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QUESTIONS & ANSWERS FOR COMPUTER STUDIES & SUBSIDIARY - ICT

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Chapter Contents: COMPUTER SOFTWARE

Introduction to Computer Software

System Software

Application Software

- 1(a) Explain what is meant by the term Computer Software? (02 marks)**

This is a collection of computer programs and related data that provides instructions to the computer hardware.

Or

Computer Software is an interface between Hardware and its users.

- (b) Mention two ways through which computer Software can be acquired (02 marks)**

- Buying standard software from vendors or software companies.
- User developed (in-house / tailor made) software.

- (c) Explain, why is it important to consider user needs when purchasing computer software. (01 marks)**

The analysis of user needs determines the types of software the user will acquire.

- 2 Give five items that should come along with authentic software. (05 marks)**

- User manual
- License
- Installation guide
- Reference guide
- Provision for trial version

- 3(a) Distinguish between open source and proprietary software. (02 marks)**

Open source software is one whose source code is freely made available to users so that they can modify, use and distribute the modified product **while** **Proprietary software** is one whose source code is hidden from the users and therefore modification is for the copyright owner / software developer.

- (b) Mention any three hardware details that should be considered before installing software. (03 marks)**

- Processor speed and type
- Hard disk capacity
- RAM capacity

- 4 Briefly explain the following terms as regards software. (05 marks)**

- (i) General purpose software**

General purpose software is software purchased “off-the-shelf” by the user and is used for wide variety of purposes.

- (ii) In-house developed software**

In-house developed software are customized programs written by a programmer or software developer under contract.

(iii) Software release

Software release is the public or private distribution of a new or upgraded version of software product.

(iv) Software version

Software version also known as software upgrade is the major upgrade in a current software leading to even changes in software interface and some procedures.

(v) Software suite

This is a collection of individual application software packages sold as a single package. E.g. Database software, spread sheet, presentation, word processor, publisher software are all sold under Microsoft office suite.

5(a) Distinguish between system and application software, state an example of each. (03 marks)

System software are a set of programs that manage and control the operations of a computer and other types of software that run on it. e.g. Operating systems (windows, MS DOS), utility programs (antivirus, cryptography) **while** **Application software** are programs designed to help a user perform a specific task e.g. word processor, database, windows media player software for playing audio & video files.

(b) State two advantages of general purpose software. (02 marks)

- Relatively cheap and readily available
- They are user friendly. Are easy to learn and use.
- Are provided with supportive documentation in both soft and hard copy format.
- Can be used to accomplish a number of tasks e.g. word processor generates a variety of documents (letters, notices, memos, speeches).

6(a) Explain, what is meant by Operating system. (01 mark)

This is a set of programs containing instructions that coordinate all the activities among computer hardware devices.

(b) State four functions of an operating system. (04 marks)

- Makes hardware to start.
- Supervises and coordinates hardware operation
- It helps in memory management.
- It monitors system performance.
- It helps in storage management
- Configuring devices. OS (Operating System) supports plug and play and can configure devices automatically.
- It administers security. OS enables system administrators do system audits on system users.
- Acts as an interface between user and hardware.

7(a) Distinguish between single user licence and site licence (02 marks)

Single user licence is a licence agreement that gives a software buyer the right to install and use software on a single computer at a time **while**

Site licence is a licence that gives a software buyer the right to use and install the software on multiple computers at a single site.

(b) Kansiime the class teacher Mitoma International school keeps records of her students on her computer. At the end of the term she prints out documentation about each student and also prepares each individual results. Tick three items of software which she could use. (03 marks)

Word processor	√
Control software	
Measuring software	
Spreadsheet software	√
Animation software	
Database software	√

8(a) What are system software programs? (01 mark)

System software are a set of programs that manage and control the operations of a computer and other types of software that run on it.

(b) Explain the three classifications of the system software. (03 marks)

Δ Operating systems

This is a set of programs containing instructions that coordinate all the activities among computer hardware devices.

Δ Utility programs

This is software designed to help analyse, configure, optimise or maintain a computer system.

Δ Programming Languages

These are artificial languages designed to communicate instructions to a machine, particularly a computer.

(c) State one way of acquiring an operating system (01 mark)

- By downloading open source copies of the software from the internet
- By purchasing a licenced copy from authorized software vendors.

9(a) Explain these terminologies as used in operating systems. (03 marks)

(i) Patch

This is a program code that rectifies a bug (error) in an operating system or seals weak points of an operating system.

(ii) Interrupt

This is an act of suspending the normal sequential processing of instructions in a computer.

(iii) Troubleshoot

This is a trace, identify and correct any hardware and software related problems.

9(b) List two devices controlled by an operating system. (02 marks)

- Secondary storage devices
- RAM
- Processor
- Input devices such as keyboard, digital camera.
- Output devices such as printer, monitor
- Communication interfaces and ports

10(a) “Nuwaha_ a sub ICT student wants to prepare her CV in preparation for a job search during her vacation. Tick three word processor softwares she could use from the list below (03 marks)

MS Word 2013	√
MS excel 2013	
Open office.org	√
SPSS	
Dbase	
LyX	√

(b) Name any two Operating sytems. (02 marks)

- Windows such as windows 7, windows 8
- Netware
- LINUX
- Vista
- DOS
- UNIX
- Palm OS for PDAs
- Solaris for e-commerce applications
- Pocket PC 2002

11(a) Explain what are Utility programs? (02 marks)

This is software designed to help analyse, configure, optimise or maintain a computer system.

11(b) State the function of these utility programs? (03 marks)

(i) Antivirus

This is a utility that scans a computer system for the possibility of malware and viruses.

(ii) Backup software

These are utilities that make copies of all information on a disk and restores either the entire disk (e.g. in the event of disk failure) or accidental deletion.

(iii) File viewer

This is a program that enables the location and access to contents of a file.

12(a) Distinguish between system and application software. (02 marks)

System software are a set of programs that manage and control the operations of a computer and other types of software that run on it. e.g. Operating systems
while

Application software are programs designed to help a user perform a specific task e.g. word processor, database.

