	Yes
Display Size	9.7"
Resolution	2048 × 1536
Generation	none
Installed Memory	32 GB
Manufacturer	Apple
Model Number	IPADAIR32 GB
Operating System	iOS
Processor Type	Apple A7 Dual Core 1.4 GHz
Samsung AlwaysOn	No
RAM	1 GB
Wireless LAN	Yes
Sim Card Slot	Yes

Lenovo IdeaTab S6000 16 GB 10.1" Tablet with Wi-Fi
R3 041,00

Processor	MT8125 1.2 GHz Quad Core (Wi-Fi)
Operating System	Android 4.2 Jelly Bean
Display	10.1" HD IPS (350 NITS)
Resolution	1280 X 800
Graphics	MT8389 Integrated
Camera	5 MP
RAM	1 GB LP DDR2
Keyboard Dock (optional)	Bluetooth keyboard with magnetic attachment
Audio	Dual speakers
Comms	WLAN 802.11b/g/n, Bluetooth 4.0
SIM Card Slot	16 GB eMMC, Up to 64 GB
MicroSD card support	Yes

The minister needs to understand the specifications of the different tablets and asks you the following questions.

8.1.1   What does *Quad Core Processor* mean? (2)

8.1.2   For what is *Bluetooth*® used? (2)

8.1.3   Why do some of the tablets have both a front and a rear camera? (2)

8.1.4   What does it mean that the tablets are both *Wi-Fi* and *SIM Card* enabled? (2)

8.1.5   The *Lenovo IdeaTab S6000* has a resolution of 1280×800. What does this mean? (2)

8.1.6   (a)   Give **THREE** functions of an operating system. (3)

        (b)   Is the operating system defined as system software or applications software? (1)

8.1.7   The *Samsung Galaxy Tab 4* and the *Lenovo IdeaTab S6000* both use Android, an *open source* operating system. What is *open source* software? (2)

8.2   Some sight impaired learners are struggling with viewing work on the tablets due to the size of the screen. Recommend **TWO** ways in which this challenge can be overcome. (2)

8.3   When used in a classroom, tablets have both advantages and disadvantages.

8.3.1   Give **ONE** task that would be BEST suited for tablet use. (1)

8.3.2   Give **TWO** tasks that would NOT be suitable for tablet use. (2)

8.4   Many schools today have introduced tablets into their classes. Give **TWO** ways in which these devices have improved the educational development of the learner. (2)

8.5   Sello has gathered all the relevant data about the tablets, the schools, the schools' hardware, software and network infrastructure requirements, the enrolment numbers at each school and the numbers of learners without tablets at each school. There is a massive amount of data to be worked with. He decides to ask you to enter this data into a database program.

8.5.1   Give **THREE** reasons why the use of a database to capture the data is the most appropriate. (3)

8.5.2 Sello is overwhelmed with all this data that is in many cases repeated data from different sources. You recommend that he splits the data into different tables as shown below.

tblSchoolDetails	
Field Name	**Data Type**
SchoolId	Autonumber
SchoolName	Text
Address	Text
Suburb	Text
City	Text
Principal	Text
Urban/Rural	Text
ITManager	Text
SchoolTypeCode	Text

tblSchoolRequirements	
Field Name	**Data Type**
SchoolTypeCode	Text
ElectricityRequirements (kW)PerDay	Number
OperationalBudget	Currency
NumberOfLearners	Number
NumberOfTablets	Number
InternetAccess	Yes/No

In order for queries to be conducted on the data, the tables need to be linked together.

(a) What must be created in order to achieve this linking of the tables? (1)

(b) The following queries need to be done. Write down, next to the correct question number, the field(s) and statement(s) you would use to achieve the following queries. For example, to list all schools with no Internet access, the criteria in the [Internet Access] field would be = false.

 (i) List all schools in Randburg that have learner numbers greater than 500. (3)

 (ii) Add a calculated field that increases the operational budget for all rural schools by R500 000,00. (4)

8.6 Sello has created and tested the queries and now needs his data capturer to enter the data. Tali, the data capturer, is a new worker and so is not familiar with the database package.

8.6.1 Give **TWO** features of the database program that can be used to help Tali capture the data. (2)

8.6.2 Some of the information obtained from the queries is more suitably displayed in a graphical form. What is the term that describes sending the information from the database to another programme? (1)

8.6.3 What application programme would be suitable to use to plot these graphs? (1)

8.6.4 If the data to be plotted is the schools' daily electricity consumption over a month, which **TWO** graph types would be suitable for this? (2)

8.7   Some parents are concerned that if learners use tablets at school, they may be able to access inappropriate websites that are not educational. Give **THREE** ways in which educators can make sure that their learners are safe while 'surfing' the web.   (3)

8.8   Another concern of parents and educators is the issue of *cyber bullying*. Explain how cyber bullying can be reduced or prevented on the tablet.   (2)

8.9   8.9.1   You are required to compile all the data into a proposal that will be presented to the Minister. Recommend **ONE** application package that will be suitable to create, manipulate and lay out your findings in a clear and easy manner.   (1)

        8.9.2   Justify your choice of application in **Question 8.9.1** by giving **TWO** supporting arguments.   (2)

8.10   Your school specifically recommends one of the tablets offered to the Minister. Give **TWO** reasons to justify your choice.   (2)

50 marks

Total: 150 marks