



NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2022

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 B

1.1.2 A

1.1.3 C

1.1.4 A

1.1.5 D

1.1.6 C

1.1.7 C

1.1.8 C

1.1.9 B

1.1.10 D

1.2 1.2.1 E

1.2.2 J

1.2.3 B

1.2.4 H

1.2.5 C

QUESTION 2

- 2.1 2.1.1 Contrast ratio
- 2.1.2 beta
- 2.1.3 Exporting
- 2.1.4 MID
- 2.1.5 RAM
- 2.2 Expanding the following acronyms. (Correct wording **MUST** be given.)
- 2.2.1 **GPS** – Global Positioning System
- 2.2.2 **RFID** – Radio Frequency Identification
- 2.2.3 **HDMI** – High-Definition Multimedia Interface
- 2.2.4 **Wi-Fi** – Wireless Fidelity
- 2.2.5 **USB** – Universal Serial Bus

SECTION B

QUESTION 3 SYSTEM TECHNOLOGIES

3.1

Question number	Name of hardware/software	Main function
3.1.1	Wireless earbuds/earphones	<p>Connecting, or pairing, with the device you want to use, through a radio or infrared signal to listen to any sound.</p> <p>OR</p> <p>Headphones that connect to a device, such as a smartphone, stereo speaker, television, gaming console, computer, or other electronic devices without using a wire or cable to listen to any sound.</p> <p>OR</p> <p>The earbuds make a connection with the phone, the phone determines what type of device the headphones are, and then when you play music the phone sends the audio data to the headphones which decode the data and play sounds the same way standard speakers do.</p> <p>(Any suitable answer that mentions a device connecting to the earbuds to listen to any sound)</p>
3.1.2	Snipping tool/Snip and sketch	<p>Screenshot utility included in Windows Vista and later versions that can take screenshots in a variety of ways.</p> <p>OR</p> <p>Take a snapshot to copy words or images from all or part of your PC screen.</p> <p>OR</p> <p>Snipping Tool is a Microsoft Windows screenshot utility to create screenshots.</p> <p>(Any suitable answer that indicates that this is used for screenshots)</p>
3.1.3	<p>SSD/Solid state drive</p> <p>Do not just accept M2 can be SSDM2</p>	<p>An SSD is a type of mass storage device similar to a hard disk drive (HDD). It supports reading and writing data and maintains stored data in a permanent state even without power.</p> <p>OR</p> <p>A solid-state storage device that uses integrated circuit assemblies to store data persistently, typically using flash memory, and functioning as secondary storage in the hierarchy of computer storage.</p> <p>OR</p> <p>A solid-state storage device is a non-volatile storage device.</p> <p>(Any suitable answer that indicates that it is a secondary storage device)</p>

3.1.4	Trackball	<p>A trackball is an input device used to enter motion data into computers or other electronic devices. It serves the same purpose as a mouse but is designed with a moveable ball on the top, which can be rolled in any direction.</p> <p>OR</p> <p>The trackball is an upside-down mouse that rotates in place within a socket. The user rolls the ball to direct the cursor to the desired place on the screen and can click one of two buttons (identical to mouse buttons) near the trackball to select desktop objects or position the cursor for text entry.</p> <p>OR</p> <p>A trackball is a pointing device consisting of a ball housed in a socket containing sensors to detect rotation of the ball.</p> <p>OR</p> <p>Input device used by disabled people instead of a mouse.</p> <p>(Any suitable answer that explains the use of a ball for input)</p>
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3.2 Primary memory:

Is the component of the computer that holds data, programs and instructions that are currently in use

OR

Main memory inside a computer/directly accessed by CPU

Example: RAM/ flash memory/cache memory

Secondary storage:

Non-volatile/persistent memory that is accessed by a device that is part of a computer system/not directly accessed by the CPU.

OR

Permanent or long-term storage/it retains its data with or without electrical power.

Example: HDD/SSD/ROM

Removable storage: any type of storage device that can be removed from a computer while the system is running/plug and play storage.

Example: USB flash drives, CDs, DVDs and External HD.

3.3 3.3.1 Graphics/Video card

3.3.2 HDMI

- 3.3.3
- It is old technology (Obsolete)
 - Does not support audio
 - Does not support high-resolution video
 - Does not support higher refresh rates
 - The analogue signal is more prone to interference
 - Many modern devices cannot connect to this port
 -
- (Any **TWO** of the above)

- 3.4
- Stylus/apple pencil/ipencil/electronic pen
 - Graphics tablet
 - Digital tablet
 - Touch screen
 - Interactive Whiteboard
 - Scanning device
- (Any **ONE** of the above)

3.5 Open the Task Manager

OR

Press Ctrl+Alt+Del/shift Q to Force quit (apple)/info force quit

Select the task/program that has stopped working and terminate the program.

