UGANDA NATIONAL EXAMINATIONS BOARD
UGANDA CERTIFICATE OF LOWER EDUCATION

INFORMATION AND COMMUNICATION TECHNOLOGY

SAMPLE THEORY PAPER

PAPER I

2 Hours 15 Minutes

Proposed Marking Guide

Section A

1. a) KIDOLE uses a computer to capture information about his business. Of late, his computer started to slow down and hang during use. Explain an appropriate solution that Kidole can use to solve the problem with his computer?
   - *Identification of the problem; The computer could be infected with viruses with a the OS and a number of programs corrupted.*
   - *Needs to back up all the work on the computer*
   - *Re-install the OS and all other programs* **(3 scores, 1@)**

   b) In a school computer lab, learners directly access the files of their fellow students. What appropriate measure can be used to improve security of the computer files?

   - *Identify the various users and create user logins*.

   - *Provide backup options where copies of deleted files can be retrieved.* (2 scores, 1@).

2. i) Describe how each of the following devices can be used for delivering a lesson in Biology.

A  **B**  **C** 

A. *Printer: Prints documents to guide discussions.*
B. *Projector: Gives shared views while learning.*
C. *Speakers: Sound projection while watching a video or listening to an audio.* (1 Score each).

ii) Explain any two precautions that should be observed while using any of the devices in i) above.

- *Handle with care.*
- *Remove from power when not in use*
- *Use an UPS for protection against power surges* *(Any 2@ 1 score)* (2 scores)

3. (a)

Statement	*Device*
A device used to convert a hard copy into soft copy file	*Scanner*
A device used to output the contents of an MP3 file at a party	*speaker*
A device for producing coloured images for a billboard	*plotter*

(b) A LaserJet printer uses tonner to form images on the sheet of paper/print media. The printer creates a beam of light in form of the image to be printed. The beam of light heats the tonner and the particles melt forming an image on the print media/paper.

The inkjet printer sprays droplets of ink onto the print media to form the required image or text.

4. (a) A computer uses system software and application software. Explain the difference between these two categories of software. **(2 scores)**
Systems software is a set of programs that manage the way a computer operates whereas application software refers to programs that solve end users' specific problems such as word processing, managing data, etc

(b) Jane tried to install a new programme on her computer. She got an error message ***"you do not have sufficient storage space"***. She has had this computer for more than 5 years.
Share with Jane three different pieces of advice on how to address the challenge.
(3 scores)

- *Try uninstalling unwanted programs on the computer to free some space.*
- *Run Disk Clean up. You can free disk space by deleting files that you do not need.*
- *Use disk compression utility. This helps you add more hard disk space.*

- *Perform a clean boot. This reduces conflicts related to software that can bring up the root causes of the insufficient disk space error as a result of apps and services that start and run in the background when Windows starts normally.*
- *Boot in Safe Mode. Safe mode starts up your computer with limited files and drivers but Windows will still run. (**Any 3 points)***

5. A User logs on to his laptop computer using a thumb print and password. He does not connect it to open wireless networks. He always tells his colleagues that ***"a laptop is a personal device not for sharing"***.

a) Share your personal views on why the User;

i) logs in with both a thumb print and a password. (1 score)

To provide double security.

ii) avoids open wireless networks.

Avoids intrusion into the user's laptop through the network. (1 score)

(a) Give one importance of:

(i) Computer Authentication (1 score)

Authentication helps organisations to keep their networks secure by allowing only authorised users (or processes) to access its protected resources, which may include computer systems, networks, databases, websites and other network-based applications or services.

(ii) Data Confidentiality (1 score)

Data Confidentiality protects the disclosure of information by ensuring that the organisational data is limited to those authorised individuals.

(iii) Data Integrity **(1 score)**

Data integrity also refers to the safety of data in regard to regulatory compliance and security. The importance of data integrity is protecting data loss or a data leak. In order to keep your data safe from outside forces with malicious intent, you must first ensure that internal users are handling data correctly.

6. (a) Explain the key role for each of the following stakeholders in managing e-waste in your community.