(b) Ring any three items which are programming languages from the list below (03 marks)

LINUX

COBOL

BASIC

PASCAL

DOS

HTML

13(a) Distinguish between Command line interface (CLI) and Graphical user interface (GUI), giving an example of each. (02 marks)

Command line interface is an action that prompts a computer user to type in commands or instructions. e.g. Log in details such as username and password
while

Graphical user interface is an action where a user clicks on any command especially graphics. e.g copy and paste, moving an item.

(b) Give two advantages of using a GUI in operating systems (03 marks)

- It is easy to learn and use unlike command line interface.
- It is user friendly since it offers guidelines on how to navigate programs.
- It is easy to transfer data from one window to another by the drag and drop method.
- One does not need to master the commands in order to use it unlike the Command line interface.

- | | | | |
|-----------|---|---|---|
| 14 | Uninstaller utility
Disk partition
Backup software | memory testers
screen savers
Disk cleaners | cryptography utility
search utility
File compression utility |
|-----------|---|---|---|

For each of the statements below fill in the correct alternative of a utility program from the list above. (05 marks)

- (i) Cryptography utility enables data to be transmitted over a channel without it being hacked.**
- (ii) File compression utility adjusts the size of a file with programs such as WinZip to improve system performance.**
- (iii) Memory testers checks for failures in the storage of system.**
- (iv) Disk cleaners enables the computer user to decide on what to delete in case the hard disk is full.**
- (v) Screen Savers prevents phosphor burn out in most CRTs and LCDs.**

- 15(a) University student on internship has just bought a new laptop for his computing work, suggest any three software programs he will need installed on his computer before using it. (03 marks)**

- Operating system such as windows 7, windows 8
- Antivirus
- Software suite such as MS office
- Device driver software

- (b) State any two factors to consider in order to upgrade an operating system. (02 marks)**

- Compatibility features with existing hardware of the computer
- User friendliness of the operating system
- The cost
- Security features related to the OS.
- Reliability
- Hardware configuration of the computer

- 16(a) What are programming languages?**

These are artificial languages designed to communicate instructions to a machine, particularly a computer.

- (b) Mention the four classifications of programming languages. (04 marks)**

- Machine languages
- Assembler languages
- High level languages
- Fourth generation languages.

17 State the function of the following utility programs. (05 marks)

(i) Disk defragmenters

This removes fragments of files to one location.

(ii) File compression

This compresses or uncompresses files to save storage space.

(iii) Diagnostic

This compiles technical information showing identified problems in the system.

(iv) Uninstaller utility

This removes application software and its associated entries within the file system

(v) Network utility

These analyse the computer network connectivity, configures network settings, checks data transfer or log events.

18 Mention three ways of identifying an illegal copy of operating system (03 marks)

- Frequent interruptions of warning messages about genuinity of operating system being used (fatal errors).
- Prices of software are extremely cheap
- There is no documentation material accompanying it.
- There is no licence agreement or cetificate of authenticity.

19(a) Distinguish between machine language and high level language. (02 marks)

Machine languages are languages written in binary form (0's & 1's) in the computer and are extremely hard for humans to read and write **while**

High level languages are languages consisting of statements or sequences of text including words, numbers and punctuations much written like natural languages.

(b) State two examples of high level languages. (02 marks)

- BASIC (Beginners All-purpose Symbolic Instruction Code)
- COBOL (Common Business Language)
- FORTRAN (Formula Transition)
- Pascal

(c) State one advantage of high level language (01 mark)

- They are machine independent
- Are user friendly
- Are problem oriented
- Are easier to learn, write, correct and revise than assembler and machine languages.

20(a) Mention one similarity between GUI and menu driven interfaces. (01 mark)

Both interfaces have a list of options to choose from

(b) What difference is there between the two interfaces in (a) above. (01 mark)

- The menu driven interface has no icons unlike GUI that has icons
- The menu driven interface does not allow the use of pointing devices unlike GUI.

(c) State three features of a user friendly Operating system (03 marks)

- It works at faster speeds thus enabling application programs to run more frequently.
- Uses GUI in its commands
- It is multi-tasking. It enables the user to carry out many tasks at ago.
- It allows a user to recover from errors using the Undo and Redo actions.

21(a) What are application software programs. (01 mark)

These are programs designed to help a user perform specific task.

(b) State four application software programs (04 marks)

- Word processors such as MS word, LyX, Open office.org writer
- Electronic spread sheets like MS excel, apple numbers, VisiCalc
- Database software such as MS access, Oracle, Dabase
- Presentation software such as Ms Powerpoint, Corel presentation
- Educational software such as Encarta, Matlab, Google earth
- Multimedia software such Windows media player, Real player
- Web design software such as Java, HTML
- Desktop publishing software such as MS publisher, Adobe photoshop.

22(a) Outline any three reasons for running Operating systems on any user's personal computer system. (03 marks)

- OS Makes hardware to start
- It supervises and coordinates hardware operation
- It helps in memory management
- It monitors system performance
- It helps in storage management
- It configures devices. OS supports plug and play and configuring devices automatically.
- It administer security. OS enables system administrators do system audits on system users.
- Acts as an interface between user and hardware.

22(b) Give any two examples of Windows Operating Systems. (02 marks)

- Windows XP professional
- Windows 7 professional
- Windows 8.

23 The worksheet below shows a school's expenses (in dollars) paid out for the first three months of the year.

	A	B	C	D	E	F	G	H
1	item	jan	feb	mar	total	average		
2								
3	food	72	72	106				
4	Electricity	24	37	66				
5	telephone	96	90	114				
6	stationary	48	38	64				
7								
8	total							

(a) Write down a formula to calculate the following (03 marks)

- (i) Total expenses for electricity**
`=SUM(B4:D4)` or `=(B4 + C4 + D4)`
- (ii) Average expenses for stationary**
`=AVERAGE(B6:D6)`
- (iii) The highest expense for telephone**
`=MAX(B5:D5)`

(b) Write down a formula to count all the items with expense greater than 70 dollars.