- 3.6
- You can use the software from any computer with an Internet connection.
 - Software is always up to date.
 - You don't have to download software and install it on your computer, which saves storage space.
 - The hardware requirements of the computer or device that you are using to run the software are not as high, which means you do not need to upgrade your computer.
 - Compatibility issues are not generally a problem.
 - Many online applications also provide some free online storage space.
 - Data is automatically saved and backed up
- (Any **TWO** of the above)

QUESTION 4 INTERNET AND NETWORK TECHNOLOGIES

- 4.1
- Sharing of hardware
 - Sharing of software/updates
 - Social networking/gaming
 - Sharing an Internet connection
 - Centralised security
 - Centralised data storage
 - Distributing workload
 - Communication between devices/people
- (Accept suitable examples of tasks or technologies e.g., file sharing, grid-computing, sharing printers)
(Any **TWO** of the above)
- 4.2
- 4.2.1
- The video footage is contained in large data files.
 - Netiquette requires not sending large attachments/Do not e-mail large files.
 - Large e-mail attachments can be blocked/flagged as spam/can be corrupted/bad quality.
 - Bandwidth constraints/slow to upload or download.
 - Data cost per MB/GB.
- (Do not accept any answer on privacy/piracy/format of the video.)
(Any **TWO** of the above)
- 4.2.2
- Podcasting is when video/audio clips are made available/published online (upload/download) for downloading purposes or to listen to online.
- 4.2.3
- SMS
 - Blog post
 - Website update
 - RSS feeds
 - E-mail
 - Instant message/App notification
- (Any **TWO** of the above)
- 4.3
- 4.3.1
- SOHO/Small office home office network
OR
HAN/Home Area network
- 4.3.2
- Advantages:**
- Accessibility home area network gives better accessibility for the devices in the network for accessing Internet connection.
 - Resources sharing within the home environment
 - Easy to install and configure
 - SOHO network infrastructure devices are available at lower prices.
 - Low capital outlay. Lower capital outlay is required compared to having a house and an office.
 - The savings, in terms of both money and time, for not having to travel to and from work.
- (Any **TWO** of the above)

4.3.3 VPN is a network implemented via the Internet to enable the user to anonymously log onto a protected network from a remote location.

4.4 Social engineering refers to the use of deception to manipulate or 'con' someone into giving out confidential information (such as a password or account number) or into giving access to their computer or premises.

4.5

- Could carry links to malware
- Irritating/Distracting/Annoying
- Save on bandwidth/data.
- Inappropriate content

(Any **ONE** of the above)

4.6

- Pages using flash graphics either do not load or are very slow and can cause your device to freeze or crash.
- Pages using large graphics or tables may not display correctly, depending on your screen and its resolution (non-responsive design)
- Pages that depend on pop-up windows for data entry may not work correctly.

(Any **TWO** of the above)

QUESTION 5 INFORMATION MANAGEMENT

5.1 5.1.1

- Give instruction on the format of the date to be used/Input mask.
- Set the format (insert) of the date picker used.
- Give separate cells/columns to force the respondent to enter a digit per cell.

(Any **TWO** of the above)

5.1.2 It means it is compulsory/mandatory/required to enter data in that field.

5.1.3 Explanation: to shorten/compact/not as long as URL
Benefit: easier to copy/paste/share/remember/type/less errors/takes up less space/redirect

5.2 **INPUT: (detect)**

Information is gathered from the sensors about the oxygen levels and the temperature and sent to microprocessor

PROCESSING: (change)

If temperature < 25 °C OR temperature checked against stored value and microprocessor sends signal to heater/actuator/valve to switch on heater.
If oxygen level < 20 ppm OR oxygen level checked against stored value to open valve/oxygen supply.

OUTPUT: (adjust)

Correct level of oxygen and temperature is maintained
Sounds an alarm if levels are not correct

5.3 **Sensor A:** temperature

Sensor B: oxygen

QUESTION 6 SOCIAL IMPLICATIONS

- 6.1 6.1.1 **Phishing:** is a form of Internet fraud when an e-mail is sent that aims to obtain valuable information such as credit card details, ID number, pins, etc.