(i) Management authorities **(1 score)**

- *Release of regulation*
- *Planning*
- *Operation of the system*
- *Environmental inspection*

(ii) Collectors (1 score)

- *Collection of the e-waste*
- *Submission to qualified recyclers*

(iii) Waste disposers (1 score)

- Incineration of hazardous material and waste

(b) Share any two societal challenges that are as a result of poor e-waste management (2 scores)

- *Water pollution*
- *Air pollution*
- *Electronic waste contains toxic components that are dangerous to human health, such as mercury, lead, cadmium, barium and lithium*

7. The school computers in the computer laboratory are having a problem of limited storage space.
   (a) Suggest three ways of solving this problem. **(3 scores)**

- *Extend Drive with Unallocated Space*
- *Clean Junk Files*
- *Clean Large Files*
- *Transfer Large Files to an External*
- *Uninstall applications which are no longer in use*

   (b) The teacher of ICT in a school in Uganda stores his files on Drop Box and Google Drive. Suggest any two challenges he is likely to face. **(2 scores)**

- ***Risk of data confidentiality***
  There is always a risk that user data can be accessed by third parties if data and cloud protection systems are not good. ***Depends on internet connection.*** *The internet is the only way to cloud computing. When there is no internet connection in your place, or the internet path to the cloud provider is in trouble, automatically access to your cloud computing machine will be disconnected.*
- ***The level of security***
  Not being in control of our own systems'security. Secrecy and security are among the most doubtful things in cloud computing. By using a cloud computing system means we have fully entrusted the security and confidentiality of data to companies that provide cloud computing services.
- ***Vulnerable in the event of an attack***
  There are lots of arguments against cloud computing one of which is that because the Cloud Computing services are online, they are exposed to a wide range of attacks online which may be difficult to control. ***Technical problem***
  Managing cloud computing services depends on the efficiency of the service providers and availability of customer support all of which is not in direct control of the user.

8. Two competing companies A and B produce similar products. Company A reaches out to customers using printed flyers and billboards around the community while company B has active Facebook and Titter platforms.
   (a) What are the likely advantages of Company A over Company B? (2 scores)

- Flyers and billboard advertising favour all categories of people whether literate or illiterate unlike company B which favours only the elite class.
- Accessing information using flyers and billboards on the side of the population does not cost anything since flyers are given to them free of charge unlike social media information access where the audience needs internet services to access information.
- Advertising using billboards makes a huge and eye catching advert unlike social media platforms.
- There is increased frequency of consumer exposure when using flyers and billboards unlike social media platforms.

(b) What are the likely advantages of Company B over Company A? (2 scores)

- Editing in the final product can be done in a matter of seconds.
- There is worldwide coverage in terms of market.
- The costs of online advertising are fairly low compared to those of print.

(c) Which of the two approaches would be appropriate for SELLING company products in your community and why? (1 score)

Advertising using flyers and billboards is the most appropriate approach in my area because not all people are computer literate.

OR: *The use of Facebook and Twitter is appropriate where the users are ICT literate and have the appropriate ICT services.*

9. Students of Senior One shared complaints of having backaches, headaches and painful shoulders as a result of participating in a computer training workshop that lasted one week.

(a) Explain the possible causes of

(i) backaches (1 score)

Caused by over bending and not using the right furniture while using computers.

(ii) headaches (1 score)

- *Using computers for long hours without breaks*
- *Too much light emitted by the screen/monitor*
- *Too much noise from the systems unit*

(iii) painful shoulders (1 score)

Sitting at a desk with your arm in an outreached position in order to use your mouse for long periods of time.

(b) Share your advice on how any two of the above challenges can be avoided by the students. (2 scores)

How to avoid (any two @1 score):

backache

- *Use proper furniture when using computers (swivel chairs)*
- *Get breaks while using computers*

headache

- *Get breaks while using computers*
- *Reduce monitor light/antiglare screens*
- *Need to replace computer fans which make noise.*

painful shoulders

- *Use proper furniture (i.e. chair and table) while using computers*
- *Exercise your limbs regularly while using computers.*

10. (a) Fill in the table below with the appropriate tool for each of the functions. **(3 scores)**

Function	**Tool**
Reading thumb prints at the workplace	*Finger print scanner/biometric scanner*
Measuring the temperature of a domestic animal	*Thermometer*
Reading prices of commodities at a point of sales	*Bar code reader*

(b) Imagine you have been assigned a task to prepare a presentation about germination of a bean seed. Identify the ICT tools you would need to collect data and what you would use each tool for. **(2 scores)**

- *Camera/video recorder - For recording pictures of germination*
- *Web cam/camera – For recording data/pictures about germination*
- *Laptop/desktop – For capturing data and keeping data to use during the presentation*
- *I-Pad – for capturing data and keeping data to use during the presentation*
- *Tablet – for capturing data and keeping data to use during the presentation*

SECTION B

Answer any two questions from this section.

