



NATIONAL SENIOR CERTIFICATE EXAMINATION
SUPPLEMENTARY EXAMINATION – MARCH 2018

COMPUTER APPLICATIONS TECHNOLOGY: PAPER I

MARKING GUIDELINES

Time: 3 hours

150 marks

These marking guidelines are prepared for use by examiners and sub-examiners, all of whom are required to attend a standardisation meeting to ensure that the guidelines are consistently interpreted and applied in the marking of candidates' scripts.

The IEB will not enter into any discussions or correspondence about any marking guidelines. It is acknowledged that there may be different views about some matters of emphasis or detail in the guidelines. It is also recognised that, without the benefit of attendance at a standardisation meeting, there may be different interpretations of the application of the marking guidelines.

SECTION A

QUESTION 1

- 1.1 1.1.1 Dark Web (1)
- 1.1.2 eSports (1)
- 1.1.3 Traffic (1)
- 1.1.4 Worm (1)
- 1.1.5 Repository (1)
- 1.2 1.2.1 A set of instructions secretly incorporated into a program so that if a particular condition or set of conditions is satisfied they will be carried out, usually with harmful effects. (2)
- 1.2.2 (Long Term Evolution) (Award 1 mark if they simply expand the acronym) **OR** 4G technology which, at present, has the fastest data transfer speeds **OR** highest data transfer rates. (2)
- 1.2.3 A virtual machine is a software computer that, like a physical computer, runs an operating system and applications. (2)
- 1.2.4 Bandwidth hog is a slang term for Internet users/downloads/uploads who/that use substantially more bandwidth than other users/downloads/uploads on the same network. (2)
- 1.2.5 A network of devices connected using Bluetooth technology. (2)

[15]

QUESTION 2

- 2.1 C (1)
- 2.2 C (1)
- 2.3 D (1)
- 2.4 A (1)
- 2.5 D (1)
- 2.6 A (1)
- 2.7 C (1)
- 2.8 D (1)
- 2.9 D (1)
- 2.10 A (1)

[10]

25 marks

SECTION B

QUESTION 3

Question Number	Name of Device	Main Function
3.1.1	(Flatbed) scanner	Digitally scan in (input) hardcopy.
3.1.2	Graphics (Video) card	To display output on a monitor OR Connect a monitor to the computer
3.1.3	PCI(e) (expansion) slots	To connect expansion cards (daughterboards) to the Motherboard
3.1.4	Headphones	Output OR Listening to sound
3.1.5	USB memory stick	Portable storage of data OR External storage

(10)

3.2 3.2.1 Primary Memory (Storage), Secondary Storage (Memory). (2)

3.2.2 Primary Memory is made up of RAM or ROM chips **OR** is usually volatile. Secondary Memory is made up of Hard Drives **OR** CD/DVD Drives **OR** USB sticks **OR** is usually permanent. Primary Memory is used while the computer is operational **OR** to store data the computer is currently using. Secondary Memory is used to store data/information permanently **OR** for later use/retrieval. (4)

Alternative answers

3.2 3.2.1 SRAM (Static Random Access Memory), DRAM (Dynamic Random Access Memory). (2)

3.2.2 SRAM uses transistors to control and store data. DRAM uses capacitors to control and store data. **OR** SRAM is faster than DRAM. **OR** SRAM is larger than DRAM. **OR** SRAM is more expensive than DRAM. (4)

OR

3.2 3.2.1 RAM (Random Access Memory), ROM (Read Only Memory). (2)

3.2.2 RAM is volatile, ROM is permanent. RAM is used for the storage of programs (code) and data while in operation. ROM stores unchanging data (such as ASCII table). (4)

3.3 3.3.1 The keyboard has been constructed in such a way so as to minimise the strain placed on the user's hands. This can be done by building the keyboard in a V-shape **OR** built in 2 angled pieces so that the wrists are not bent when being used. (2)

