



NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2012

COMPUTER APPLICATIONS TECHNOLOGY: PAPER I

Time: 3 hours

150 marks

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY

1. This paper consists of 15 pages. Please check that your question paper is complete.
 2. The paper is divided into Section A (30 marks) and Section B (120 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.
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SECTION A

QUESTION 1

1.1 Choose the correct words in Column B which **BEST** complete 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	(a) allows resources like (b) to be used again.	recycling e-waste copper ink
1.1.2	(a) has become very popular nowadays because (b) transactions can be done online.	e-commerce e-mailing secure free
1.1.3	A (a) contains a transformer so that the (b) will run at the correct voltage.	power supply unit USB Hub motherboard mouse
1.1.4	(a) in Africa is being solved by the addition of new (b) cables.	the digital divide social networking undersea overland
1.1.5	One difference between (a) and cellphones is that they have an embedded (b) loaded.	smartphones PDAs operating system clock

(10)

1.2 In each of the following cases state whether each statement is **TRUE** or **FALSE**. Substantiate your answer by giving an explanation as to why the statement is **TRUE** or **FALSE**.

1.2.1 A file with a .zip extension has been compressed using a utility program. (2)

1.2.2 A web browser allows a user to send e-mails from a free e-mail account supplied by and stored on a service provider's server, for example, Google. (2)

1.2.3 Animated slideshows are produced in a presentations package. (2)

1.2.4 RSS stands for Really Straightforward Software. (2)

1.2.5 A search engine is hardware that powers your hard drive. (2)

[20]

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 chart types is most appropriate for displaying the changes in temperature in Johannesburg in a month?
- A A pie chart
 - B A line chart
 - C A scatter chart
 - D A bubble chart
- 2.2 Which one of the following **WILL NOT** protect data in a spreadsheet?
- A Changing the colour of the font to transparent
 - B Ensure that the spreadsheet is saved as an unshared file
 - C Encrypting the spreadsheet file
 - D Restricting permissions of the spreadsheet file
- 2.3 An MMS can be sent from your cellphone. What does MMS stand for?
- A Most Memorable Sites
 - B Multimedia Messaging Service
 - C Mythological Moving Stations
 - D Many Movies & Songs
- 2.4 Web conferencing requires the following hardware:
- A headphones, microphones
 - B mouse, speakers
 - C webcams, microphones
 - D webcams, mouse
- 2.5 In a spreadsheet, the following values have been assigned: Cell A1 has the value of 3. Cell A2 has the value of 6. Cell A3 has the value 9. In Cell A4 the following formula is typed in: =SUM(A1,A2,A3)/B1. When enter is struck, what will appear in Cell A4?
- A 6
 - B 0
 - C #DIV/0!
 - D 18
- 2.6 Which one of the following software programs will allow a music video to be played?
- A Adobe PhotoShop
 - B Pastel Partner
 - C Microsoft Excel
 - D Windows Media Player

2.7 Your computer system switches on but no image appears on the monitor. What is/are possible reason/s for this problem?

- I The monitor cable is unplugged.
- II The monitor brightness is set to minimum.
- III The monitor is not switched on.
- IV The CPU has failed.

- A I only.
- B I and II.
- C I, II and III.
- D I, II, III and IV.

2.8 A major source of income for cellphone companies today is users ...

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

2.9 Which one of the following can e-learning students **NOT** do?

- A Chat with their teachers.
- B Run practical chemistry science experiments.
- C Take written tests.
- D Collate information for a shared assignment with another student.

2.10 Virtual reality is ...

- A a fake website on the Internet where all your personal information is stored.
- B a method of e-mailing people in real time.
- C a computer created simulated environment.
- D an encryption used to protect your financial details.