11. Imagine you were dropped in the middle of a forest. You are not able to identify where you are. In your pocket, you have a functioning smartphone that has no sim card in it. You realise that it can access an active hot spot for an abandoned camping site nearby. Write down a detailed step by step account of the steps you would take to get yourself out of the forest back to safety? (15 scores)

- Connect my phone to the active hotspot
- This is meant to connect me to the internet
- Turn on the GPS on my phone
- Open Google maps on my phone
- Type the name of my residence or the nearest trading centre e.g. Kyambogo University
- Specify that I am walking on the Google map
- Tap directions and choose start
- This facility will show me my current place and will provide directions I need to take to my desired destination.

Any five logical steps @ 3 scores

12. Bruce works as a secretary at a law firm. His work requires him together with 20 other colleagues to work on a computer for more than 8 hours a day, six days a week. Each of these employees can work for a maximum of 3 days a week and then take a break. The office policy allows anyone in office to work on a case at hand irrespective of who created its documents. At times they are forced to collaborate in order to get the same understanding about the case. As a student of ICT,

(a) Guide Bruce and his colleagues on how they can store files in a way that allows them to work effectively. **(7 scores)**

- Use removable storage devices like flash disk where one can save and share the storage media with their colleagues.
- Use of well labelled folders on the office computer where all the colleagues can access files.
- Use online collaborative means of creating, editing and saving files e.g. using Google docs.
- Joint online storage of office files where all the workers have the online account credentials for accessing and editing of office files e.g. using Google drive

(b) Advise Bruce on how he can reduce chances of getting health related challenges that may come as a result of his work environment. (8 scores)

Preventing computer-related overuse injuries

Tips to avoid overuse injuries of the hand or arm include:

- *Have your mouse at the same height as your correctly positioned keyboard.*
- *Position the mouse as close as possible to the side of the keyboard.*
- *Use your whole arm, not just your wrist, when using the mouse.*

- *Type lightly and gently.*
- *Mix your tasks to avoid long, uninterrupted stretches of using the computer.*
- *Remove your hands from the keyboard when not actively typing, to let your arms relax.*

Preventing eyestrain from computer use

Tips to avoid eyestrain include:

- *Make sure your main source of light (such as a window) is not shining into your face or directly onto the computer screen.*
- *Tilt the screen slightly to avoid reflections or glare.*
- *Make sure the screen is not too close to your face.*
- *Put the screen either at eye level or slightly lower.*
- *Reduce the contrast and brightness of your screen by adjusting the controls.*
- *Frequently look away from the screen and focus on faraway objects.*
- *Have regular eye examinations to check that any blurring, headaches and other associated problems are not caused by any underlying disorders.*

Preventing injury from laptop computers

Tips to reduce laptop dangers include:

- *Use a correctly set-up desktop computer instead of a laptop as often as you can.*
- *Use peripheral equipment, such as a docking station, separate keyboard, mouse and laptop stand.*
- *Take frequent breaks.*
- *Carry your laptop in a backpack or in wheel-along luggage.*

13. Imagine you are at a camp site in a remote village and realise the many features near the camp site are what was required for your Geography coursework. You need to take a number of photos of these features because they will be helpful in your coursework. You only have access to two devices with you. A new digital camera that does not have a memory card in it but has internal storage that can accommodate about 5 images and a laptop whose webcam is faulty. Both laptop and camera support Bluetooth technology. You need to take not less than 30 photos for the coursework to be fully covered.

