S850/1
ICT
THEORY PAPER ONE
Time: 2 ½ Hours
UMTA

MARKING GUIDE

MOCK EXAMINATIONS, 2016
UGANDA ADVANCED CERTIFICATE OF EDUCATION
SUBSIDIARY ICT PAPER I

INSTRUCTIONS TO CANDIDATES:

Attempt **ALL** questions in this paper

The maximum time allocated to this paper is 2 hours 30 Minutes

The paper is made up of 20 equally weighted questions.

Write in dark blue or black pen in the spaces provided on the Question Paper. All answers should be written in the spaces provided.

No additional materials (answer sheets) are required.

The number of marks is given in brackets ( ) at the end of each question or part question

The maximum mark for the paper is 100%

FOR OFFICIAL USE ONLY					
1.			11.		
2.			12.		
3.			13.		
4.			14.		
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8.			18.		
9.			19.		**TOTAL**
10.			20.		

1. (a) Distinguish between **computer software** and **Computer hardware** .   *Any 2x1=2 marks*

   ➤ *Computer software refers to that part of a computer system that consists of encoded information or computer instructions where as Computer hardware are the physical parts of the computer*.

   (b) Give two reasons to explain why computer users should **backup** their **data regularly**.

                                                                                    Any 2x1=2 marks
   ➤ *To prevent data from loss due to hardware failure, software bugs, natural disaster, human action*

   ➤ *To provide a copy of data in case of loss.*

   ➤ *Computer crashes – always happen when you least need it, and can lead to data loss.*

   ➤ *Virus Infection – aggressive malicious viruses can corrupt files and disable computers.*

   ➤ *Hard drive failure - hard drives have a finite lifetime and can fail suddenly and without warning. The sudden death of a hard drive can cause the painful loss of months or years of irreplaceable files and the timing can be catastrophic – if this happens close to a work or college deadline it could be a nightmare scenario.*

   ➤ *Physical computer damage – your files are more at risk if you use a laptop. Light and portable comes at the price of reduced durability. Laptops are sensitive and are easily damaged if dropped or have drinks spilled over them.*

   ➤ *Theft – computers are sought after by thieves and cannot always be kept secure whilst travelling.*

   (c) Mention one example of devices that can be used to **output information**.   *Any 1x1=1 mark*

   ➤ *Speakers*
   ➤ *Headphones*
   ➤ *Screen (Monitor)*
   ➤ *Printer*
   ➤ *Punched card input/output*
   ➤ *Punched tape*
   ➤ *Voice output communication aid*
   ➤ *Automotive navigation system*
   ➤ *Braille embosser*
   ➤ *Plotter*

2.(a) State three editing features of a **word processor**.   *Any 3x1=3 marks*

➢ *Insert text: Allows you to insert text anywhere in the document.*

➢ *Delete text: Allows you to erase characters, words, lines, or pages as easily as you can cross them out on paper.*

➢ *Cut and paste : Allows you to remove (cut) a section of text from one place in a document and insert (paste) it somewhere else.*

➢ *Copy :Allows you to duplicate a section of text.*

➢ *Page size and margins :Allows you to define various page sizes and margins, and the word processor will automatically readjust the text so that it fits.*

➢ *Search and replace : Allows you to direct the word processor to search for a particular word or phrase. You can also direct the word processor to replace one group of characters with another everywhere that the first group appears.*

➢ *Word wrap :The word processor automatically moves to the next line when you have filled one line with text, and it will readjust text if you change the margins.*

➢ *print: Allows you to send a document to a printer to get hardcopy*.