[10]

30 marks

SECTION B

Read through the background theme below. Note that all of the questions in Section B are based on this theme and the scenario described at the beginning of each question. **Please relate your answers to that scenario.**

STAR TREK IN THE 23RD CENTURY

The Bridge, USS Enterprise, NCC 1701. The crew is on a routine mission patrolling the Federation/Romulan Space border. A Romulan enemy ship appears and fires a barrage of torpedoes at the Enterprise causing all the bridge personnel to black out and USS Enterprise is forced through a break in time. When the crew regain their consciousness, they find that they have been transported back in time to the year 2012, in orbit over the planet Earth. Captain Kirk decides to send an away team to the surface to see what technology the human race is using and how they can find a way to return to their own century.

[<<http://www.starstore.com/acatalog/st-uss-enterprise-ncc-1701-hd-ship.jpg>>]

QUESTION 3

Captain Kirk is considering setting up a small business to generate funds. He asks Commander Spock, the Science Officer to set up a small SOHO for their use. He requires that the system be able to do the following:

- Word Processing
- Spreadsheets
- Databases
- Connect to the Internet for
 - Information searching and retrieval
 - E-mailing
 - Basic Web Design

Spock goes to the Computer Store where you work, called *SysNet Computers*. He is unsure of some of the current technology and asks you for your assistance.

3.1 What does the term *SOHO* stand for?

(1)

3.2 Spock is given the following product list to set up the basic system.

Figure 1

SysNet Computers Product List		
1.	Asus P5G41T-M LX IG41 Motherboard w/A8 + G + LK + SATA3	R476.00
2.	Manhattan Deluxe Stereo Headset	R100.00
3.	Cooler Master 690 II Plus Mid Tower Chassis – Black – Window – No PSU	R937.00
4.	Sony VPL-VW200 1920x1080, 800AL SXRD Home Theatre Projector	R10 584.00
5.	Asus 18.5" Wide 10000:1 VH192D 250 cd/m ² 5ms LCD Panel	R851.00
6.	ADATA 1TB Classic CH11 External Hard Drive – USB3	R1 058.00
7.	Manhattan RightTrack USB Mouse – Red	R74.00
8.	Logitech Extreme 3D Pro Joystick	R891.00
9.	Manhattan Universal Notebook Power Adapter (15-20V) (6A) (90W)	R375.00
10.	Compro VideoMate E300 PCI Express TV Tuner w/FM + Remote	R236.00

Choose **TWO** essential components (from **Figure 1**) that Spock would need for their *basic* computer system **AND** give one main function of each component chosen. (4)

3.3 *SysNet Computers* also offers the following peripherals for purchase:

- Samsung CLP-320 Colour Laserjet Printer
- Oki Microline 1120 Dot Matrix Printer – 9pin
- HP Designjet T790e Plotter and Printer

Recommend to Spock the most appropriate printer for use in their business **AND** explain why you made that choice. (2)

3.4 Spock sees a sign about refilled cartridges which can be used in the printer chosen in Question 3.3. Give **ONE** *advantage* **AND** **ONE** *disadvantage* of using refilled cartridges. (2)

3.5 Mr Spock expresses an interest in producing videos for sale. He wonders how the product will be stored in the computer. You explain that the most common way of storing information in the computer is on the hard disk drive. You offer him **TWO** products:

- Buffalo 1 TB DriveStation External Hard Drive – Hi Speed USB (*HotSwappable*)
- Seagate 500 GB 3.5" SATA-III 6 Gb/s Internal Hard Drive 7200RPM 16MB Cache (*Plug and Play*)

3.5.1 Explain the term *Plug and Play*. (2)

3.5.2 Write down **ONE** way that *Hot swappable* differs from *Plug and Play*. (1)

3.5.3 Would you recommend to Mr Spock that he purchase both an internal hard disk drive and an external hard disk drive? Give **TWO** reasons to justify your answer. (3)

3.5.4 What new technology is replacing the magnetic hard disk drive? (1)

3.6 Mr Spock also needs to take photographs and be able to store them on the computer. He realises that he can use the camera built into his smartphone.