    Explain in detail how you can get all the necessary photos without leaving the camp site? **(15 scores)**

    - *Turn on the phone's Bluetooth and pair it with the laptop Bluetooth*
    - *Take the first five photos using the camera by saving them on its internal memory space.*
    - *Using Bluetooth feature on the laptop, set it to receive a file.*

- *Send the files from the phone to the laptop.*
- *Delete the remaining copies on the phone to free space.*
- *Take new pictures using the camera.*
- *Repeat the procedure of sending files to the laptop from the phone through Bluetooth technology until all the required pictures have been taken and saved on the laptop.*

  Any five pts - @3pts = 15 scores

END

UGANDA NATIONAL EXAMINATIONS BOARD
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INFORMATION AND COMMUNICATION TECHNOLOGY

SAMPLE PRACTICAL PAPER

PAPER 2

PAPER 2 (PRACTICAL)

TIME: 2 HOURS AND 30 MINUTES

Instructions to Candidates

This paper is made up of two sections, Section A and Section B.

Section A is compulsory and takes 50 marks. You are required to attempt the **two** questions in this Section.

Section B is made of **three** equally weighted questions. Each has a maximum score of 25 marks. Attempt any **two** questions.

Support files, where necessary, are provided.

Save your work on a CD for submission and also include printouts.

Section A (50 Marks)

This section is compulsory.

Question 1: Word processing

i) A tree planting company wants to have their first issue of a tree planting magazine. You are required to word process the available text based on the following instructions to make the article readable.
ii) Using a suitable Word processing software package, load the file **Tree planting.txt**
iii) Set the page size to A4.
iv) Set the page orientation to landscape.
v) Format the entire document into three equally spaced columns, with a 4 mm gap between the columns with a '*Times New Roman'* font style.
vi) Set text to 1.5-line spacing
vii) Set the text to fully justified.
viii) Set the font size to 11 points
ix) Insert an appropriate image on the first page with text wrapping around its right side only.
x) Format only the first page of the document as a single column
xi) Insert a centre aligned heading **'Tree Planting Protects the Environment'** on the first page with text font size 70 points and double underlined.
xii) Insert below the heading the words **"Edited by <<Your full name>>**" right aligned.
xiii) Locate the text "SUSTAINABLE PLANTATIONS" and 'FORESTS ARE OUR JEWELS' and format them as headings. They should appear in upper case.
xiv) Create a footnote at your name. The information in the footnote should contain your personal number.
xv) Place an automated page number
xvi) Insert a well visible page border around the entire document.
xvii) Save your work as **'Tree Growing'** and print.

Question 2: Spreadsheets

MMM secondary school has just had their end of year examinations. The results for the different subjects are in the document named **results.docx**. You are going to analyse these results using a suitable spreadsheet software and answer the following questions.

i) Load the contents of the file **Data.docx** into a suitable spreadsheet application
ii) Insert your name and index number as the middle header.
iii) Determine the total score for every student.
iv) Determine the average score for each of the students and correct to two decimal points.
v) Use the Rank Function to assign each student a position in class.
vi) Create a word document and save it with the file name **Results.docx**

vii) Take a screen shot of your work and paste it in Word document Results.docx.

viii) Show the formulas used to calculate and take a screenshot and paste it in Results.docx.

ix) Using any function of your choice, insert a comment column which automatically assigns “Good performance” for the participants above Average 70, “Fair performance” for the participants above average 50 and “Needs improvement” for average 50 and below.

x) Create a column graph on a new sheet summarising the participants’ performance showing their average scores.

xi) Format the chat with the following:
   a. appropriate chart title
   b. data label on each column
   c. horizontal axis
   d. vertical axis

xii) Display the table of scores used in the graph below the graph for easy interpretation by the management.

xiii) Determine the modal mark for the class in all subjects and indicate it in the Results.docx.

xiv) Save your work as MDD (your name) and print your work on A4.

Submit the printouts for Results.docx, final excel sheet on A4, and soft copies of the work done.

SECTION B (50 marks)

Answer any two questions from this section.

Question 3: Database Management System

In this question you will design and create a database using the following information.

A community library has been opened in your area to promote the reading culture among school going children. After one week of operation, the librarian realised that a number of children share the same names and borrowed the same title of books. As a result, the librarian is not able to track books borrowed. Part of the information on borrowed books is shown in the table below.