`=COUNTIF(B3:D6, ">70")` OR `+COUNTIF(B3:D6, ">70")`

24 Write down a suitable software you could use for the following

- (i) Poduction of reports for a company (01 mark)**
 Word processor
- (ii) Management of records in a firm (01 mark)**
 Database
- (iii) Production of calendars and brochures for a school. (01 mark)**
 Publisher
- (iv) Manipulation of mumerical data collected for research. (01 mark)**
 Spreadsheet
- (v) To convey visual explanation during a workshop (01 mark)**
 Presentation

- 25 The spread sheet table was created using MS excel and shows part of Sub ICT results for some students of S6 in a certain school in an end of term exam.

E16								
	A	B	C	D	E	F	G	H
1								
2	NAME	S850/1	S850/2	S850/1 OUT OF 40%	S850/2 OUT OF 60%	TOTAL	GRADE	POSITION
3								
4	Ann	55	80	22	48	70	D1	2
5	Peter	57	59					
6	James	43	50					
7	Kezia	73	80					
8	David	59	59					
9	Mariam	66	70					
10	Suzie	49	40					
11	Gift	50	57					

(a) Suggest two other spread sheet programs that could be used to create the records besides MS excel. (02 marks)

- Lotus 1-2-3
- VisiCalc
- Open Office.org Calc
- Jazz
- Symphony
- VP planner

(b) Which function is suitable for grading students in column G (01 mark)
The IF function

(c) (i) Write down a formula for creating position for students in column H basing on total. (01 mark)

=RANK(F4, F\$4:F\$11, 0)

(ii) State the tool you would employ to complete the positioning for all the students. (01 mark)

The auto fill / copy handle tool.

26(a) State the difference between Systems and Application software? (02 marks)

System software are a set of programs that manage and control the operations of a computer and other types of software that run on it. e.g. Operating systems **while**

Application software are programs designed to help a user perform a specific task e.g. word processor, database.

26(b) Give any one example of:

i) A customized application program. (01 mark)

- Personal websites
- Inventory management
- School management software
- Automatic Teller Machine (ATM) software

ii) Office application Program.

- Microsoft word 2007
- Microsoft publisher 2010
- Microsoft excel 2013
- Microsoft outlook 2010

iii) Shareware software.

- Adobe acrobat 8
- (IVOS) Intelligent voice operating system 1.02
- WinAVI video converter 7.1
- Xilisoft video converter.

27(a) What is meant by DataBase Management System (DBMS)? (01 mark)

This is a collection of programs that enables users create and maintain a database.

(b) Name any two database management systems (02 marks)

- Micrisoft Access
- Oracle
- My SQL
- Dbase
- Corel parodox
- Visual basic

(c) Explain two advantages of DBMS over File based system. (02 marks)

- It controls data redundancy. Data of similar type is stored in single location hence easing independent updates.
- It helps restrict unauthorized access. Many DBMS use security mechanism to protect data.
- DBMS provides facilities for recovery from hardware and software failures (Provide backup and recovery).
- Improves data accessiblity and responsiveness. It is possible to access data via an internet connection.
- It improves maintenance through data independence.
- It enforces standards in databases.

28. The table below shows part of a database for employees of a certain company.

EMPLOYEE ID	FIRST NAME	LAST NAME	SEX	BASIC SALARY \$	DEPART
K001/04	Glenn	Tucker	M	25000	Security
K007/088	James	Bond	M	30000	Security
K013/098	Jessie	Elvis	M	20000	Messenger
K009/003	Mary	Heitinga	F	40000	Council
K156/145	Leon	Melanine	F	58000	COuncil
K345/001	Jack	Freddie	M	10000	Cleaner
K728/024	Hwan	Sung	M	33000	technical

- (a) Write down the data type for the following fields
- (i) SEX (01 mark)
Text
 - (ii) EMPLOYEE ID (01 mark)
ID number
- (b) How many records are there in the table? (01 mark)
7 records (number of rows used for data entry)
- (c) What is the suitable primary key? (01 mark)
EMPLOYEE ID
- (d) Write down a query for employees in the security department and council department. (01 mark)
“Council” or “Security”

- 29(a) Explain the following terms as used in presentation (04 marks)

(i) Template

This refers to a predefined inbuilt format and colour scheme to be applied to a presentation to give it a fully designed professional look.

(ii) Animation

These are visual effects applied to individual items in a slide such as graphical images, titles or bulleted points. These help to stimulate action during a presentation.

(iii) Transition

This is the visual movement in a given slide show. It is the method of moving one slide off the screen and bringing on another slide during a slide show.

(iv) Master slide

This is a parent slide that contains text and object that will appear on all other slides such as headers and footers, slide number, date & time.

29(b) Name any other presentation software besides MS PowerPoint (01 mark)

- Open office presentation
- Lotus freelance
- Corel presentation
- Harvard graphics

30(a) Distinguish between Custom made software and off the shelf software. (02 marks)

Custom made (special purpose / tailor made software) is software written to meet the needs of an organisation that can not be usually satisfied by other sources of software **while**

Off the shelf (General purpose / packaged software) is software which may be used for a wide variety of purposes e.g. Word processors, spread sheets, databases, presentations, etc.

(b) Explain any three categories of Application software (03 marks)

● **Licensed**

This is where a user purchases only the license of the software and not the software itself. The vendor allows for the the installation of this software on a specific number of machine.

● **Commercial / sold**

This is where the user purchases a legitimate copy of the software itself from the vendor and is free to resale it.

● **A Freeware**

This is application software that can be downloaded, used and copied without any restrictions eg. Internet softwares such as web browsers, file converters, etc.

● **As Shareware**

This is application that can be downloaded but you need to pay some amount of money for using them.

● **Open source**

This is software made available with their source code such that a user is free to modify its code and use it.

