COMPUTER APPLICATIONS TECHNOLOGY: PAPER II

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   I

       1.1.2   A

       1.1.3   G

       1.1.4   C

       1.1.5   D

1.2   1.2.1   D

       1.2.2   B

       1.2.3   A

       1.2.4   A

       1.2.5   C

       1.2.6   D

       1.2.7   C

       1.2.8   D

       1.2.9   B

       1.2.10   B

QUESTION 2

2.1   2.1.1   MAN

      2.1.2   wiki

      2.1.3   CAPTCHA

      2.1.4   .rtf

      2.1.5   Mbps

      2.1.6   metadata

2.2   2.2.1   The pattern/signature/piece of code that uniquely identifies a virus.

      2.2.2   Usually a 'patch' to fix bugs.

             OR

             The addition of major/latest/minor new features to your software.

      2.2.3   Secure Digital, officially abbreviated as SD, is a proprietary non-volatile memory card format.

             OR

             A Secure Digital (SD) card is a very small flash memory card. SD cards are used in smartphones, digital cameras, e-books and car navigation systems.

      2.2.4   A large circuit board inside the computer box containing different slots and connections that allows all the components of a computer to connect.

SECTION B

QUESTION 3   SYSTEM TECHNOLOGIES

3.1   3.1.1

[<https://www.pcgamer.com-hardware-guide>]	
Name of hardware	CPU
Main function	The part of the computer that processes all data and carries out instructions. **OR** It is the electronic circuitry in a computer that executes instructions that make up a computer program. **OR** It is the arithmetic logic processing of data (Also accept other components such as registers.)

3.1.2

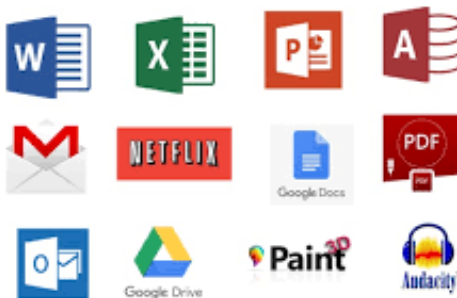|	
[<https://www.networkdrops.com/>]	
Name of hardware	Fibre Optic Cable (Fibre only will be accepted)
Main function	Fibre-optic cable is a physical medium that provides access to the Internet transmitting data using pulses of light that travel across fibre cables at the speed of light. OR Used to give access to a network

3.1.3

[<https://www.webopedia.com>]	
Name of device	Virtual Keyboard
Main function	A virtual keyboard is a device that allows the input of characters without the need for physical keys as the keys are displayed on a flat surface. **OR** The interaction with the virtual keyboard happens mostly via a touchscreen interface but can also take place in a different form in virtual or augmented reality.

3.1.4

[<https:www.learncomputerscienceonline>]	
General name to describe the software	Application Software (Accept Apps)
Main function	This is a program or group of programs that perform specific tasks for an end-user. **OR** Programs that allow the end-user to directly interact with the computer.

3.2   3.2.1 The maximum number of pages that can be printed in a month without the printer failing or breaking.

3.2.2
- More reliable (doesn't have nozzles that can clog or ink that can dry out).
- Provides sharper/crisper text.
- Capable of producing good-quality colour printouts.
- Generally prints faster.

*(Any **ONE** of the above)*
[Don't accept any answers related to cost]

3.3   3.3.1 Formatting will erase/remove all data/files on the disk.

        3.3.2 (a)   **Recommendation:** Disk defragmenter/Utility Software

               (b)   **How the software works?** A disk defragmenter is a tool that reorganises/rearranges the file's parts, so they can be loaded from the disk more quickly. It does not free up disk space.
                      *(Any **TWO** of the above)*

3.4   3.4.1 Fast, repetitive (finger) actions, such as texting
               Poor posture
               Forceful use of keys

               *(Any **ONE** of the above)*

        3.4.2
- Curved keyboard/angled keys
- Palm/wrist rest
- Soft keys
- (Additional) shortcut keys, etc.