First Name	Last Name	DOB	Gender	Book Title	Author	Date borrowed	Return date
Apio	Susan	12/9/2004	F	Introduction to French Book 2	Patel D	20/7/2021	4/8/2021
Apio	Susan	12/9/2004	F	Vegetable Growing	Dhawal S	22/5/2021	6/6/2021
Apio	Susan	12/9/2004	F	Introduction to French	Patel D	18/9/2021	2/10/2021
Mbaine	Moses	8/8/2005	M	Introduction to French	Patel D	10/4/2021	24/4/2021
Mbaine	Moses	13/6/2003	M	Vegetable Growing	Dhawal S	20/11/2021	4/12/2021

i) Design and create a suitable database that will allow a single student to borrow more than one book at a time. Your database should also have a provision for:
   a. STATUS attribute for the librarian that will hold that data "RETURNED" or "NOT RETURNED".
   b. accept letters F or M for gender.
ii) Help them to create an interface in the program that can be used to enter more data.
iii) Generate a report that shows only the First Name, Last Name, Age in years, Book title, Author and Status.
iv) Students born after 2005 are not supposed to vote. Generate a report of those who were supposed to participate in voting.
v) Print all reports generated.

Question 4: Presentation

You are going to create a presentation on learners' evaluation of ICT based on information in the support file **PRESDOC.DOCX.** All slides of your presentation should have a consistent

look (layout and formatting). The slides must display a title and bulleted list unless otherwise stated.

i) Create a presentation of 6 slides using the file **PRESDOC.DOCX**
ii) Format slide 1 so that
    a. its layout is for a title slide.
    b. both the title and sub title are centred on the same slide
    c. Your name appears after the text *prepared by:*
iii) Format the entire presentation so that the following features appear on all slides to give the presentation a consistent look.
    a. have a company logo saved as **NCDC LOGO.PNG**
    b. your name, random number and index number
    c. automatic slide number and date in the footer.
iv) Create a bar chart using data provided in the file DURATION.CSV
v) Format the chart with
    a. appropriate labels for the horizontal axis and vertical axes.
    b. chart title.
    c. place the chart at an appropriate slide in the presentation.
vi) Insert a new slide between slide 4 and slide 5. Insert a column graph based on the data below.

Level of proficiency in ICT	**Year of Assessment**		
	2019	**2020**	**2021**
Excellent	14	56	70
Very good	36	54	65
Basic	35	43	20

vii) Comment on the level of proficiency in ICT over the period 2019 to 2021 on the same slide.
viii) Apply uniform animations and transitions in your presentation.
ix) Print a copy of your presentation showing 4 slides on each page.

Question 5: Web designing/Desktop Publication

In this question, you will design a website with four pages.

Healing hospital located on Plot 23 Kampala Road has approached you to design a website for them. The hospital management wants a four-page website which will market its services to the outside world. The hospital address is P.O Box 3454 Kampala, email is healinghospital@gmail.com, Facebook page is www.facebook.com/healinghospital, Telephone number is +256707665582.

i. Using the support content in support folder, design their website showing the staff page, how to contact them and the services they offer.
ii. A well designed banner should appear on the four pages
iii. The website should have well hyperlinked navigation buttons to take the visitor back and forth.
iv. The links i.e. hospital email address and the Facebook address should be well actively linked.
v. The telephone number for the hospital should keep moving from one side to another.
vi. Save your website as Healing hospital website and print the pages.

END

Information and Communication Technology

Paper 2

Sample examination

$2\,^{1}/_{2}$**Hours**

UGANDA NATIONAL EXAMINATIONS BOARD

Uganda Certificate of Lower Secondary Education

Information and Communication Technology

Paper Two (Practical)

2 hours 30 minutes

Proposed Marking Guide

Section A

Marking Guide for Question 1: Word Processing

SKILL BEING TESTED	SCORE
Ability to load the .txt file into a word processing software	1
Setting the page size to A4	1
Set page orientation to landscape	1
Setting the page to three columns	1
Adjusting columns to have a gap of 4mm	2
Changing font style to Times New Roman	1
Changing line spacing to 1.5	1
Text fully justified	1
Font size changed to 11 points	1
Inserting an image	1
Wrapping text to the right of the image	1
Inserting a section at end of page 1 (at the right place)	1
Changing the first page back to one column	1
Typing text “Tree Planting protects the Environment” in the right place	1
Formatting the text to 70 points, centre aligned	1
Inserting a double underline	1
Inserting the words “edited by << students name>>, right aligned	1
Locating the text “sustainable plantations” and “Forests are our jewels” and changing them to look different	2