● **Needs to be installed**

This is software that has to be installed before you use your computer, such as device driver software, MS office suite.

● **Runs online**

This is software that runs online and you do not necessarily need to be download it e.g. Antivirus, Internet games.

31 The table shows part of database. Use it to answer the questions that follow.

STUDENT ID	Name	Math	Eng	Scie	SST	Total
014/KSS/005	Seninde	80	60	78	46	
014/KSS/102	Opondo	90	81	72	60	
014/KSS/009	Kutosi	56	92	66	46	

- (a) What is the most appropriate primary key (01 mark)
STUDENT ID
- (b)(i) Write down the criteria for students whose name ends with letter O and have a mark in math greater than 70 (01 mark)
Name: Like"O", math>70
- (ii) Write down a criteria for students whose names begin with letter K to S and have a mark in science less than 68. (01 mark)
Name: Like"[K-S]*", Scie<68
- (c) The formula entered in design view for total marks is. (01 mark)
Total:[Math] + [Eng] + [Scie] + [SST]
- (d) Write down an input mask for STUDENT ID to contain KKK and incremental by one. (01 mark)
'KKK1'

32(a) Explain the meaning of the following as used in presentation software. (03 marks)

(i) Hyperlink

A hyperlink is a connection from one slide to a web page, email address, slide or file. Text or objects such as pictures and shapes can be formatted as a hyperlink.

(ii) Action button

Action buttons are built in button shapes that you can add to a presentation and use as a hyperlink. Thus when one clicks or moves over the button, the action can occur.

(iii) Handouts

These are copies of presentation that are distributed to an audience for note taking and reference.

32(b) State two application areas of presentation software (02 marks)

- They are used in E-learning and instructional design
- They are used in Tutorials and instructions
- In business presentations
- In events and project documentations

33 (a) What is meant by cell reference?

This is the location / address of a cell in a worksheet e.g. B5, F9, DG43

(b) Distinguish between Relative cell reference and Absolute cell reference. (02 marks)

Relative cell reference is a reference to cells relative to the position of the formula **while**

Absolute (fixed) cell reference is a reference that always refers to cells in a specified location.

(c) State the function of the following as used in spread sheets. (02 marks)

(i) Auto fill/ copy handle tool

This is a feature that automatically fills in cells, create row of dates and even copy formatting from one cell to the next.

(ii) Freezing and unfreezing panes

This is a feature that enables headings of a large worksheet to be viewed as the you scroll through a work sheet. In this case these headings do not disappear as you scroll through.

34 (a) Distinguish between

(i) Validation rule and validation text (02 marks)

Validation rule gives an expression that must be true whenever you add or change a value in a field e.g. “F” or “M” **while**

Validation text is a text that appears when a value violates the validation rule e.g. required to enter F or M for this field.

(ii) Data validation and data verification (02 marks)

Data validation involves checking data input against expected / predetermined data limits coded in the computer **while**

Data verification involves checking data input manually by comparing input data with source data.

(c) State the importance of an input mask as a field property in databases (01 mark)

An input mask controls the value of a record and sets it in a specified format e.g. a telephone number field can be formatted with an input mask to accept ten digits that are automatically formatted as “(555) 123-4567. And the blank field will look like () _ _ _

35(a) What is meant by Word processing? (01 mark)

This refers to the process of entering and manipulating a document using a computer and computer programs.

(b) State two features of word processors. (02 marks)

- Word wrap
- File management capabilities
- Cut and paste
- Print management
- Font specifications
- Allows Graphics
- Allows customizing of headers, footers & page numbering
- Allow for mergers such as mail merge
- Spell check-up
- Allows for automatic creation of table of contents and indexes
- Has Thesaurus

(c) Distinguish between copy and cut command in word processing (02 marks)

Copy command allows the duplication of text or data to get two or more copies leaving the original behind **while**

Cut command allows the computer transfer of data or text from one position to another without leaving the original behind.

36(a) What is meant by application software? (01 mark)

These are programs designed to help a user perform specific task.

(b) State two application softwares used in spread sheets programs. (02 marks)

- VisiCalc
- MS excel
- Lotus 1-2-3
- SPSS
- Apple numbers

(c) In a sub-ICT exam a student who gets a total less than 50% is give an “F” while a student who scores a mark above or equal to 50% is given a point “O”. Write a function in spread sheet for grading students starting with cell address G3 (02 marks)

=IF(G3>=50%, “o”, IF(G3<50, “F”))

37(a) Define the term electronic publishing? (02 marks)

This is the production, distribution and user interaction of computer based production of text graphics and other interactive media.

(b) Mention any three electronic publications (03 marks)

- E-mail publishing
- E-books
- Web publishing
- Print on demand
- Print on demand
- Digital content
- E-journals
- Electronic ink
- Online portfolios
- Digital scrup books and online photo galleries

38(a) Briefly explain these terms as used in word processors (03 marks)

(i) Thesaurus

This is a word feature that allow you to search for meanings or synonymums without leaving the word processor.

(ii) Drop cap

This is an artistic (enlarge) beginning letter of a sentence or paragraph.

(iii) Macros

This is a character of words that represents a series of key strokes such as text or commands.

(iv) Footnote

This is a note placed at the bottom of a page of a book or manuscript that comments on or cites a reference for a designated part of the text.

(iv) Mail merging

This is the combining of two files into a single file when creating mass productions.

39(a) Distinguish between a workbook and a worksheet. (02 marks)

A workbook is a collection of worksheets in a spreadsheet **while** a worksheet

(b) State two data types stored in a spread sheet. (03 marks)

- Labels
- Numbers
- Formulas

40(a) Explain the following terms as used in Publisher software (03 marks)

(i) Frame

These are areas within a publication which may include text areas and picture areas.

(ii) Handles

These are small circles which appear round the edge of a frame when you click on the frame.

(iii) Template

These are tools having pre-chosen design styles that can be used in publisher to help you easily create basic publications.