(b) How is formatting and editing different as related to **data processing**.   *Any 2x1=2 marks*

➢ *Formatting is the visual appearance of the text. This includes things like Font style and size, bolds, italics, margins, etc. Editing refers to the content while as Editing is the process of making changes to the existing content of the document. Common editing features include:*
  o *Inserting*
  o *Deleting*
  o *Cutting, copying, pasting e.t.c*

3. (a) Despite the prices of LCD monitors being higher compared to those of **cathode Ray Tubes**

(CRT),LCD monitors are still preferred by many people. Give three **factors** that can explain this

preference.   *Any 3x1=3 marks*

➢ *Because LCD monitors are very small and thus occupy a small space on the table hence the preference*

➢ *Because the quality of picture displayed by the Lcd monitors is very good as compared to CRT monitors.*

➢ *Because the LCD monitors consumes very little power than CRT monitors thus the preference*

(b) Mention two measures you would take to ensure safety and continued use of your computer monitor. *Any 2x1=2 marks*

> *You should ensure that the monitor is placed well on the table where it cannot fall.*
>
> *Cover the monitor after use.*
>
> *Always clean the with a dry cloth or moist cloth when power is off.*

4 (a) For each of the statements below, **name** the most appropriate **I/O device**:

(i) Inputting text by people with poor eyesight:

> *Magnifiers Including conventional handheld or mounted magnifiers & video magnifiers.*
> *Writing equipment Including raised line paper and signiture guides.*
> *Household Including kitchen equipment, TV magnifiers and battery chargers.*
> *Braille & Moon Including frames for manual creation & machines to create Braille.*
> *Text to speech Including Daisy players & text to speech scanners*
> *Identifying items Including Braille or Moon labels & labelling systems.*
> *Telephones Including large button phones or spoken announcement of numbers*
> *Clocks & watches Including those with a tactile face or spoken output.*
>
> *Any 1x1=1 marks*

(ii) This output device can produce carbon copies:

> *Dot-matrix printers on multi-form paper as in electricity bills*
> *Daisy wheel printers*
> *Inject printer*
> *Braille printers*
>
> *Any 1x1=1 marks*

(iii) Commonly found in laptops instead of the mouse:

> *Track ball*
> *Touch pad/glide pad*
> *Pointing stick*
> *Stylus*
>
> *Any 1x1=1 marks*

(iv) An output device that produces hardcopy vector images:

> *Pen plotters*
> *Digitizers*
>
> *Any 1x1=1 marks*

(v) Captures the position of a tick (✓) on a multiple-choice answer sheet:………………

> *Optical mark reader*

<div align="right">*Any 1x1=1 marks*</div>

5. The **ALU**, **RAM**, **CPU** and **ROM** are components of a computer system.

    (i)   What do the **three acronyms** stand for?

ALU. Arithmetic logical unit	*Any 1x1=1 mark*
CPU: Central Processing Unit	*Any 1x1=1 mark*
ROM: Read only memory	**Any 1x1=1 mark**

    (ii)   Give two uses of **virtual memory** during data processing.   *Any 2x1=2 marks*
- *You can run more applications at once.*
- *You can run larger applications with less real RAM.*
- *You don't have buy more memory RAM*

Virtual memory is a feature of an operating system (OS) that allows a computer to compensate for shortages of physical memory by temporarily transferring pages of data from random access memory (RAM) to disk storage.

> *Virtual memory helps to store data temporary in a computer.*

> *Increases storage in a computer.*

6.   (a)   Use the images below to answer the questions that follow:

    (i)   Unwanted and deleted items are sent to the   *Any 1x1=1 mark*
> **Recycle bin**

    (ii)   Mention any one **application program**.   *Any 1x1=1 mark*

> ➤ **Microsoft word 2003**
> ➤ **Paint**
> ➤ **Internet Explorer**

(ii)   Which **one** of these **files** is a shortcut to a main program?   *Any 1x1=1 mark*

> ▪ **Microsoft office word 2003**
> ▪ **Paint**

(b)   Explain the meaning of the following terms:

Username is a name associated with a person to gain access to a computer or your account on the internet for purposes of authentication and usually accompanied/paired with a password.

Any 1x1=1 mark

Password is a string of characters that people can be used to log on to a computer and access files, programs, and other resources as well as gain access to ones account on the internet service like e-mail and facebook.