               (*Any **TWO** of the above*)

        3.4.3
- Don't work for long periods – take breaks.
- Do exercises (wrist/fingers) while at the computer.
- Use keyboard shortcuts.
- Arrange the physical desktop so everything is within easy reach, etc.

               *(Any **ONE** (except use of ergonomically designed equipment))*

3.5   3.5.1 The 1.3 MP is important as it represents the maximum resolution of the image.

               OR

               The 1.3 MP is important as it represents the number of megapixels or image/picture element.

               OR

               The 1.3 MP is important as it represents the quality of the image.

               *(Any **ONE** of the above that relates to the image displayed by the webcam)*

        3.5.2
- VoIP/Skype usage/social communication/Teams Meeting/Zoom
- Video conferencing/collaborating with other users/Presenting/ Seeing presenter/demonstrations

               *(Any **TWO** of the above)*

QUESTION 4   INTERNET AND NETWORK TECHNOLOGIES

4.1   WLAN connection (Wireless Local Area Network Connection)

4.2   A router allows for different technologies to send and receive data Connecting (traffic/internet) over different media (multiple devices)

4.3   4.3.1
- Provide all users with passwords/encryption.
- Biometric access to mobile devices.
- Restrict access to only certain files on the network.
- Whitelist allowable IP addresses. IP Whitelisting looks at the user's IP address and compares it to a list of "allowed" IP addresses to see if this device is authorised to access the account.
- Implement two-factor authentication/identification in addition to the usual log-in and password. The user will need to have another device (typically a mobile device) close by since he/she will need to enter a code that will instantly be generated.
- Implement a **firewall**. This is a network security device that monitors incoming and outgoing network traffic and decides whether to allow or block specific traffic based on a defined set of security rules.

*(Any **TWO** of the above)*

4.3.2
- Power failure/Load Shedding
- Power surges
- Hardware failure/disk crash, etc.
- Malware

*(Any **TWO** of the above)*

4.4   Network administrator (accept IT/computer technician)

4.5   4.5.1
- mail.yahoo/yahoomail
- Gmail
- Hotmail
- Ymail
- Webmail
- iCloud, etc.

*(Any **ONE** of the above)*
(Note to marker: Accept any valid web-based e-mail service.)

4.5.2
- E-mail can be accessed at any location with Internet access.
- Access to your e-mail from all your devices.
- E-mails are not lost in case of a computer crash.
- No need to upgrade software/no need to purchase or install software/Saving on costs
- May have better e-mail management options, e.g., regarding spam and phishing reporting.
- Tighter integration with other web-services, e.g., Google Drive for attachments.
- Save hard drive storage space

*(Any **TWO** of the above)*

4.5.3 BCC Field

4.6
- Broadband/high fast/speed Internet connection.
- Uncapped/large data allocation/bundle/bandwidth
- Unshaped connection.
- Reliability/Stability

*(Any **TWO** of the above)*

4.7   4.7.1 To extend the functionality of a browser/view extra multimedia effects.

OR

Enhancing browsing experience

4.7.2
- Adobe Acrobat
- Java(Script)
- QuickTime
- RealPlayer
- Shockwave Player
- Silverlight
- Windows Media Player, etc.

*(Any **TWO** of the above)*

4.8   YouTube
TikTok
Vimeo
Twitch

QUESTION 5   INFORMATION MANAGEMENT

5.1   5.1.1 Input mask, validation rules, list/combo box

*(Any **TWO**)*

5.1.2 • What type of vehicle will they be working on?
  • What type of service does the customer want to be done?
  • The registration number of the vehicle to ensure that they work on the correct vehicle.
  • The required tyre/shocks/battery size.
  • Does the customer require the balancing and wheel alignment service?
  • Does the customer want to keep the replaced items, or can Supertracker dispose of them?