(b) State two Print on demand / desktop publishing (02 marks)

- | | |
|----------------|------------------|
| ● Books | ● Calendars |
| ● Journals | ● Brochures |
| ● Magazines | ● Certificates |
| ● Flyers | ● Banners |
| ● Posters | ● Business cards |
| ● News letters | ● Greeting cards |

41(a) State two features of Electronic publishing software. (02 marks)

- Has inbuilt templates which users can adopt in publications
- Text formatting features
- Has inbuilt fonts
- Has ability to import text and graphics from other programs
- Has standard shapes such as lines used for drawing
- Has page formatting features such as margins, footers.

(b) Mention three electronic publishing software (03 marks)

- Microsoft Publisher
- Adobe page InDesign
- Adobe page maker
- iStudio publisher
- Corel Draw
- Frame maker

42 (a) Distinguish between relative cell referencing and absolute cell referencing. (02 marks)

Relative cell reference is a reference to cells relative to the position of the formula while

Absolute (fixed) cell reference is a reference that always refers to cells in a specified location.

42(b) Explain the meaning of the following spread sheet cell error messages. (03 marks)

i. #VALUE

An argument or Operant used is of wrong type.

ii. #NAME

Microsoft Excel does not recognise the name used in the formula.

iii. #####

The cell width needs to be adjusted such that the values are all seen.

43(a) Mention any three data types used in spreadsheets (03 marks)

- Labels
- Values
- Functions
- Formulas

(b) Mariam obtained the following marks in her combination in the promotional exams: 56, 60, 77, 80. Suppose values are entered in a work sheet at cells B4 to G4. Write down a formula that will be used to sum up all the her marks greater than 65. (02 marks)

=SUM(B4:G4, ">65")

44 Explain the meaning of these terms as used in spread sheets.(05 marks)

i. Active cell

This is the cell where the cursor is currently stationed.

ii. Worksheet

This is a sheet that contains rows and columns (cells) where you enter data. It is like a page in a work a workbook.

iii. Workboot

A workbook is a collection of worksheets. It is the main file of a spreadsheet program.

iv. Data range

This refers to a group of cells that usually acts as a basis for calculations in worksheets including creating charts.

v. Automatic recalculation

This is a feature in spread sheet that automatically adjusts the results of a formula if there is any adjustment in data.

45 Explain the following Error values in MS excel. (05 marks)

i. #DIV/0!

The formula is trying to divide by 0

ii. **#N/A!**

No value is available.

iii. **#NULL!**

You specified an instruction of two areas that do not intersect.

iv. **#NUM**

There is a problem with a number used in the formula.

v. **#REF**

The formula refers to a cell that is not valid e.g. 6E instead of E6.

46(a) Distinguish between a formula and a function as used in spread sheets. (02 marks)

A formula is a sequence of instructions for performing calculations and displaying result in a cell **while**

A function is a predefined formula that provides shortcuts for commonly used calculations.

(b) List down an three functions used in spreadsheets. (03 mark)

- Sum
- Average
- Maximum
- Minimum
- Count
- Mode
- If
- Median
- Rank
- Sqrt

47(a) Explain the meaning of these terms as used in chart & graphs in spreadsheets. (04 marks)

i. **Data series**

These are related data points or data markers that are plotted in a chart usually distinguished by a unique colour or pattern.

ii. **Legends**

These are small boxes that identify the pattern or colour assigned to data series in a chart.

iii. **Embedded chart**

This is a chart which is created within the same worksheet having the table.

iv. **Chart sheet.**

This is a chart displayed on a separate worksheet from the real sheet onto which a table is formed.

47(b) Mention one data management tool used in spread sheets. (01 mark)

- Sorting
- Filtering
- Creating charts / graphs

48(a) State the use of the functions in spreadsheets. (03 marks)

i. RANK

This enables one to create positions of data in either ascending or descending order.

ii. What IF

This is used to forecast the outcome and test different parameters with the help of the automatic recalculation feature.

iii. COUNT

This is used to count and return the number of items in a given range.

(b) Distinguish between data filtering and sorting. (02 marks)

Data filtering involves the display of data rows that meet certain criteria **while** Sorting is the arranging of data alphabetically or numerically either in ascending or descending order.

49(a) The airline uses a computer based presentation in all the airports to advertise its in-flight services. Give one reason why a master slide should be used when creating the presentation. (01 mark)

- With the master slide, the airline needs create an item once and the presentation program will automatically include it on every slide.
- You can edit items on the master slide any time.
- The slide master enables you to move objects, add headings and labels, change themes.

(b) Describe one advantage of using a wizard to create the master slide. (01 mark)

- Wizard has inbuilt templates which helps ease the slide creation.
- It has automatic master title styles from which you can use to easily create slide content.

(c) Explain the following presentation features. (03 marks)

(i) Slide show

This is a presentation of a series or sequence of still images and text on the display unit using presentation software.

(ii) Slide transition

This is the visual movement in a given slide show. Or

It is the movement of one slide off the screen and bringing on another onto the screen during a slide show.

(iii) Slide animation

This is the visual effect applied to individual items in a slide such as graphical images, titles and bulleted points.

50(a) Define a word processor.

(01 mark)

This refers to an automatically inbuilt electronic program used for entering and manipulating of documents using a computer.

(b) Explain the results of the following commands when applied to text in a word processor.

(i) Cut and paste

(01 mark)

This command allows the complete transfer of data or text from one position to another without leaving the original behind.

(ii) Copy and paste

(01 mark)

This command allows the duplication of text or data to get two or more copies leaving the original behind.

(c) What is meant by word-wrap as it is applied in word processing. (02 marks)

This is a feature in word processing that enables text or a sentence to automatically continue to the next line after reaching the margin.