- 3.3.2 Accept any **TWO** of: (*Accept any correct answers*)
- QWERTY
 - DVORAK
 - QWERTZ
 - AZERTY
 - QZERTY
 - Colemak
 - Workman
 - Norman
 - JCUKEN
 - Neo
 - Plover
 - BEPO
- (2)
- 3.4 3.4.1 Damage any hardware **OR** corrupt any data/program. (Award mark if they give an example of hardware or software instead)
- (1)
- 3.4.2 Use a power-surge protector **OR** Place a fuse into the circuit **OR** Use a suppression diode **OR** Use a circuit breaker Use an UPS (Uninterruptable Power Supply) **OR** Use a backup battery.
- (2)
- 3.5 3.5.1 (a) Data is transmitted 1 byte (8 bits) at a time (each bit on a separate wire).
- (1)
- (b) Data is transmitted 1 bit at a time (on a single wire).
- (1)
- 3.5.2 (a) Parallel data transmission rates are higher than serial data transmission rates.
- (1)
- (b) Serial data transmission is more accurate/has less errors.
- (1)
- [27]**

QUESTION 4

- 4.1 4.1.1 Accept any **TWO** of:
- Usually have mobile phone in your possession.
 - Easy to carry/are portable.
 - Can access Internet almost anywhere.
- (2)
- 4.1.2 Accept any **TWO** from:
- Easily lost.
 - May have poorer signal.
 - Display is smaller/keyboard is smaller.
 - Content is more limited.
 - Can be slower to access Internet.
 - Batteries might run out.
 - No mouse, so can be more difficult to navigate.
 - Expensive when compared to other methods of connectivity.
- (2)

- 4.2 4.2.1 A network that connects computers and other devices in a relatively small area **OR** a single location **OR** building **OR** a group of buildings. (2)
- 4.2.2 A network that connects smaller networks over a large area **OR** across a country **OR** over a wide area. (2)
- 4.2.3 Accept any **THREE** of:
- Hub
 - Switch
 - Bridge
 - Repeater
 - Modem
- (3)
- 4.2.4 Accept any **TWO** from:
- It stores information about which computer is connected to which network.
 - It receives data packets from an individual computer.
 - It passes the data packets to the appropriate switch.
 - To reduce data collisions.
 - It can connect the LANs to the Internet.
 - It can function as a firewall.
 - It can connect networks using different protocols.
- (2)
- 4.3 Accept any **ONE** from: (Two marks per answer, one mark for the description and one mark for the explanation.)
- Username and password – It is very difficult for hackers to guess passwords **OR** if you don't know the password you cannot gain access to the system **OR** data **OR** you need to know both username and password to gain access.
 - Biometric data **OR** retina scan, fingerprints/handprints **OR** voice recognition – Each of these is unique **OR** very difficult to replicate.
 - Magnetic stripe card for entry into school campuses – Difficult to replicate security information on stripe.
 - PIN (Personal Identification Number) for entry into school campuses – It is very difficult for hacker to guess PIN.
 - Digital certificate – Confirms the origin of any document transmitted in the network.

(2)
[15]

QUESTION 5

5.1 Accept any **THREE** from: (*Accept any correct answers*)

- Artist/Group/Orchestra name
- Soloist
- Music Title
- Genre
- Publisher
- Publication date
- CD or DVD format
- Instrumental or Vocals
- Reference Disk? (Y/N)
- (Accept any correct field)

(3)

5.2 Accept any **THREE** from: (*Accept any correct answers*)

- Sort the music according to Genre **OR** Artist **OR** Group.
- Search for a particular genre of music **OR** Artist **OR** Group.
- Search for all music published before a specific date **OR** on any other similar condition.
- Is a particular disk allowed to be borrowed (Reference or not?).
- Who is the most popular soloist **OR** Group **OR** Artist?

(Accept any correct query. Note: do not accept any repeated queries where, for example, the first query is search by Artist and the second query is search by Group.)

(3)

5.3 5.3.1 A step by step **OR** sequential set of instructions to solve a problem.

(3)

5.3.2 Input, Processing and Output

(3)

[12]

QUESTION 6

6.1 It is illegal to make a copy of proprietary software

OR

It is illegal to copy software and make money

(2)

6.2 Accept any **TWO** from:

- An electronic download can be installed and deleted from your computer so it could be harder to copy to a disk).
- They can track where an illegal copy of a game might have come from.
- There will be a wider audience for the product **OR** more ways to buy the game.
- Saves money on CDs **OR** cheaper to produce **OR** cheaper distribution costs.
- Helps environmental targets **OR** eco credentials of the company.
- Collection of marketing data.