3.6.1 What are the units of measurement of the resolution of the photographs taken by the smartphone? (1)

3.6.2 Name **TWO** connection types that Mr Spock can use to connect his smartphone to his computer. (2)

3.6.3 Mr Spock asks you to save the photographs on his computer for him. You tell Mr Spock that you can either save the photographs as bitmap images or as jpeg images. Which format would you recommend considering that the photographs will be used on a website? Justify your choice. (2)

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QUESTION 4

Now that the hardware has been purchased, Captain Kirk turns to Chief Engineer Scott and asks him to set up the software of the computer system.

You inform him that there are two types of software, namely System Software and Applications Software.

- 4.1 4.1.1 Explain *System Software*. (1)
- 4.1.2 Explain *Applications Software*. (1)
- 4.2 Give an example of a software type that will do the following (do **not** use brand names).
- 4.2.1 Software supplied by the manufacturer of a device that aids the operating system in running the new device. (1)
- 4.2.2 Software developed especially for doing many calculations and creating graphs of data. (1)
- 4.3 Choose the term that **BEST** fits the explanation in each of the following cases:
- 4.3.1 Software that is available for downloading, using and distributing without cost. (1)
- 4.3.2 Software that is available for use for a limited time period; after which the software must be purchased in order to continue using it legally. (1)
- 4.3.3 Software for which a fee has been paid and a specific number of licences have been obtained. (1)
- 4.4 Scott purchases a *suite of programs* called Microsoft Office.
- 4.4.1 What does the phrase *suite of programs* mean? (2)
- 4.4.2 When Scott installs the program for the first time, a window pops up asking for the *product key* supplied with his purchase. What is the *product key* used for? (2)

4.5 After entering the product key, another window appears which is headed EULA.

Figure 2



There are two buttons on the screen, namely, *Accept* and *Decline* (**Figure 2**).

4.5.1 What does EULA stand for? (2)

4.5.2 What is covered in the EULA? (2)

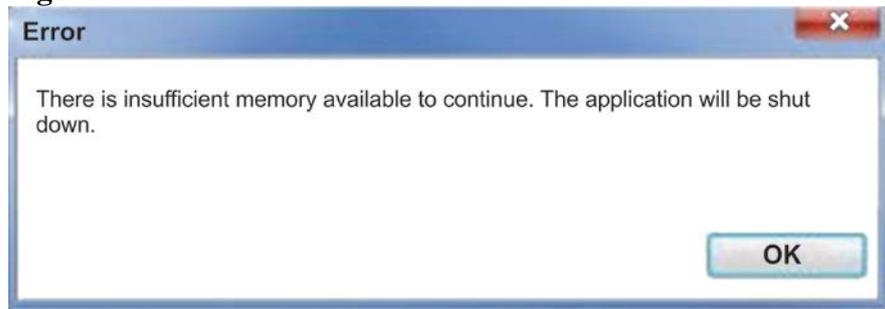
4.6 Scott clicks on the *Accept* button and the installation begins. The first screen that appears says *'The Program will load into the default folder c:\Users\Office11 and requires 1.03 GB of free space.'*

4.6.1 What is meant by a default folder? (1)

4.6.2 Based on the above path what drive will c: typically be? (1)

4.7 The installation stops suddenly and a message stating that *'There is insufficient memory available to continue. The application will be shut down.'* appears (**Figure 3**).

Figure 3



4.7.1 Explain what this message refers to. (1)

4.7.2 Give a simple hardware solution to the problem. (1)

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QUESTION 5

Scott now has the arduous task of connecting their computer system to the Internet. You are called in to assist. The whole process can be divided into four main parts.

- Hardware requirements
- Software requirements
- Internet connection
- Security considerations

5.1 Before you offer any advice, you need to ensure that the computer has the necessary hardware to connect to the Internet. The most common ways of connecting to the Internet in 2012 are via ADSL or through Wireless 3G.