51 a) Differentiate between system software and application software. (02 marks)

System software are a set of programs that manage and control the operations of a computer and other types of software that run on it. e.g. Operating systems **while** Application software are programs designed to help a user perform a specific task e.g. word processor, database.

b) Identify 3 system utilities which manages, maintains or optimizes storage space on the hard disks. (03 marks)

- Antivirus
- Backup software
- Disk cleaners
- Disc compression
- Disk defragmentors
- Disk partitions
- Disk space analyser
- File compression

52(a) Suggest two advantages of using presentation software over the traditional chalk and talk approach in conduction lessons. (02 marks)

- It attracts the attention of learners
- It provides edutainment. As well as learning, students are entertained
- Presentation can be stored as soft copies and later used for references
- It allows for correction of mistakes (editing)
- The presentation can be formatted with graphics, animations, transitions to make it more appealing.

(b) Suggest two advantages of using desktop publishing package for designing cards other than packages. (02 marks)

- It is readily available in popular suites such as MS office.
- It is easier to learn
- Has inbuilt templates which eases the design process

OBJECTIVE QUESTIONS

EXERCISE : 1

THE ANSWERS ARE BOLDED / IN DARK BLACK COLOR

1. The following is true about software
 - A. Software gets the proper instructions from hardware on how to perform a task.
 - B. Software is the step-by-step instructions that tell the computer hardware parts on how to do a task and how to do it.**
 - C. Software is type of data stored inside the computer to be processed by the computer.
 - D. Software is a program that is meant to display and print computer files.
2. Which of the following are the two main parts of computer software?
 - A. Application software and Operating system
 - B. Aystem software and Application software**
 - C. Programming languages and Microsoft Excel
 - D. Spreadsheet and Database Management System.
3. The set of programs that support the computer systems by coordinating the activities of the hardware and the application programs is referred to as:
 - A. Systems software**
 - C. Database
 - B. Anti-Virus program
 - D. Hard disk
4. Which type of software that solves the specific user oriented problem in an organization?
 - A. Application programs**
 - C. Utility programs
 - B. Operating systems
 - D. Data recovery
5. The following are the functions of operating systems except
 - A. Memory management
 - B. Error reporting and error handling
 - C. Job scheduling
 - D. Deciding for the users what tasks should be done.**
6. The following are good examples of operating systems except:
 - A. Unix
 - C. Linux
 - B. COBOL**
 - D. DOS
7. Which of the following is not a utility program?
 - A. Uninstaller
 - C. Wordpad**
 - B. Screen saver
 - D. Disk repair
8. Which level of programming language that uses binary digits (0's and 1's) while writing the computer program?
 - A. Machine Language**
 - C. Assembly languages
 - B. High level languages
 - D. 4th Generation

- 9 The following can be one of the advantages of machine languages programs, except?
 - A. Machine code programs are executed faster
 - B. They don't require either a compiler or Interpreter
 - C. They are suitable for developing operating systems
 - D. They are simple to learn and write programs**
10. The errors found in any of the computer programs is referred in computer terms as:
 - A. a bug**
 - B. a mistake
 - C. an error
 - D. All of the above.
11. Program installations means:
 - A. Removing programs from the hard disk.
 - B. Loading data from the hard disk to the computer memory
 - C. Adding programs to your computer hard disk to be utilized by the user.**
 - D. Scanning programs stored in the computer hard disk.
12. People who make computer programs are called?
 - A. Program designers
 - B. Computer architects
 - C. Computer programmers**
 - D. Computer Engineers.
13. Fifth Generation language are also called?
 - A. Natural Languages**
 - B. Low level languages
 - C. High level Languages
 - D. Middle level languages.
14. Which of the following computer language is the hardest to learn and to be used?
 - A. Machine Language**
 - B. Assembly language
 - C. Hard languages
 - D. 4th Generation languages
15. Which of the following high level programming languages is best for commercial purposes?
 - A. COBOL**
 - B. FORTRAN
 - C. C++
 - D. PASCAL
16. What is ALGOL in full?
 - A. All Languages are General Oriented Languages
 - B. Algorithmic oriented Languages**
 - C. Algorithmic Object Languages
 - D. Arithmetic Oriented Languages
17. The function of the following program is to combine two or more input files and form one output file.
 - A. Copy utility
 - B. Sort utility
 - C. Screen saver
 - D. Merge utility**
- 18 Which of the following list comprises computer high level programming languages?
 - A. COBOL, UNIX, Pascal, C++, ADA, FORTRAN, JAVA.
 - B. COBOL, BASIC, FORTRAN, C++, Pascal, JAVA.**
 - C. JAVA, LINUX, FORTRAN, BASIC, Pascal, ALGOL
 - D. JAVA, ADA, BASIC, C++, LINUX, and FORTRAN.

19. The following program allows a user to copy selected files on the entire hard disk into another disk or tape.
A. Backup utility C. Uninstaller
B. Save utility D. All of the above
20. The process of reorganizing scattered file and unused spaces on a computer's hard disk so that data can be accessed more quickly is referred to as:
A. Disk De-fragmentation C. Disk preparation
B. Disk fragmentation D. Disk Formatiiing
21. If you want to remove programs occupying the hard disk we use the utility called?
A. Disk cleanup C. Screen saver
B. Uninstaller D. DBMS
22. Application programs have two parts:
A. Database and Off-the-Shelf
B. Custom made and Off-the-Shelf
C. Custom made and Utility programs
D. All of the above.
23. The problem with any of the high level programming languages is that:
A. They need lengthy programs in order for them to execute.
B. They need a good computer that can store their programs.
C. They cannot be used to create very useful programs.
D. They need a compiler to convert the source program into executable code.
24. Which of the following programming language that evolved from C++?
A. JAVA C. ADA
B. BASIC D. FORTRAN
25. Which of the following are the language translators?
A. Compiler, Disk repair, and Translator
B. Compiler, Translator, and Interpreter
C. Compiler, Interpreter, and Assembler
D. Assembler, Translator, and COmpiler
26. Which of the following are good examples of Database programs?
A. Excel, Oracle, and MS-access
B. Oracle, MS-Access and dBase
C. dBase, MS-Access and MS-Word
D. MS-Access, MS-Excel, and MS-Word
27. The following are the good example of spreadsheet programs.
A. Word, Access, and SuperCal
B. MS-Excel, Lotus 1-2-3 and SuperCal
C. MySQL, MS-Excel, and Lotus 1--2-3
D. All of the above are correct

