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	J	(1)
	1.1.2	I	(1)
	1.1.3	L	(1)
	1.1.4	F	(1)
	1.1.5	A	(1)
1.2	1.2.1	B	(1)
	1.2.2	D	(1)
	1.2.3	C	(1)
	1.2.4	B	(1)
	1.2.5	A	(1)
	1.2.6	D	(1)
	1.2.7	C	(1)
	1.2.8	D	(1)
	1.2.9	C	(1)
	1.2.10	D	(1)

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QUESTION 2

2.1   2.1.1 VLOOKUP   (1)

       2.1.2 Endnote   (1)

       2.1.3 square brackets   (1)

       2.1.4 table cellpadding   (1)

       2.1.5 video   (1)

       2.1.6 cloud   (1)

2.2   Expanding the following acronyms.

       2.2.1 **GUI:** graphic/graphical user interface   (1)

       2.2.2 **HTML:** Hypertext Markup Language   (1)

       2.2.3 **URL:** Uniform Resource Locator   (1)

       2.2.4 **EFT:** electronic funds transfer   (1)

[10]

25 marks

SECTION B

QUESTION 3   SYSTEM TECHNOLOGIES

3.1

Question number	Name of hardware/ software	Main function (If the HW/SW is incorrect, can still get the function mark if it is correct for the incorrect HW/SW)
3.1.1	Wi-Fi connection device **OR** Wi-Fi Router	This device performs the function of wireless access point to the internet. **OR** The main purpose of this device is to connect multiple computers to the internet. **OR** In order for devices on the network to connect to the internet. **OR** Most Wi-Fi routers have Ethernet ports designed to connect multiple computers to the internet. **(Any suitable answer that mentions a device enabling connection to the internet)**
3.1.2	CAPTCHA	The technology is used mostly to block spammers and bots that try to automatically harvest email addresses. **OR** A CAPTCHA is a type of challenge-response test used to determine whether or not the user is human. **OR** CAPTCHA: **c**ompletely **a**utomated **p**ublic **T**uring **t**est to tell **c**omputers and **h**umans **a**part. " **(Any suitable answer that indicates that this code is to check that you are a human and not a robot)**
3.1.3	Motherboard	The motherboard is a large circuit board that all the other components are plugged into. **OR** A motherboard holds together many of the crucial components of a computer. **OR** A motherboard allows all the parts of your computer to receive power and communicate with one another. **(Any suitable answer that indicates the purpose of a motherboard)**
3.1.4	Graphics card	Allows computers to produce graphics and images more quickly. **OR** A graphics card connects to the motherboard of a computer system and generates output images to display. **OR** The graphics card is responsible for rendering an image to your monitor; it does this by converting data into a signal your monitor can understand. **(Any suitable answer that speaks of image quality/response)**

(8)

3.2 The system software provides basic security functions such as:
- user and password control
- biometric access control
- asking for access rights to your device before installing any software
- controlling and preventing the spread of malware
- checking for programs that are trying to access your computer via the internet
- the security centre in the Windows operating system warning you about settings that could make your system insecure, for example that your anti-virus software is outdated

(Any **TWO** of the above) (2)

3.3 disk scanning software (Check Disk or ChkDsk can also be accepted) (1)

3.4 3.4.1 It is a software programme that allows the operating system to communicate with hardware or peripheral devices. (2)

3.4.2 The driver program for many generic and specific devices is pre-loaded on the computer as part of the operating system and is automatically installed when the device is plugged into the computer. (2)

3.5 3.5.1 The product key is a unique alphanumeric code of any length required by many software programs during installation that is unique to a specific programme. (1)

3.5.2 A product key is used by software manufacturers to ensure that each copy of their software was legally purchased AND stop software piracy. (1)

3.5.3 Without the product key, the program will most likely not open past the product key page, **OR** it might run but only as a trial of the full version **OR** you cannot even download or install the program (1)

3.6
- You could load two different operating systems.
- You could have the second partition as a recovery drive for the main partition.
- You could have programs installed on one partition and save your data on the other partition.
- A good way to secure and protect data as multiple backing up of files is done.
- If data is stored on the second partition there will be no data loss should it be necessary to re-format the primary partition.
- If you run out of data storage space on your disk drive, this will not impact on your OS performance

(Any **TWO** of the above) (2)

3.7
- Re-install the operating system/drivers
- Repair using the installation media
- Check the power supply is working
- Check the hard drive is working

(Any **TWO** of the above) (2)

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QUESTION 4 **INTERNET AND NETWORK TECHNOLOGIES**

4.1 **Broadband:** In the context of internet access, is used to mean any high-speed internet access that is always on and faster than dial-up access.