(2)

6.3 Accept any **TWO** from:

- The company's carbon footprint will be reduced as less power is used.
- Fewer non-renewable resources are used to create the disk **OR** packaging.
- Lower emissions from transport **OR** distribution of products.
- Less waste produced, meaning less landfill.
- Recycling costs are lower.

(2)

6.4 6.4.1 Accept any **ONE** from: (*Accept any correct answer*)

- People spending time on technology rather than with family **OR** friends.
- Poor impact upon health due to inactivity.
- Time spent using technology rather than doing **OR** completing work **OR** school work.
- More likely to have accidents such as a car crash due to using technology in inappropriate situations.
- Dangers of giving out personal details leads to personal issues such as bullying.
- People becoming ill **OR** over-stressed due to the inability to stop working due to always available communication.
- Can risk not developing proper social skills.
- Lack of sleep due to over use of technology which affects work **OR** school performance.
- Can lead to inability to focus **OR** pay attention.
- Lack of sleep **OR** food leads to illness.
- Addiction is similar to other addictions and needs to be treated.

(1)

6.4.2 Accept any **ONE** from: (*Accept any correct answer*)

- Use of technology is essential in modern world (need to develop skills to be successful).
- Technology develops hand-eye co-ordination which is essential in modern world.
- Technology use makes life easier.
- Technology use linked to improved reading skills.
- Friendships can be built online (social networking) **OR** easier to maintain contact with friends and family (e.g. Skype).
- Access to information about health and wellbeing online.
- Exercises at home using digital devices such as the Wii.
- Health and fitness monitoring.
- Use of technology to stay safe **OR** track location.

(1)
[8]

QUESTION 7

- 7.1 Form (1)
- 7.2 Relational Database (1)
- 7.3 Accept any **TWO** of:
- Data does not have to be typed in twice **OR** referential integrity.
 - Quicker to enter new data.
 - So fewer errors are likely.
 - Less memory **OR** storage capacity is used.
 - It is easier to edit data.
 - Queries can be done across the tables. (2)
- 7.4 Code **OR** primary key (1)
- 7.5 BookLoaned (1)
- 7.6 Cost (1)
- 7.7 Date or Time/Date (1)
- 7.8 Input Mask (1)
- 7.9 0000/00/00 (1 mark for the zeros and 1 mark for the /) **OR** 9999/99/99 (1 mark for the 9s and 1 mark for the /) (2)
- 7.10 tblBook.Published > 1990 (Award the mark for tblBook.Published even if the table name is left out) (2)

[13]

75 marks

SECTION C

QUESTION 8

- 8.1 8.1.1 Option C – Nintendo Wii (1)
- 8.1.2 Option C – Nintendo Wii (1)
- 8.1.3 Accept **TWO** from: (*Accept any correct answers*)
- Hand-held **OR** small **OR** light.
 - Has a built-in display **OR** don't need a separate monitor.
 - Glasses not needed for 3D display.
 - Controls **OR** controller built-in **OR** no other equipment needed.
 - Uses battery power.
 - No wires.
- (2)
- 8.1.4 Accept **TWO** from: (*Accept any correct answers*)
- CD/DVD/Blu-ray drive
 - Hard drive **OR** Removable storage
 - Games Controller (e.g. wireless controller/steering wheel/joystick/remote control/balance board/Move/playstation eye)
 - Activity monitor (e.g. heart rate)
 - Headset **OR** headphones **OR** microphone and speakers
 - Keyboard **OR** keypad
 - Motion sensor (e.g. Kinect)
- (2)
- 8.1.5 Accept **TWO** from: (*Accept any correct answers*)
- Bluetooth
 - WiFi / wireless
 - USB **OR** serial cable **OR** Firewire **OR** Thunderbolt
 - Infrared **OR** IrDA
 - Line in/Line out **OR** minijack **OR** headphone
 - Socket/plug
 - AudioVisual cable **OR** Composite cable **OR** RCAcable **OR** RGB cable **OR** SCART **OR** VGA **OR** HDMI
- (2)
- 8.1.6 Allows user to perform many **OR** other tasks other than playing games, for example browsing the internet **OR** watching movies **OR** listening to music **OR** social networking.
OR
Allows user to perform many or other tasks so that they don't need more than one device.
(Accept: They don't need more than one device, but award 1 mark) (2)
- 8.1.7 Accept **TWO** from:
- Can play anywhere in the room.
 - Easy to set up **OR** add more remotes **OR** fewer cables to connect **OR** tangle.
 - Allows users to play new types of games.
 - Enhances the user experience **OR** more immersive.
 - People more likely to play **OR** easier to play **OR** intuitive interface.
 - Users may get more exercise.
- (2)