(*Any **TWO** of the above*)

5.1.3 GIGO

5.2   **Input**
  • Key in the make, model year, etc. of the vehicle.

Processing
  • Once the information is captured, allow the computer to pick up the sensor readings from the instruments that are placed on the wheels, and determine what work needs to be done.

Output
  • The information received will indicate which wheel is not aligned and what settings will need to be changed to align the wheels accordingly.

*(Any **CORRECT** answer that explains input, processing, and output)*

5.3   • Lock keyboard so there is no unauthorised access to the computer.
  • Backup/store the data on external hard drive in a secure location.
  • Install a security camera.
  • Allow room key access only (accept lock room).
  • Use security cables to 'lock down' equipment.
  • Security guards.
  • Tracking device(s).
  • Alarm.
  • Access card key/Biometric

*(Any **TWO** valid methods)*

QUESTION 6   SOCIAL IMPLICATIONS

6.1   6.1.1
- Microsoft Teams
- Google Classroom
- Zoom
- Skype
- WhatsApp
- Telegram
- Webex
- Moodle
- Udemy

*(Any **TWO** valid platforms)*

6.1.2   Acceptable Use Policy (accept AUP)

6.2
- Make sure your monitor's sleep feature is set to power down automatically when you are away from it for a while.
- Make sure you turn your monitor off each night and when you are going to be away all day, or for a few hours. This will save a great deal on power usage.
- Lower the display brightness. The brighter your monitor is, the more power it uses.
- If you have an animated screen saver, turn it off.
- Enable 'standby' or 'hibernate' mode to save waiting a long time for your computer to boot up.
- Keep your computer tuned up. Just like a car, a computer needs to be kept in good order or it uses more power, gets hotter and runs more slowly. Part of this is to defrag the memory every month or to optimise your computer.
- Recycle your old computer when you need a new one, rather than sending it to landfill.
- When you purchase a new computer, buy 'green'. In fact, most laptops now have energy-saving features, and they can be set up like a desktop model by using full-sized monitor, keyboard and a wireless mouse.
- Digital Copy instead of printing

*(Any **THREE** suitable answers)*

6.3   **Definition:**

The name given to the use of good manners and showing common courtesy to other users when using the internet.

Example

- Make sure identification is clear in all communications. Begin with a salutation and end with your signature.
- Review checking spelling what you write and try to interpret it objectively. When we speak face to face and are misunderstood, we have an on-the-spot opportunity to rephrase our words. In writing, we must strive twice as hard to be under-stood, as we do not have the benefit of modifying or elaborating in real time.
- Do not use All caps ("I'M SHOUTING") and exclamation marks ("Give me a break!!!") as these can be misinterpreted as intense anger or humour without the appropriate context.
- If you wouldn't say it face to face, don't say it online. When you're working online, you're safe behind a screen, but that's no excuse to be ill-mannered or say things you would never say in public.
- Don't assume everyone understands where you're coming from. Sarcasm and wit are often the spice of in-person conversation, but in online discussion, it can not only lose its edge but come back to bite you!
- Don't spam. Don't take advantage of your connection with the other students in your online classroom to forward e-mails and links regarding your political/religious beliefs or to sell your services.
- Use emoticons. In casual chatroom settings, emoticons can help convey feelings that may otherwise get lost in translation, including humour, exasperation, exhaustion and even confusion. (Also accept in do not use emoticons as long as good explanation)
- Respect others' privacy. Don't give out another student's personal e-mail address without permission.
- Remember, if it's on the internet, it's everywhere. Don't share personal information about yourself in a public online forum, especially something that could put your safety or security at risk.
- Follow the rules. Topics related to academic integrity and student expectations; online forums also have rules of conduct.
- Forgive and forget. If you're offended by something another student says online, keep in mind that you may have misunderstood their intentions. Give them the benefit of the doubt.