Bandwidth: Is the capacity of a wired or wireless network communications link to transmit the maximum amount of data from one point to another over a computer network or internet connection in a given amount of time **OR** speed of data transfer. (2)

4.2 4.2.1
- No traveling costs as meetings can be done over VOIP.
- Marketing costs will be less as no printing will be needed.
- Communication can happen instantly as email will be used and no longer the old system of posting letters.
- Solving problems on a specific business project can be done with grid computing.
- Clients can be assisted remotely if companies have IT support systems in place.

(Any **ONE** of the above, however, one mark for the example and the other mark for the explanation, candidate may not just say saving on traveling cost) (2)

4.2.2 digital divide (1)

4.3 **Fibre:** uses fibre optic cables to transmit data.
ADSL: uses telephone lines to transmit data **OR** along copper cables from your nearest telephone exchange. Fibre requires a CPE or ONT to which the router is connected while ADSL does not. (2)

4.4 4.4.1 Ring topology (1)

4.4.2 **Advantages:**
- All data flows in one direction, reducing the chance of packet collisions.
- A network server is not needed to control network connectivity between workstations.
- Data can be transferred between workstations at high speeds.
- Additional workstations can be added without affecting the performance of the network.
(Any **TWO** of the above) (2)

4.4.3 **Limitations:**
- All data being transferred over the network must pass through each workstation on the network, which can make it slower than a star topology.
- The entire network will be affected if one workstation shuts down.
- The hardware needed to connect each workstation to the network is more expensive than Ethernet cards and switches.
(Any **TWO** of the above) (2)

4.5   4.5.1 A network interface controller (NIC, also known as a network interface card, network adapter, LAN adapter, physical network interface, etc.) is a hardware component that **connects a single computer to a computer network OR** assigns an IP address (1)

4.5.2 A network switch (also called switching hub, bridging hub) is a computer networking device that **connects many devices together on a computer network OR** by using packet switching to receive, process, and forward data to the destination device. (1)

4.6   4.6.1 It is a set of rules/instructions/steps to follow/method of communi-cation that governs how data is transferred over a network. (1)

4.6.2 The files can be uploaded to an FTP server and the people who want the files can then download the files from the server. (2)

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QUESTION 5   INFORMATION MANAGEMENT

5.1   5.1.1   The (GPS) location setting on the phone is not activated.   (1)

       5.1.2
- harsh braking
- harsh cornering
- distracted driving
- speeding
- distance that you drove
- locations you went to
- time taken to drive
  (Any **THREE** of the above)   (3)

5.2
- "Discovery Insure" can give tips to a driver on how to improve a specific driving behaviour.
- "Discovery Insure" can reward the drivers when they achieved an incident-free report while driving.
- "Discovery Insure" could decrease or increase the monthly fee when paying for insurance.
  (Any **TWO** of the above)   (2)

5.3
- When a client wants to claim for an accident they can refer to the data collected to see if the client was speeding, etc.
- "Discovery Insure" could provide vital information should a loved one be in an accident, e.g. to find the location of the vehicle.
- "Discovery Insure" could provide last location information if the vehicle was stolen.
- Can be awarded bonus/discount
  (Any **TWO** of the above)   (2)

5.4
- Potholes
- Weather conditions
- Traffic conditions
- Road works without clear indication to warn driver.
- Pedestrians that cross the road without any indication of a pedestrian crossing.
- High accident zone due to road markings that are not clear.
- Speed limit signage boards damaged/removed.
- Traffic officers that unexpectedly appear from nowhere to stop a driver to do random checks. They should be more visible as their sudden appearance may cause a driver to brake harshly even if he/she was not speeding.
  (Any **TWO** of the above)   (2)

[10]

QUESTION 6   SOCIAL IMPLICATIONS

6.1   6.1.1   Twitter is a free social networking (microblogging) service that gives users live feeds of added information. Only registered members can broadcast short posts **OR** *tweets* (isolated group).   (2)

        6.1.2   The default settings for Twitter are public and anyone can follow anyone on Twitter, unlike Facebook, where members need to approve social connections to follow someone.
                OR
                Twitter allows for quick short messages with added hyperlinks that are received by a follower who is then informed about an event that will be hosted by Monte Casino only, unlike Facebook that makes the world more open and connected. People use Facebook to stay connected with friends and family, discover what's going on in the world and share and express what matters to them.