Any 1x1=1 mark

7.   One of the vital parts of a computer system is data. Data to be exposed to a number of risks and dangers. Using your ICT knowledge suggest five dangers data can face.   *Any 5x1=1 marks*

> ➤ *Accidental loss.*
> ➤ *Accidental damage or corruption.*
> ➤ *Theft*
> ➤ *Deliberate damage or corruption.*
> ➤ *Authorised disclosure.*

8.   Suggest any five ways through which you would care and **protect data** against **organizational** and **environmental risks** and dangers.   *Any 5x1=5 marks*

> ➤ *Makes backup copies of data regularly. Before backing up, make sure that data is error free otherwise; you might take a back up copy of corrupted data.*
> ➤ *Minimize the number of visitors to your computer installations and do not allow any one to your server except the network administrator.*
> ➤ *Avoid diskettes from different installations as your system might contract viruses.*
> ➤ *If you have unwanted printouts, please destroy them because data is not supposed to fall in unauthorized hands.*
> ➤ *Save data regularly as an abrupt power cut off may corrupt your data, if you have no UPS.*

9.(a) State two examples of instruction **data input hardware devices**. *Any 2x1=2 marks*

> *Mouse*
> *Keyboard*

(b) In relation to a computer's keyboard, give one **function** to each of the following:-
Any 3x1=3 marks

(i) Space bar

- *Provide a gap between words while typing text.*
- *Used to bring text to the default font style and size (Ctrl+Space bar).*
- *Used to resize minimise and close a window (Alt+space bar).*
- *Used to align pictures in Office 2003.*
- *Used to pause music.*
- *Used to play music.*
- *Used to play computer games e.g. pinball.*
- *Usually allows the user to page down or to page up when the space bar is used with the shift key.*

(ii) Enter key.

- *Used to create a new paragraph.*
- *Used to come to a new line while typing.*
- *Used to confirm a command e.g. in Ms. DOS*
- *Used to move through cells in a spreadsheet application.*
- *Used to create a new row in a table (Ms.Word).*
- *Used to create a new record in Ms. Access.*
- *Used to execute a formula in a spreadsheet.*

(iii) Escape key.

- *To stop an action or activity like stopping a presentation.*
- *It takes the user to the start button of the windows machine (Ctrl + Esc).*
- *It cancels a dialogue box.*
- *It brings the game to its menu interface.*
- *Used to switch computer mode (Alt+Esc)*
- *Enables the user to go to the windows task manager (Ctr+Shift+Esc).*

10. (a) Mention two main **functions** of an **operating system**.

- Booting the computer
- Performs basic computer tasks eg managing the various peripheral devices eg mouse, keyboard
- Provides a user interface, e.g. command line, graphical user interface (GUI)
- Handles system resources such as computer's memory and sharing of the central processing unit (CPU) time by various applications or peripheral devices
- Provides file management which refers to the way that the operating system manipulates, stores, retrieves and saves data.
- Scheduling
- Information Protection and Security   *Any (2x1) Marks*

(b)   For each of the following three statements name the **utility program** which best fits.
                                                                             Any 3x1=3 marks

(i)   Gathers separate pieces of the same file together in a disk
   ➢ **defragmentation**

(ii)   Prepares a new disk to accept data
   ➢ **Formatting**

(iii)   A program which monitors, detects and deletes viruses

   ➢ **Antivirus software**

11.   (a) Define the term **Computer Communication**.   *Any 1x1=1 mark*

   ➢ Data communications (DC) is the process of using computing and communication technologies to transfer data from one place to another

   (b) State any two categories of **Computer networks**.   *Any 2x1=2 marks*

   ➢ *Local area Network*
   ➢ *Wide area Network*
   ➢ *Metropolitan Network*

   (c) State the difference between **simplex** and a **full duplex channel**   *Any 1x1=1 mark*

   ➢ Simplex refers to a communication in which data signals move in one direction at a time eg key board where as Full duplex is a communication channel in which data signals move in both directions simultaneously eg Phone.