*(Any **ONE** suitable answer)*

6.4
- Eye-tracking devices
- Head movement devices
- Large key keyboards
- (Large) trackballs
- Joysticks
- Foot pedal control devices
- Sip and puff devices, mic etc.

*(Any **TWO** suitable answers)*

[Note: answers must be hardware-related and specifically address motor problem]

6.5   6.5.1 **Harassment:**

Is when you are continuously bothered with messages or data that you do not want to receive.

OR

It is data that spreads false and potentially harmful information about you to others.

[Do not accept examples as the term must be defined]

6.5.2 **Cyber-attack:**

Is an attack on the infrastructure of the Web itself causing problems conducting business?

OR

Is an attack that floods a server to block normal users to get access to the system.

[Do not accept examples as the term must be defined]

QUESTION 7 SOLUTION DEVELOPMENT

7.1
- Press the F1 key
- Click on the Question Mark/Contact Support/Show Training/What's new when selecting the Help Tab
- Search bar

*(Any **ONE** of the above)*

7.2 **Advantage:** Saves ink/toner

Disadvantage: Poor-quality printout

7.3
- Incorrectly spelled word could be a homophone (e.g., 'sea' instead of 'see').
- Incorrectly spelled word could have been added to dictionary in error.
- The incorrect proofing language could have been selected.
- Different dialect used English (USA) instead of English (SA).
- Ignored correct options

*(Any **TWO** of the above)*

7.4 Filter

7.5 Must be typed in a Text Box 'ab' instead of 'Aa' (not in a Label)
Function name is incorrect (should be AVG)
Field name 'Score' is not enclosed in square brackets

7.6 Conditional Formatting

7.7 Wrap text

OR

Using Alt+Enter

7.8 7.8.1 CSS (Cascading Style Sheets) or Java Script

7.8.2 <ul> displays bulleted (unordered) list
 displays a numbered (ordered) list

SECTION C

QUESTION 8   INTEGRATED SCENARIO

8.1   8.1.1   Grid Computing

       8.1.2   Funding a project or venture by raising many small amounts of money from lots of people, mostly via the Internet.

8.2   8.2.1   The 12 cores mean that there are 12 physical processors included in a single chip and this makes the computer perform far better than when using a dual or quad-core processor.

                This is advisable as the scientists will have to run multiple tasks while doing research and they will need fast computers.

       8.2.2   Secondary storage

       8.2.3   Computers are often attacked by computer viruses and so need to be scanned for viruses and eliminate them. The scientist will need an anti-virus program to detect virus definitions that are created on a regular basis.

                Examples: Norton, Avast, AVG, NOD32, McAfee, Kaspersky, etc. (Any suitable example)

       8.2.4   Durability, because it has no moving parts should the disk fall the scientist data will still be safe.

                OR

                Uses less power than an HDD and so would be cheaper to run leaving more money for research purposes

                (*Any **TWO** suitable answers; to receive the 2nd mark the benefit should refer to how it will be beneficial for the scientist*)

       8.2.5   A video card (also called a graphics card, display card, graphics adapter, or display adapter) is an expansion card which generates images to a display device (such as a computer monitor).

                OR

                A video card allows the monitor to produce fast action sequences, ideal for high-definition video

8.3   8.3.1   • Hardware failures can happen, for example the disk drive can crash.
                • Data can be lost if computers are stolen.
                • It is possible for disasters such as fires, floods, etc. that can destroy hardware.
                • Files can be corrupted by power fluctuations.
                • Files can get a virus.
                • Accidental delete

                (*Any **THREE** suitable answers*)

8.3.2
- Use software that automatically manages your backup process, so scientist don't have to do this manually every time. (Time management)
- Only back up data recently created/used data/files and not all the data/files (the idea of an incremental backup). (Size)
- Back up files onto external hard drives/online as well. (Safety/ Medium)
- Keep the backups off-site. (Safety)
- Perform 'housekeeping' so that the scientist doesn't have multiple copies of the same files.
- Consider archiving large files that scientist doesn't often use. (Size)
- Check that backups are working by restoring some of the files from the backups from time to time. (reliability)
- Cost