28. Which of the following programs that serve to be examples of word processing programs?
A. WordPerfect, MS-Word, and WordStar
B. MS-Excel, MS-Word, and WordStar
C. WordPerfect, Ms-Access, and WordStar
D. dBaseIII+, MS-Excel, and WordStar
29. Which of the following are good examples of desktop Publishing?
A. PageMaker and CorelDraw
B. PageMaker and Publisher
C. Publisher and CorelDraw
D. Excel and PageMaker
30. The following programs are under the category of Microsoft Office program.
A. Microsoft Excel, Microsoft Access, Microsoft PowerPoint and Microsoft Word
B. Microsoft word, Paint, PageMaker, dBase
C. Lotus 1-2-3, Paint, PageMaker, and Microsoft Excel
D. MS-DOS and Windows XP
31. Computer viruses can spread through two main ways:
A. Telephone lines and storage devices like flash disks
B. Telephone lines and dust acquired from the surrounding
C. Through electric lines and Floppy diskettes.
D. All of the above are correct.
32. You can realize that your computer has computer viruses if:
A. Sudden rebooting on your computer
B. Mysterious disappearance of stored files
C. Irritating messages that are displayed on your screen.
D. All of the above
33. Which is the best way to prevent your computer from computer virus attack?
A. Ensure that you blow dust every after a dhort period of time.
B. Don't leave your computer on if it's not in use.
C. Install an Anti-virus and ensure regular scanning of files.
D. All of the above can the best.
34. Which type of translator that translates a high level program into machine language a line by line?
A. Compiler
C. Interpreter
B. Translator
D. Assembler
34. One problem with the off-the-shelf program is that:
A. It may fail to suit on some organization's tasks
B. The purchaser does not have full control over the package
C. The organization may pay for features that are never to be used.
D. All of the above

36. Custom made program is also know as:
A. **Tailor Made** C. Application package
B. Packaged software D. Off-the-shelf
37. Copyrighted software that is distributed at no cost for a specified period of time such that payment will be made after that period has elapsed is called?
A. Freeware C. Custom made
B. **Shareware** D. Off -the-shelf
38. The following is one of the types of computer viruses, except?
A. Boot sector virus C. Macro virus
B. File virus **D. Processor virus**
39. The process of loading an operating system from the hard disk to the computer memory is called?
A. **Booting** C. Saving
B. Formatting D. Retrieving
40. Two well known user interface include?
A. **Graphical User Interface and Command Line Interface**
B. Graphical User Interface and Screen Saver
C. Command Line Interface and Icons
D. Microsoft windows and Microsoft Office
41. Which of the following level of computer programming is the lowest?
A. 4th Generation Languages **C. Machine Languages**
B. 3rd Genration Languages D. Assembly Languages
42. Which of the following operating systems is a product of Microsoft Software Company?
A. Linux C. Macintosh OS
B. Windows XP D. Unix
43. Which of the following utility programs can be used to free the hard disk space?
A. Diagnostic utility **C. File compression utility**
Disk repair utility D. Anti-virus utility programs
44. Which of the following programming languages do not need a compiler or interpreter?
A. COBOL and machine Languages
B. Assembly Language
C. PASCAL and Assembly Language
D. Machine Language.
45. Which of the following software can be used to access the internet pages?
A. **Web browsers** C. Norton
B. Publisher D. Microsoft word
46. Which of the following is one of characteristics of low level languages?
A. User friendliness
B. Its programs are not compatible
C. Program written by low level languages are short
D. Its vocabularies are close to human English language

47. Which of the following computer software are user oriented programs?
A. Media players and computer games
B. Media player and MS-DOS
C. Microsoft word and Linux
D. Database and MS-DOS
48. Which of the following computer software component is used to develop other software?
A. JAVA
B. Spreadsheet
C. Word-processing
D. Windows XP
49. Which of the following software components helps the user to interact with his computer/
A. User Interface
B. Keyboard and mouse
C. Monitor screen
D. Programming language.
50. What do you think computer software represent?.
A. Components in the computer that cannot be seen or touched
B. Instructions to hardware on how to perform a task
C. Non volatile memories
D. Volatile memories.

OBJECTIVE QUESTIONS

EXERCISE: 2 ON SOFTWARE APPLICATIONS

ANSWERS ARE IN BOLD / DARK BLACK COLOUR

1. Which of the following is not one of word-processing programs?
 A. Microsoft word C. La Text Edit
B. Lotus 1-2-3 D. AbiWord
2. _____Is the process of adjusting the appearance of the document in order to make it look appropriate and attractive.
A. Formatting C. Colouring
 B. Editing D. Paragraphing.
3. Which of the following makes word-processing programs more advantageous than typewriter?
 A. There is no need of experienced or very fast typist
B. The ability to store typed and processed documents
 C. There is no need of papers while using word programs
 D. More readable characters than those of typewriters.
4. _____is a feature that allows a user to type continuously without pressing the Enter key at the end of the line making text to move on to the next line.
 A. Merge text C. Auto format
B. Word wrap D. Line break
5. _____, _____ and _____ are features used when letters of the same content have to be sent to different individuals, except?
 A. Form letters C. Mail Merge
B. Merge letters D. Envelopes
6. Which of the following features allows a computer user to transfer part or full content of the document without leaving the original behind?
 A. Copy and paste **C. Cut and paste**
 B. Save As feature D. The Save button
7. _____ is a keyboard button that when pressed allows text to be written over or inserted as other characters move to create rooms for new ons.
 A. Caps lock key C. Space bar key
 B. Shift key **D. Insert key**
8. Which of the following is the key step for formatting the block of text?
 A. Bolding and Italicizing **C. Highlighting text**
 B. Bulleting and numbering D. Border surrounding
9. Which of the following is not a feature of word-processing program?
 A. Spell Checker C. Thesaurus
B. Querying D. Tables
10. _____is a common feature with predefined format which can allow users to design documnets such as letters and memos with little or without customization.
A. Template C. Print Preview
 B. Indentation D. Page layout