OR

Phishing is a type of social engineering attack often used to steal user data, including login credentials and credit card numbers.

OR

Phishing attacks are the practice of sending fraudulent communications that appear to come from a reputable source. It is usually done through e-mail. The goal is to steal sensitive data like credit card and login information, or to install malware on the victim's machine.

Spoofing:

Cybercriminals making a fake copy of a bank's website, that looks identical to the bank's website but then create a URL that will direct customers to the website stored on their own server.

OR

Spoofing is the act of disguising a communication from an unknown source as being from a known, trusted source. Spoofing can apply to e-mails, phone calls, and websites.

OR

Spoofing is a specific type of cyber-attack in which someone attempts to use a computer, device, or network to trick other computer networks by being masked as a legitimate entity.

(Phishing aims to take hold of personal information by convincing the user to provide it directly; spoofing aims to steal or disguise an identity so malicious activity can ensue.)

- 6.1.2
- Avoid using public terminals for Internet banking.
 - Beware of the higher risk of stealing data using a wireless connection.
 - Never access a banking website using a link in an e-mail. Rather type the address into the address bar in the web browser.
 - Set strong passwords.
 - Keep your computers and mobile devices up to date.
 - Keep personal information personal. Do not share ID numbers, account numbers or pins.
 - Install antivirus software on your computer or network, including anti-spyware, anti-spam and firewall.
 - Avoid non-secure websites and only use websites with a URL starting with "https://" or where a padlock is present.
 - Do not download files from an unknown website.
 - Never respond to e-mails or messages requesting information.
 - Awareness to be updated about online fraud
- (Any **THREE** of the above reasons)

- 6.2 6.2.1
- Wider audience/publicity
 - Cheap advertising
 - (Immediate) customer feedback
 - Cheap/Effective way of communicating directly with customers e.g., advertising, etc.
 - Targeted advertising, etc.
 - Environmental awareness/friendliness
- (Any **TWO** of the above advantages)

- 6.2.2
- Use of GPS technology e.g., directions
 - Use of the Internet e.g., for the entertainment of the security guards travelling long distances
 - Updates to the car's software
 - Traffic updates/information direct to the car
 - Remote monitoring for security/Vehicle tracking
 - Remote monitoring of performance/maintenance of the car, etc.
- (Any **TWO** of the above advantages)

- 6.3
- Use technology for efficient filing, daily planning, favourites, etc./Install and use productivity apps
 - Refine/Filter/Reduce information e.g., filter emails, establish trusted sources of information, RSS feeds, do not subscribe to too many sites, etc.
 - Effective searching skills e.g., advanced search functions of browsers.
 - Limit time/reduce screen time, etc.
- (Any **TWO** of the above reasons)

QUESTION 7 SOLUTION DEVELOPMENT

- 7.1 7.1.1 Header/Footer/Watermark
 - 7.1.2 An additional piece of information printed at the bottom of a page to make references (author, date)/or to add a comment or additional information.
 - 7.1.3 Add a Style to the headings/Set the table of content to use a different style.
- 7.2 7.2.1 Learner_number
 - 7.2.2 Lookup wizard/Lookup tab
 - 7.2.3 Text/Short text
 - 7.2.4 Feature of the report: Grouping
 - 7.2.5 Report footer
- 7.3 7.3.1 Format the cell to number/Autofill the format
 - 7.3.2 Total days * number of people * rate

OR

= F6 * G6 * \$E\$3 (accept E3 without the \$)

- 7.3.3 The formula was auto filled and the rate (cell E3) was not an absolute cell address

SECTION C

QUESTION 8 INTEGRATED SCENARIO

8.1 8.1.1 Computer A

- Less expensive
 - Higher specifications
 - Faster processing
 - Bigger monitor
 - Mouse (some people may be uncomfortable working with a touchpad)
 - Availability of a warranty
- (Any **TWO** of the above)

OR

Computer B

- Mobility
 - More storage space
 - Windows 10 installed
- (Any **TWO** of the above)

8.1.2 • CPU/Processor

- RAM
- Hard Drive

(Any **TWO** of the above reasons must be in the advert)

8.1.3 RAM/primary memory

8.1.4 A refurbished computer is one that had been used, but went through a set of tests and repairs prior to listing it for sale.

8.1.5 • External hard drive

- Flash drive
- Blu-ray DVD
- Cloud storage e.g., SkyDrive, Dropbox, Google Drive, etc.
- Memory card

(Any **TWO** of the above)

8.2 8.2.1 • Easier to add devices/computers to the network

- Provides mobility for users/equipment
- Do not have to deal with cables lying around
- Easier to use where cabling is difficult/impractical, etc.