12.   (a) .(a) Explain the purpose of a *device driver*   *Any 1x1=1 mark*

A device driver is a computer program that operates or controls a particular type of device that is attached to a computer

> A *device driver is a file that lets the computer know the configuration and specifications of a certain hardware device. Some examples of devices that need drivers are hard drives, DVD drives, and PCI cards.*

(b) What is **antivirus program**?   *Any 1x1=1 mark*

> *Anti-virus software is a program or set of programs that are designed to prevent, search for, detect, and remove software viruses, and other malicious software like worms, trojans, adware.*

> *as anti-malware software, is computer software used to prevent, detect and remove malicious software*

> *software is used to safeguard a computer from malware, including viruses, computer worms, and Trojan horses*.

(c) Name any three **antivirus programs**   *Any 3x1=3 marks*

> *Avira antivirus software*
> *Norton antivirus software*
> *Kaspersky antivirus software*
> *Panda antivirus software*
> *McAfee antivirus software*
> *AVG antivirus software*
> *Bull Guard antivirus software*
> *Avast antivirus software*

13. The following **database table** shows information on five employees. Study the table and then answer the questions below.

Name	Surname	ID number	Job	D.O.B.
Peter	Cini	123456 (M)	Clerk	23/5/1956
Mary	Cutajar	34167 (G)	Supervisor	1/3/1967
Linda	Formosa	456781 (M)	Manager	9/8/1981
Melanie	Abela	8278 (G)	Clerk	10/10/1978
Gordon	Hili	901268 (M)	Messenger	4/12/1968

(i) Write down one **field name**. *Any 1x1=1 mark*

  ➢ **Name**
  ➢ **Surname**
  ➢ **ID number**
    Job
  ➢ **D.O.B**

(ii) Which field would be a suitable **key field** (primary key)?

  ➢ **Id number** *Any 1x1=1 mark*

(iii) What is the **operation** of selecting particular information called?

  ➢ **Query.** *Any 1x1=1 mark*

(iv) If the table is used to work out the **weekly employee wages**, what other important **field** should the table contain?

  ➢ **Wages**
  ➢ **Number of hours worked** *Any 1x1=1 mark*

(v) If the table above is linked to some other table, what is this **link** called?

  ➢ *Hyperlink* *Any 1x1=1 mark*

14. Use appropriate computer terms for each of the following statements to fill in the table below: *Any 5x1=5 marks*

(i)	Generic software that includes a combination of text, audio, still images,	Multimedia software

	animation and video:	
(ii)	The process of altering/modifying a digital image on a computer:	Editing
(iii)	A small sized computer, often with an in-built diary application and few other functions such as an address book:	Personal digital assistant or electronic organizer,Pocket compute
(iv)	Software used for the creation of a house plan:	Computer Aided Design
(v)	The creation of documents, such as a flyer, using a page layout software on a computer:	Desktop publishing software Adobe page maker Adobe illustrator Coral draw

15.(a) Mention two examples of **operating system**.

> ➢ *Disk operating system*
> ➢ *Windows*
> ➢ *Unix*
> ➢ *Linux*
> ➢ *Macintosh*   *Any 2x1=2 marks*

(b) Give two advantages of **utility programs**.

- *Scans for computer viruses and remove them.*

- *Can make a copy of all information stored on a disk, and restore either the entire disk*

- *Output a smaller file when provided with a stream or file.*

- *scans the content of a hard disk to find files or areas that are*

- *Finds files that are unnecessary to computer and can decide to delete.*

- *Transparently compress/uncompress the contents of a disk, increasing the capacity of the disk.*

- *Increase efficiency by moving data to one side of the disk.*

- *Divides an individual drive into multiple logical drives*

- *To get the size for each folder/ sub folders & files in folder or drive. Showing the distribution of the used space.*

- *Ensures that data is stored and files arranged in order of ascending. It also helps the computer to re-arrange data files.*

- *Output a stream or a single file when provided with a directory or a set of files. Archive utilities, unlike archive suites, usually do not include compression or encryption capabilities.*

- *Provide a convenient method of performing routine data management tasks, such as deleting, renaming, cataloguing, un cataloguing, moving, copying, merging etc.*

- *Encrypt and decrypt streams and files.*

- *Directly modify the text or data of a file.*

- *Check for memory failures.*

- *Analyzes the computer's network connectivity, configure network settings, check data transfer or log events.*