5.1.1 Explain to Scott what these terms mean.

(a) ADSL (1)

(b) Wireless 3G (1)

5.1.2 Give TWO hardware requirements for each connection.

(a) ADSL (2)

(b) Wireless 3G (2)

5.2 Give ONE advantage of each of the connections.

5.2.1 ADSL (1)

5.2.2 Wireless 3G (1)

5.3 Scott chooses an ADSL connection. He will now need to sign up with an ISP.

5.3.1 Explain what *ISP* stands for. (1)

5.3.2 If you owned an ISP, what **ONE** service would you offer your clients, other than connecting to the Internet? (1)

5.4 Scott chooses an ISP called NetConnect. They offer capped packages, uncapped-shaped packages and uncapped-unshaped packages. Explain:

5.4.1 capped (1)

5.4.2 uncapped (1)

5.4.3 shaped (1)

5.4.4 unshaped (1)

5.5 NetConnect also mentions that they have **bandwidths** of between 384 **kbps** and 4048 **kbps**. Define the highlighted terms, namely

5.5.1 bandwidth (1)

5.5.2 kbps (1)

5.6 While he is signing the ISP contract, Ensign Chekov, the security officer, reminds Scott to find out about Internet security problems and their solutions.

5.6.1 What is meant by malware? (2)

5.6.2 Name **TWO** software package types that can protect your computer against attack (do **not** use brand names). (2)

[20]

QUESTION 6

The *Online Medical Advice Service* is now up and running. It is a popular site as generally medical costs are very high.

- 6.1 In order to make payments by clients easier, Captain Kirk opens an account at the local bank, First Provincial Bank. He immediately receives the following e-mail.

Figure 4

Dear Customer,

Your First Provincial Bank online banking access has been limited. We suspected someone other than you with **IP 126.370.42.86** trying to access your informations.

Please verify your banking information with us to show that you are not currently away.

You have to verify this as soon as possible to keep your online bank account from getting bloket.

Initiate the Process

This e-mail was sent from FPB secure server and is done for your banking safety.

Please **SIGNON** to e-mail us as mails sent to this address cannot be answered

When he moves his cursor over the **Initiate the Process** hyperlink, he sees the following

<http://easy-ridors.ru/sens/l.upgrade/home/loc/nnbe/fpb.php>

- 6.1.1 Give him **TWO** reasons why this e-mail is **NOT** from the First Provincial Bank. (2)
- 6.1.2 Give the term for this type of e-mail. (1)
- 6.1.3 What will happen if Captain Kirk did click on this hyperlink? (4)
- 6.1.4 Can malware protection software packages protect Captain Kirk from this e-mail? Give **ONE** reason for your answer. (2)
- 6.2 Dr McCoy accesses the video swopping site online called UsTube. He downloads a number of **commercially** available short videos showing how to deal with simple everyday aches and pains. Scott then joins these videos together and markets them on the website for a small fee without firstly obtaining permission to do so from the original author.
- 6.2.1 Is this legal for Scott to do? Justify your answer. (3)
- 6.2.2 Dr McCoy then creates a video presentation summarising a range of simple everyday aches and pains. Scott places this video as an introduction to the original video. Has the legal position of selling the video changed from Question 6.2.1? Justify your answer. (3)

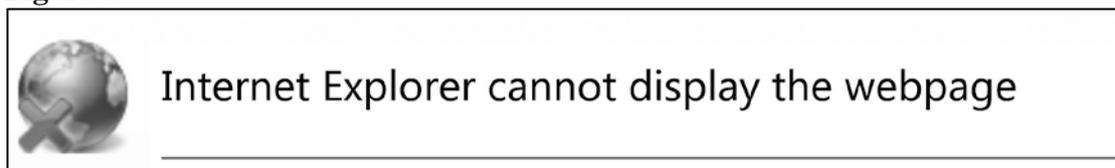
- 6.3 Name **ONE** possible program (use a brand name) that Scott could use to copy the video files onto CD or DVD. (1)
- 6.4 What is the term used for the copying files onto a CD or DVD? (1)
- 6.5 When Scott begins the program to copy the files, he sees the following options:
- Create a data CD/DVD
 - Copy the entire CD/DVD
 - Copy and format files so that they can be used on a dedicated CD/DVD player
- Recommend to Scott which option is **BEST** for his requirements. Justify your answer by explaining why **ONE** of the options is suitable and the other **TWO** are not suitable. (4)
- 6.6 While copying the files, Scott accidentally corrupts some copies. Give **ONE** option to Scott for the safe disposal of the unusable CD or DVD disks that will be environmentally friendly. (1)

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QUESTION 7

The *Online Citizens Health Bureau* has been in operation for a few weeks but some problems have been appearing in the network, as well as in the software. Lieutenant Sulu, who is in charge of maintenance, asks for your assistance in troubleshooting the following situations.