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

8.2.2 (Wireless) Router/Access points/Gateway/repeater/booster/WAP

- 8.3 8.3.1 An ISP (Internet Service Provider) is a company that has a permanent, fast connection to the Internet. These companies sell Internet access and services to individuals or organisations for a monthly fee. In other words, the Internet Café would connect to the Internet via the ISP's connection.
- 8.3.2 MTN, Vox, MWEB, Vodacom, HeroTel, Supersonic, Telkom, Cell C, Cool Ideas, Afrihost, Axxess, RSAWEB, Internet Solutions, Webafrica, Home Connect, Rain, etc. (any suitable example)
- 8.3.3
- Providing email addresses
 - Web page hosting
 - Fax-to-email
 - Spam filtering services
- (Any **TWO** of the above)
- 8.3.4 Bandwidth throttling is a purposeful slowing down of available bandwidth. In other words, it's an intentional lowering of the 'speed' that's typically available over an Internet connection.
- 8.4 8.4.1 Place the <hr/> tag in the body of the HTML document
- 8.4.2
- Use a font tag
 - Change the <h1> tags to different (smaller size) tags such as <h2> or <h3>, etc.
- (Any **ONE** of the above)
- 8.4.3 *Colour* should be *color*

QUESTION 9 INTEGRATED SCENARIO (continued)

- 9.1 9.1.1 Each operating system uses different architecture and has different ways of interfacing with software

OR

A different 'version' has to be written for each OS platform.

- 9.1.2 If a game was installed using Windows 8 and it still works when the operating system is updated to Windows 10, it has backward compatibility. (**Accept any correct example**)

- 9.1.3 Control panel/Game setting, change mouse cursor

- 9.2 9.2.1 Head-mounted display **OR** Virtual Reality (VR) headset

- 9.2.2 A plug-in is software that adds a specific feature/functionality to existing software.

OR

Special program that is needed to allow the user to view special effects (usually multi-media effects).

- 9.2.3 If this device supports plug-ins, a program from the web can be used to play embedded audio and video files.

OR

Embedded audio and video files can be played without the need for a dedicated media player.

OR

3D experience.

- 9.3
 - Movement
 - Sound
 - Light(Any **TWO** of the above)

- 9.4
 - Voice recognition software/.
 - Small pointer on a helmet to be used as a mouse.
 - Foot pedal devices
 - Motion Sensor(Any **TWO** of the above)

9.5 9.5.1 **Virtual reality**

Virtual reality increases user participation by bringing the user to a virtual reality world.

OR

The use of computer modelling and simulation that enables a person to interact with an artificial three-dimensional (3-D) visual or other sensory environment.

OR

A computer-generated environment with scenes and objects that appear to be real, making the user feel they are immersed in their surroundings.

Augmented reality

Augmented reality creates an effect of digital content interacting with the world by overlaying projected images on top of a device.

OR

AR is an enhanced version of the physical world that is achieved through the use of digital visual elements, sound, or other sensory stimuli delivered via technology/is technology that presents us with virtual objects and information in our field of vision.

- 9.5.2 • Due to the fact that the content is not real, it may obscure or narrow a user's interests or tastes and anti-social behaviour.
- The marketing and advertising of AR devices can have a negative effect on society because of cybercrime and malware infection.
- Quite expensive to use in everyday life and it might be less accessible to everyone.
- Operating system must support the application.
- (Any **TWO** of the above disadvantages)

9.6 9.6.1 Field size

9.6.2 Required field

9.7 Name
Cell phone number

- 9.8 Any suitable example:
- Teachers marking a test/exam paper and giving feedback.
 - Proofreading a document.
 - Extra notes, etc.

- 9.9 9.9.1 • Make sure the printer is on/connected
 • Correct printer is selected/check printer que
 • Check if there is paper in the printer/paper jam
 • Update/reinstall the drivers
 • No ink or toner
 (Any **TWO** of the above)
- 9.9.2 • Adjust the margins.
 • Reduce the font size.
 • Reduce the line spacing.
 • Fit to page / scaling
 (Any **TWO** of the above)
- 9.10 • Save file for the first time
 • Saving the file to another folder, drive or location
 • Adding a password to a file
 • Change the file extension
 (Any **TWO** of the above solutions)
- 9.11 A bookmark identifies a location or a selection of text that you name so you
 can easily locate it again.

Total: 150 marks