(*Any **TWO** suitable answers*)

8.4   Random Access Memory (Accept RAM)

8.5
- Manages the hardware/device (including other resources such as monitors)
- Provides the user interface
- Manages all applications/programs/File management
- Provides basic security
- Memory Management
- Processor Management
- Control over system performance
- Job accounting
- Error detecting aids
- Coordination between other software and users
- Multitasking

(*Any **FOUR** suitable answers*)

8.6
- The scientists can make notes while speaking without having to write down their findings while the device records the findings.
- The scientists can insert sketches and pictures of their findings.
- The scientists can synchronise their findings between devices and share information on the results they have with others.

(*Any **ONE** suitable answer referring to capturing notes using technology but not writing down their notes*)

8.7
- Large files can be transferred easily without the size restrictions that are often placed on e-mail attachments.
- Security can be maintained by using a username and password.
- The transfer of a file can be scheduled to occur at a time when the network is not too busy.
- The files will be available to all the scientists who share the FTP server.

(*Any **ONE** of the above*)

QUESTION 9   INTEGRATED SCENARIO (continue)

9.1   They can purchase ergonomically designed hardware, for example keyboard/mouse or furniture such as chairs

9.2   9.2.1   • Closed questions make it easier to capture and process the answers to give a result.
        • The respondent can only select a response from a list or set of options therefore the respondent clearly understands what is required.

        (*Any* **ONE** *suitable answer if it refers to the benefit of using closed questions in a questionnaire.*)

        9.2.2   Biometric identification

9.3   (a)   **Bandwidth:** The total amount of data that can be transferred from one point to another in a given period of time.

       (b)   **Broadband:** A high-speed, high-bandwidth connection to the Internet.

9.4   9.4.1   **Function of QR code:** It is a two-dimensional square barcode that can store much more data than a conventional barcode.

        OR

        It is a barcode that allows the storing of a lot of data on a specific topic/ product.

        OR

        It is a code that takes the reader to a site where data on a specific topic/ product can be accessed.

        Requirements: The scientists will need a device such as a smartphone equipped with a camera and they will need to have special software/internet connection to interpret the code.

        9.4.2   RSS is a service that automatically provides users with updated content, such as new entries made by the scientists without having to scan or search for the information.

9.5   9.5.1   Comment

        9.5.2   • Must be a space between 'font' and 'size'
                • Must be 'color'
                • Must be 'Arial'
                • 12 is an invalid font size [not necessary to state that max size is 7]
                • Double " missing

                (*Any* **TWO** *of the above*)

9.6   The investor needs to refresh or close and open the page again to receive updated information.

9.7   9.7.1   (a)   **Executable files**

A file that is in a format that runs/install directly without the need for any additional software or facility.

(b)   **Compressed files**

This type of file is used to store data in a format that requires less storage space.

9.7.2   **Reason:**

Compatibility Mode temporarily disables new or enhanced Word features so that the document can still be edited by people using the earlier version of Word.

Example:

File Save As options select the option to ensure 'lower' version of current document you are working in

OR

File info - Compatibility

9.8   9.8.1   **Hardware** – Router, Network cards, Cable, Hub, Bridge, Switch, Modem.

*(Any **ONE** of the above)*

Software – Operating system that allows connection, network monitoring software.

*(Any **ONE** of the above)*

9.8.2   A firewall is a network security device/hardware/software that monitors incoming and outgoing network traffic and decides whether to allow or block specific traffic based on a defined set of security rules.

9.9   Add section breaks (so that page 3 is in a section by itself) or select information.
Apply landscape formatting to that section or the selected information.

9.10   Caption

9.11   Mail merge

9.12   So that the name will update automatically (e.g., if the document is renamed.)

Total: 150 marks