                (To receive the 2nd mark there must be a comparison as to how Facebook differs from Twitter.)   (2)

        6.1.3   Identify theft **OR** cloning   (1)

6.2   The use of deception to manipulate or trick someone into sharing confidential information.

        Reason: (any **ONE** of the following)
        • to impersonate someone **OR**
        • to install malware **OR**
        • for fraudulent purposes   (2)

6.3   6.3.1   The email service provider receives and keeps all the emails that are sent. Once the recipient accesses his/her email account when the power is back on, their messages will download (be sent) to the inbox of their email program.
                OR
                Power might be off at the sender's end but not at the receiver's end or the ISP.
                OR
                Backup power/UPS/inverters might be used to sustain the connection. Fibre/ADSL infrastructure remains working as a requirement in their licence
                OR
                Emails sent via cell phone still seem to work but come through a lot slower   (2)

        6.3.2   The educator will use the BCC field to include all parents' email addresses without them being able to see the names of the other recipients.   (1)

        6.3.3   A group/set/collection of email addresses given a single group name.   (1)

6.3.4
- It saves time because all the email addresses do not have to be typed in one by one.
- Any email sent to the group will be sent to every person in the mailing list.
- Prevents errors in typing an address and omission of an address.
- Any list member can send an email to all other list members, reply to all list members or send an email to the original sender only.

(Any **ONE** of the above) (1)

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QUESTION 7   SOLUTION DEVELOPMENT

7.1   7.1.1   Conditional formatting (1)

7.1.2   She needs to select column E/correct cells then select the number tab and change the format to currency.
OR
Use the Format Painter assuming that cell E11 is correctly formatted. (1)

7.1.3   = E11 *7%
OR
=7/100 *E11 (Can use maths symbols) (2)

7.1.4   Nested If
OR
If within an If (1)

7.2   **Step 1:** Create a main letter.
Step 2: Create/find the data source with the employees' information.
Step 3: Using Insert merge fields, add related fields using the data source.
Step 4: Preview the results to ensure letter is correct.
Step 5: Finish the merge and save the merged document. (5)

7.3   7.3.1
- Copy and paste
- Insert as a link or an embedded object
- Import/export
(Any **TWO** of the above) (2)

7.3.2
- Calculation: Count function
- Display: Report Header/Footer
                      OR
                      If grouped in the Group Header/Footer (2)

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| 75 marks |

SECTION C

QUESTION 8   INTEGRATED SCENARIO

8.1   • Poor cable/router connection choice
      • Excessive number of users
      • Technical issues with the ISP
      • Media faults (fibre/ADSL)
      • Background applications using the bandwidth
     (Any **TWO** of the above)   (2)

8.2   A social networking site is where individuals/organisations can post their likes, dislikes, interest, comments, photographs and activities for their friends/clients to see.   (2)

8.3   8.3.1   **Primary key**

           Explain:

           A field that uniquely identifies each record
           OR
           Primary key is a unique key that cannot be repeated.

           Example: This key will work if the zoo manager gives a unique ID to each animal/reptile.   (2)

     8.3.2   **Input mask**

           Explain:

           It is a set format that entered data must conform to.

           Example:

           The zoo manager will use this to ensure that the date of birth of the animal/reptile is captured in a specific format, for example 12 May 2019.   (2)

8.3.3 **Validation rule**

Explain:

These are the conditions that the data must satisfy in a specific field in order to be valid.

Example:

The zoo manager can use this to capture the animal's/reptile's gender ("M" for male or "F" for female). (2)

(Any suitable example as long as the example is correctly used in relation to the term given and the scenario.)

8.4 A form allows for easy data capturing due to the fact that all the fields for a specified record can be viewed at once.