- *Clean and optimize the Windows registry by removing old registry keys that are no longer in use.*

- *Were desired to prevent phosphor burn-in on CRT and plasma computer monitors. Modern screensavers are used primarily for entertainment or security.*

- *For monitoring resources and performance in a computer system.*

- *Provide detailed information about the software installed and hardware attached to the computer.*

- *For organizing files in any choose order*

- *Merges or combines different files in one.*

- *Compiles technical information about a computer's hardware and certain system software programs and then prepares a report outlining any identified problems.*

- *Helps the computer to find out the error and fixes it.*

- *Enables the user to get back all the data that might have been deleted or lost by virus from a computer.K2*
- *It enables the user to get back to the last best known configuration settings of a computer.*

- *It enables the user to remove an application program and its associated attributes from the system.*

(c) Define **firmware**.   *Any 2x1=2 marks*

  ➢ *A computer program placed in a computer at a time of its manufacture.*

17. (a) What do the acronyms **LAN** and **WAN** stand for?
   (i)   **LAN**: Local Area Network   *Any 1x1=1 mark*

   (ii)   **WAN**: Wide Area Network   *Any 1x1=1 mark*

   (b)   Give **one advantage** of having a LAN system in the school's administration office rather than standalone computers.

   Advantage:

  ➢ *Workstations can share peripheral devices like printers. This is cheaper than buying a printer for every workstations.*
  ➢ *Workstations do not necessarily need their own hard disk or CD-ROM drives which make them cheaper to buy than stand-alone PCs.*
  ➢ *User can save their work centrally on the network's file server. This means that they can retrieve their work from any workstation on the network.*
  ➢ *They don't need to go back to the same workstation all the time.*
  ➢ *Users can communicate with each other and transfer data between workstations very easily.*
  ➢ *One copy of each application package such as a word processor, spreadsheet etc. can be loaded onto the file server and shared by all users.*
  ➢ *When a new version comes out, it only has to be loaded onto the server instead of onto every workstation.*

                                                                                      Any 1x1=1 mark

   (c)   The **Internet** is a typical WAN system. As a student, mention **use** that you make   of the internet.

- *Communication*

- *Research*
- *Education*
- *Financial Transaction*
- *Real Time Updates*
- *Leisure*
- *Online booking*
- *Weather forecast updates*
- *Online business*
- *News feeds*   *Any 1x1=1 mark*

(c)   As a concerned student of ICT explain any **one** bad practice that a student would get involved in while using the internet.   *(01 mark)*

- *There is a lot of wrong information on the internet. Anyone can post anything, and much of it is garbage.*
- *There are predators that hang out on the internet waiting to get unsuspecting people in dangerous situations.*
- *Some people are getting addicted to the internet and thus causing problems with their interactions of friends and loved ones.*
- *Pornography that can get in the hands of young children too easily.*
- *Easy to waste a lot of time on the internet. You can start surfing, and then realize far more time has passed than you realized. Internet and television together of added to the more sedentary*
- *Lifestyles of people which further acclerates the obesity problem.*
- *Internet has a lot of "cheater" sites. People can buy essays and pass them off as their own far more easily than they used to be able to do.*
- *There are a lot of unscrupulous businesses that have sprung up on the internet to take advantage of people.*
- *Hackers can create viruses that can get into your personal computer and ruin valuable data.*
- *Hackers can use the internet for identity theft.*
- *It can be quite depressing to be on the internet and realize just how uneducated so many people have become in today's society.*

Any 1x1=1 marks

18.   (a)   Define **Green computing**.   *(01 mark)*

refers to environmentally sustainable computing or IT. It is "the study and practice of designing, manufacturing, using, and disposing of computers, servers, and associated subsystems such as monitors, printers, storage devices, and networking and communications systems efficiently and effectively with minimal or no impact on the environment.

(b)   Explain **two** ways of maintaining **Green computing** by organisations.   )

- Don't leave your computer running all the time by leaving it to Standby or Hibernate.
- Use Energy Star-certified devices
- Free up RAM
- Optimize Windows services
- Perform regular PC maintenance
- Resource allocation to energy secure areas
- Product longevity
- Virtualization of servers

Any 2x1=2 marks

(c)   (i) Mention one physical threat to optical storage devices.