- 7.1 The computer operation is running slowly.
- 7.1.1 Outline to Mr Sulu **TWO** possible causes of this problem. (2)
- 7.1.2 Give **ONE** solution to each of the **TWO** possible problems. (2)
- 7.2 While busy working on the computer, the system suddenly shuts down completely and no matter what Mr Sulu does, he is unable to restart the computer.
- 7.2.1 Name **TWO** problems that could cause this to happen. (2)
- 7.2.2 Give **ONE** possible solution for each of the **TWO** problems. (2)
- 7.3 On a personal level, Mr Sulu finds that he is spending much of the workday playing online games and facebooking on the computer. Captain Kirk is not happy with the amount of time that he sees as 'wasted' by Mr Sulu.
- 7.3.1 Is Captain Kirk correct in his assessment of Mr Sulu's time usage? Justify your answer with **ONE** supporting argument. (2)
- 7.3.2 What **TWO** physical problems could Mr Sulu develop from his use of a joystick to play the online games? (2)
- 7.3.3 Other than to stop playing online games, how can Mr Sulu avoid the **TWO** physical problems named in Question 7.3.2? (2)
- 7.4 Since Mr Sulu is a part owner of the online company, Captain Kirk is unable to instruct him in his computer usage.
- 7.4.1 What document should Captain Kirk, as the employer, have asked Mr Sulu to sign, as the employee, when originally hiring him? (1)
- 7.4.2 Give **TWO** points that you would recommend be included in this document. (2)
- 7.5 When Scott tries to log onto the SA Whiskey Festival site via the Internet Explorer web browser, he gets the following message (**Figure 5**):

Figure 5

- 7.5.1 Mr Sulu suggests it could be that the webpage he was surfing to was blocked by filtering software. Suggest **TWO** other reasons why this message appeared. (2)
- 7.5.2 If the webpage was blocked by filtering software, do you think that this is acceptable for the business to do this? Justify your answer. (2)

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QUESTION 8

The computer system has now been installed. Captain Kirk has decided that they will create a database of information for the *Online Citizens Health Bureau*. It will contain medical advice for a small fee. He asks Dr McCoy to work out what knowledge will be needed for the system. Dr McCoy approaches you for help in organising and manipulating the information. You recommend that he sets up a database of medical info as well as of clients.

- 8.1 Explain what the Primary Key in a database is **AND** what it is used for. (2)
- 8.2 Using your knowledge of databases, design a possible structure of the personal information table for the clients needed by Dr McCoy's database. Give **TWO** relevant fields and the data type for each field that must be included in the table. The primary key chosen must also be clearly indicated. (A suitable table layout is given below, copy this into your Answer Book and fill in the required information.) (5)

Field Name	Data Type

Mark the Primary Key with a *.

- 8.3 Dr McCoy is concerned that he will have to retype the medical information into the table for each patient's diagnosis. You explain that you can link the two tables together for him.
 - 8.3.1 Give the phrase used by database programmers for this linking of tables. (1)
 - 8.3.2 What procedure will you follow, in general terms, to link the two tables? (2)
- 8.4 Explain the following terms to Dr McCoy **AND** in each case give an example based on the scenario:
 - 8.4.1 An input mask (2)
 - 8.4.2 A validation rule (2)
 - 8.4.3 A query (1)
- 8.5 A test patient has been diagnosed by Dr McCoy as having a number of possible diseases. Write down the structure of the command that will count the number of diseases on the database report that lists the diagnoses. (2)

[17]

120 marks

Total: 150 marks