Formatting the words “sustainable plantations” and “Forests are our jewels” as headings.	1
Creating a Footnote on the name	1
Placing automated page numbers	1
Inserting a visible page border	1
Evidence of a printed copy of the work	1
TOTAL	25

Marking Guide for Question2: Spreadsheets

SKILL BEING TESTED	**SCORE**
Ability to load data into a spreadsheet application	1
Name and Index number in the header	1
Formula used to determine total score	1
Correct total score filled for all students	1
Formula used to determine average score	1
Correct average score filled for all students	1
Rank function used correctly	1
Rank function used to get positions for whole class	1
Screenshot showing totals, average and position pasted in the word document	1
Screenshot showing formulae used	1
Use of the any of the following functions, If Function, HLookup or Vlookup correctly	2
Creating a column graph with the right values (Average scores)	2
Formatting the chart with appropriate chart title	1
Formatting the chart with data labels	1
Formatting the chart with label for horizontal axis	1
Formatting the chart with label for vertical axis	1
Table of scores displayed below the graph	1
Modal mark is stated and correct (1 for formula and 1 for correct mark)	2
Soft copies submitted	1
Excel sheet printed	1
Excel sheet fits on A4 (scaling the document)	1
Results.docx document printed	1
TOTAL	25

Section B

Marking Guide for Question 3: Database Management Systems

SKILL BEING TESTED/ Maximum mark)	**Attribute**	**SCORE**
Designing an appropriate database (8 marks)		

A relational database with two tables, each record having a unique primary key, correct use of Foreign Key	Two tables each with appropriate attributes	4
	Use of Primary keys in each table	2
	Proper use of a foreign key in the books table	2
Application of knowledge on data types (2 marks)	Data types well used in the designed table	2
	Data types not well used but database can work	1
Inserting given data into the database (3Marks)	All data correctly inserted into database	3
	Data inserted with errors	1
	Data not inserted	0
Having a status attribute in the database (2 marks)	Status column with the appropriate data type	2
	Status column with inappropriate data type	1
Data validation on the Gender attribute(2 marks)	Validation rule well used	2
Interface for data entry (4 marks)	Form for entering student data	2
	Form for entering books data	2
Report	Report shows data from the two tables	3
	Report shows data from only one form	1
Date calculations (1 mark)	Report shows that age of the student by use of date calculation formula	1
Generating the voters register (1 mark)	Voters register generated	1
Printing (2 marks)	Print out for each of the report	
TOTAL	**25**	

Question 4: Marking Guide for Presentation

SKILL BEING TESTED	SCORE
Ability to load content from an external document	2
Changing layout of slide 1 to title slide	1
Centre align text on title slide	1
Adding text to a presentation	1
Giving the entire presentation a consistent look	
- Evidence of using the master slide	2
- Consistent background achieved	1
- Consistent appearance of a logo on all slides achieved	1
- Consistent appearance of name of creator	1
- Adding appearance of a random number	1
- Appearance of an index number on all slides	1
- Appearance of automatic slide number on all slides	1
- Appearance of automatic date on all slides	1
Creating a bar chart based on information given	1
- Chart formatting with chart title	1
- Horizontal and vertical labels	2
- Placing the chart on the right slide to co-exist with the text	1
Ability to insert a new slide at the right position	1
Creating the right chart from the information given	1
Appropriate comment about the chart produced	1
Appropriate animations across the presentation	1
Evidence of slide transitions	1
Slides printed showing 4 slides on every page	1
TOTAL	25

Marking Guide for Question 5: Web design/Desktop publication

SKILL BEING TESTED	**SCORE**
Creating four web pages	4
Creativity on the choice of content to use	2
Different designs used	2
Creation of navigation buttons	2
Hyperlinks in the navigations button	3
Use of images on different pages	2
Creation of a uniform banner	2
Hyperlinking email address and url i.e. Facebook	2
Insertion of the marquee	2
The contrast of the text with the background	2
Saving and printing	2
TOTAL	**25**

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