Data capturing with a form is faster as it has a user-friendly interface to view, add or change records in a table. (2)

8.5 • You can group according to different fields, headings, etc.
• You can sort the information.
• You can do statistical calculations.
• A report presents information from a database in an easy-to-read format, in a better layout and format when printed.
• Reports have more sections in comparison to queries and tables.
(Any **TWO** of the above) (2)

8.6 • A graph must always have a descriptive heading or title.
• Axes labels are recommended, especially with line and bar graphs.
• When using a pie graph, data values or percentages should be shown.
• Legends should be removed if they serve no purpose.
• Use trend lines to show trends in the data.
(Any **TWO** of the above) (2)

8.7 Ergonomic keyboards position the keys so that you hold your hands in a more natural position so it is more comfortable to work with and this will reduce ANY form of injury for example RSI (repetitive strain injury) or CTS (carpal tunnel syndrome). (2)

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QUESTION 9   INTEGRATED SCENARIO (continued)

9.1   9.1.1   No

A server is a powerful computer used to provide resources and services to all the computers that are linked together in a network and the zoo manager will only use one desktop for his business.   (2)

9.1.2

	DESKTOP	LAPTOP
Processor	Desktop processors can be faster than laptop processors.	Laptop processors have nearly caught up with desktop processors. **OR** Laptops can perform as well as desktops, but are more expensive.
Upgrading	Most components in a desktop are easily removable, making it easier to upgrade and since desktop cases are usually much bigger they're easier to work in when upgrading.	Memory and hard drive are about the only components that can be upgraded in a laptop. The remaining components are either built-in or not removable, or the laptop is not designed to work with an upgraded version of a component. A need to upgrade anything other than the hard drive and memory usually requires a new laptop.

(4)

9.1.3 • They are portable
       • They can be used on battery power for a few hours if there is no electricity available, e.g. during a power outage.
       • No loose keyboard/mouse.
       • Lower power and space requirements
       • Can be used in a variety of settings, such as when lying down in a bed.
         (**Any TWO** of the above)   (2)

9.2   9.2.1   Memory (RAM) is a component in your computer that allows for short-term data saving and access.
Storage (whether in the form of a hard drive or SSD) is the component in your computer that allows for long-term data saving and access.
OR
Programs and data that need to be run or processed need to be loaded from storage into memory.
Storage is the component that is used to store your files permanently.   (2)

9.2.2   The slot that allows your computer to read SD cards that are often found in digital cameras.   (1)

9.2.3   A quad-core processor is a chip with four independent units called cores that read and execute central processing unit (CPU) instructions such as add, move data, and branch.
OR
It means there are four processors mounted on a single chip.
OR
The CPU contains four separate processors that work completely independently of any other core on the CPU chip.   (2)

9.2.4   • keyboard
• mouse
• external hard drive
• speakers
• flash drive
• web cam
• printer
• digital camera
• scanner
(Any **THREE** of the above)   (3)

9.3   9.3.1   Quarantine is a separate area of the hard disk that holds the infected files until the virus/malware can be removed or cleaned.   (2)

9.3.2   Format/reformat hard disk and reinstall applications.   (2)

9.3.3   • Press Ctrl+Alt+Del and load task manager
• Highlight the non-responding program and terminate the task   (2)

9.4   9.4.1   ICT stands for **information and communication technologies**

OR

ICT is defined as the use of a diverse set of technological tools and resources used to communicate and to create, disseminate, store, and manage information. (1)

    9.4.2   Notification message in a pop-up (1)

    9.4.3   Speech-to-text program (1)

    9.4.4   Add captions/sub-titles/on-screen sign interpreter (1)

9.5
- She would use the shareware because it will only be for a trial period to see if the zoo can benefit from the software (after which it stops working or downgrades in functions/features)
- If the admin assistant feels positive that the zoo should continue using it, or to obtain the 'full' unrestricted version, she can advise the zoo manager to pay for the software.

(When marking this, make sure that the learner refers to why the admin assistant would consider the use of the shareware.) (2)

9.6   Dot matrix printer only allows for printing whereas a multifunction printer can print, copy, fax and scan documents **OR** better quality printing (2)

9.7
- SIGHTED people: ALT attribute supplies the text that should be displayed if for some reason the image cannot be displayed.

- For BLIND/PARTIALLY SIGHTED people: screen reader software uses the text supplied by the ALT attribute to describe the image to the user. (2)

[32]

50 marks

Total: 150 marks