- 8.1.8 Accept any **TWO** from:
- Disabled players may have restricted, slow movement **OR** difficulty holding things.
 - Disabled players may have difficulty communicating with the console.
 - At a disadvantage because of disability **OR** makes it difficult to play the game. (2)
- 8.2 8.2.1 Option A – Microsoft Xbox 360 **OR** Option B – Sony Playstation 3 (1)
- 8.2.2 Option C – Nintendo Wii (1)
- 8.3 Able to run older games or software without extra modifications or adaptations. (2)
- 8.4 The (proprietary) operating system is embedded in the consoles **OR** pre-installed. (2)
- 8.5 8.5.1 Accept **ONE** from:
- Word processor
 - Spreadsheet
 - Publishing **OR** desktop publishing
 - Drawing package (1)
- 8.5.2 Mail merging. (1)
- 8.6 8.6.1 Accept **TWO** from: (*Accept any correct answers*)
- RSI **OR** Repetitive Strain Injury
 - Carpal Tunnel Syndrome
 - Eye Strain
 - Back Strain **OR** Neck Strain
 - Headaches **OR** Tiredness **OR** Irritability (2)
- 8.6.2 Accept **TWO** from: (*Must match the answers chosen in Question 8.6.1*)
- Regularly stop playing for a moment and flex your fingers and hands.
 - Regularly stand up and stretch your legs and body.
 - Ensure that your sitting height makes you look downwards towards the screen.
 - Regularly look up off the screen and focus on a distant point.
 - Ensure that your chair and controller are ergonomically designed.
 - Sit correctly.
 - Stop playing and sleep or eat. (2)

8.7	Field Name	Data Type	Data Restriction Method	
8.7.1	SchoolGrade	Text	ListBox OR ComboBox OR Validation Rule	(2)
8.7.2	ConsoleType	Text	ListBox OR ComboBox OR Validation Rule	(2)
8.7.3	FeePaid	Yes/No OR Boolean	ListBox OR ComboBox OR Validation Rule	(2)

8.7.4 Record (1)

8.7.5 A field that uniquely identifies each record in the table. (2)

8.7.6 LearnerId (1)

8.8 Accept **ONE** from: (*Accept any correct spreadsheet program*)

- (Microsoft) Excel
- Lotus 123
- OpenOffice Calc
- VisiCalc
- Gnumeric
- Quattro Pro
- Multiplan
- Calligra Sheets
- SuperCalc
- LibreOfficeCalc
- Pyspread
- GNU Oleo
- Lotus Improv
- Boeing Calc
- 3D Calc
- Quantrix

(1)

8.9 Accept any legitimate problem and solution for each situation.

Question number	Possible problem	Possible solution	
8.9.1	There is no VGA output on the console.	Use a VGA to HDMI converter connecting cable	(2)
8.9.2	The school's network firewall is blocking the connections OR the learners are using the incorrect WiFi password OR learners do not have permissions to use the WiFi OR the WiFi is not turned on	Reset the school firewall to allow access OR use the correct password OR give each learner a login name and password OR turn on the WiFi	(2)
8.9.3	The resolution of the graphics display is incorrectly set OR a critical piece of hardware has failed	Reset the graphics display resolution OR replace the faulty hardware	(2)
8.9.4	The trip switch (circuit breaker) on the electrical circuit board has tripped OR a critical piece of hardware has failed	Reset the trip switch (circuit breaker) OR replace the faulty hardware	(2)
8.9.5	US electronic devices use a different electrical voltage to South African devices	Use a voltage adapter to connect the US device	(2)

8.10 8.10.1 Use a firewall. (1)

8.10.2 Accept **TWO** from:

- Use a software firewall.
- Use a content filtering **OR** control program.
- Use a virtual proxy server.
- Set up a "white list" of acceptable websites. (2)

50 marks

Total: 150 marks