- Extreme Temperature
- Dust particles
- Sunlight
- Fire
- Earthquakes
- Theft
- Vandalism   *Any 1x1=1 mark*

(ii) How would you advise to mitigate the problem in (c) (i) above?

- Maintain relative humidity around 40%.
- Avoid large and rapid fluctuations in temperature/humidity.
- Control dust (maintain a slight positive pressure environment).
- Avoid exposure to magnetic fields (for magnetic media).
- Avoid exposure to fumes.
- Establish a no food, drink, or smoking policy in media storage areas.
- Store media in closed metal cabinets, electrically grounded.
- Store media in their original cases.
- Shelve media vertically (not stacked).
- Minimize exposure to sunlight and UV from light fixtures.
- Allow media to acclimate to new temperature and humidity before using.
- Return to controlled storage immediately after use.

Any 1x1=1 mark

19.   (a)   Define the term **Artificial Intelligence** (IT).   *(01 mark)*

➤ Artificial intelligence (AI) is an area of computer science that emphasizes the creation of intelligent machines that work and react like humans.

Any 1x1=1 mark

(b) Explain two areas in which **artificial intelligence** is being applied in the following areas.

Heavy industries:

- Robotics is also a major field related to AI.
- Optimization of Continuous Production Processes
- Optimization of Coal Fired Boilers
- Virtual Online Analyzer (Virtual Sensor)
- Expert systems
- Knowledge based planning and simulation
- Scheduling AT-based training and maintenance

Any 1x1=1 mark

Hospitals and medicine

Generating alerts and reminders. In so-called real-time situations, an expert system attached to a monitor can warn of changes in a patient's condition. Diagnostic assistance. When a patient's case is complex, rare or the person making the diagnosis is simply inexperienced, an expert system can help come up with likely diagnoses based on patient data. Therapy critiquing and planning. Systems can either look for inconsistencies, errors and omissions in an existing treatment plan, or can be used to formulate a treatment based upon a patient's specific condition and accepted treatment guidelines.

Agents for information retrieval. Software 'agents' can be sent to search for and retrieve information, for example on the Internet, that is considered relevant to a particular problem. The agent contains knowledge about its user's preferences and needs, and may also need to have medical knowledge to be able to assess the importance and utility of what it finds.

Image recognition and interpretation. Many medical images can now be automatically interpreted, from plane X-rays through to more complex images like angiograms, CT and MRI scans. This is of value in mass-screenings, for example, when the system can flag potentially abnormal images for detailed human attention.

Any 1x1=1 mark

(c) Mention two branches of **digital forensics**. *(02 marks)*

> **Mobile device forensics** – relates to recovery of digital data from mobile devices.
> **Computer forensics** – explain the use of digital data on a computer system and storage medium.
> **Network forensics** – concerned with monitoring and analysing computer network traffic.
> **Database forensics** – study of databases and their metadata.

Any 2x1=2 marks

20. (a) Give two ways you can control intruders into a computer laboratory.   *(02 Marks)*

- *By burglar proofing of the computer lab.*
- *By employing the use of possessed objects so as to gain entry.*
- *By use of passwords.*
- *By introducing the use of computer locks.*
- *By activating computer firewalls.*
- *By maintaining a log of people that enter the computer laboratory.*
- *By penalising intruders found in the compute laboratories.*
- *By use of call back systems.*
- *Through installation of CCTV cameras.*
- *By installation of alarm systems*.   *Any 2x1=2 marks*
-

(b)   What is the primary function of a **dust blower** in the computer lab   *(01 Mark)*

> *Removing dust from devices*   *Any 1x1=1 mark*

(c) State two circumstances under which a computer user should double click a file.

(02 Marks)

- *When a user wants to open a file or folder.*
- *When a user wants to run an installation of a program.*
- *Double-click executes the function associated with that object.*
- *When the user wants to select the entire word.*   *Any 2x1=2 marks*

END