11. Which of the following acronyms describes the fact that the way the document appears on the screen it will be exactly the same way it will appear on paper after printing?
A. ASCII
B. WYSIWYG
C. BIOS-ROM
D. DBMS
12. The non printable areas around the edge of your page are usually called?
A. Page borders
B. Page margins
C. Page boundaries
D. Page edges
13. Which of the following command will help the user to recover his work if he has accidentally deleted it or made a mistake in his document?
A. Use Undo.
B. Use Redo
C. Use Recycle been
D. Use Save As.
14. How can auser format the document to make it appear straight in both right and left side?
A. Use Center command
B. Use Justify command
C. Use Align left command
D. Use Align right command
15. A movable symbol on the display screen that shows you where you may enter characters is called?
A. Insert
B. Cell
C. Image
D. Cursor
16. _____ is another name used for letter characters.
A. Numbers
B. Buttons
C. Fonts
D. Functions
17. Which of the following action should be done before you print your document on paper?
A. Spell Check
B. Print Preview
C. Save the file
D. Typeset
18. Which of the following is not a feature of word processing software?
A. Thesaurus
B. What-if analysis
C. Spell Checker
D. Headres and Footers
19. Which of the following is a pictorial representation of a commad or task that is used in graphical user Interface?
A. Windows
B. Icon
C. Dialog box
D. Button
20. The software application feature that can be used to view other hidden parts of the document is called?
A. Tool bar
B. Task bar
C. Scroll bar
D. Tool box
21. The graphic image that appears on the screen and displays a message requiring a response from the user is called?
A. Chart Wizard
B. Dialog box
C. Menu items
D. Office button

22. Which feature in Word processing that can allow users to automatically replace a word that has been used several times in a document?
A. Search and Find C. Spell checker
B. Thesaurus D. Word wrap
23. The option on the menu bar which enables one to name the document and store it on a storage device using another name is
A. Save C. Edit
B. Save As D. New
24. Which of the following is not a word processor?
A. Microsoft Word C. Word Perfect
B. Word Wrap D. Lotus Word Pro
25. The contents of an entire file can be referred to as a
A. Document C. Paragraph
B. Word processor D. Page
26. Formatting in Word Processing refers to:
A. Preparing a new floppy diskette for use
B. Cleaning diskettes for storage
C. Enhancing the appearance of text in a document
D. Erasing all data on a diskette.
27. Which of the following utilities can provide words that have the same meaning?
A. Spell Checker **C. Thesaurus**
B. Auto correct D. Grammar checker
28. Which one of the following is done in word processing?
A. Writing letter, formatting disks and processing graphics
B. Creating, saving, and printing documents
C. Printing of documnets, information sharing and processing work
D. Documenting, processing and sending information
29. Which type of memory that temporarily store the copied or cut portion of document before it is pasted to a different location?
A. Register C. Cache
B. Clipboard Hard disk
30. Which of the following task cannot be done by the use of word-processing program?
A. Inserting tables **C. Displaying query**
B. Spell checking D. Inserting Clipart
31. Which category of programs that Microsoft Excel falls in?
A. Presentation software **C. Spreadsheet software**
B. Database software D. Word-processing
32. Which of the following can easily identify the electronic spreadsheet?
A. Master slide C. Lookup wizard
B. Cells and Cell addresses D. Bullet and numbering

33. The preprogrammed formula in spreadsheet program is called?
A. Function C. Range
 B. Address D. Worksheet
34. Which of the following in spreadsheet programs can be used to provide summary from a highly detailed data?
A. Pivot Tables C. What If Analysis
 B. Lookup wizard D. Recalculation
35. The row and column coordinates of a cell in spreadsheet program is called?
 A. Active cell C. Reference
B. Cell address D. Formula
36. Which of the following tasks can best be done by the spreadsheet programs?
 A. Preparing memo **C. Preparing Invoices**
 B. Table of content D. Arranging Slides
37. Which of the following formula references does not change when the formula is copied?
 A. Relative reference **C. Absolute reference**
 B. Mixed reference D. All of the above
38. Commands or formulas you create and store in a spreadsheet are called?
 A. Icons C. Graphics
 B. Templates **D. Macros**
39. Which of the following is not a “Logical Operator” in spreadsheet program?
 A. Less than (<) operator **C. Division (/) operator**
 B. Equal to (=) operator D. Not equal (< >) operator
40. If the Microsoft Excel program can't use a certain cell content for calculation, then:
 A. #NAME? Error type is displayed **C. #VALUE! Error type is displayed**
 B. #DIV/0! Error type is displayed D. NULL! Error type is displayed
41. The error type #NAME? is caused by:
 A. The narrow column that the number cannot be displayed
 B. The formula entered is failing to locate all numbers
 C. The formula is trying to refer to cell that contains the formula
D. The formula must have been misspelled.
42. Which of the following formula is your best choice if you're to instruct the computer?
 A. =A2+B2+C2+D2 C. =SUM(A2,B2,C2,D2)
B. =SUM(A2:D2) D. =SUM(A2:B2:C2:D2)
43. A cell can be defined as:
 A. The collection of rows and columns
B. The intersection of a row and a column
 C. The combination of worksheets and chart sheets
 D. The marked boxes on your worksheet screen.

Chapter Contents: Internet & World Wide Web

Introduction to the Internet

Internet Services

World Wide Web

1(a) Explain what is meant by the term Internet? (02 marks)

This is a world wide network with more than 100 million users that are linked for the exchange of data, news, conversation and commerce.

Or

It is an arrangement of connected computers which lets the computer users all over the Globe to exchange data.

(b) Briefly describe the following internet protocols (03 marks)

i. TCP/IP

Transmission Control Protocol / Internet Protocol (TCP/IP) is a protocol suite that determines how computers connect, send and receive information on the internet.

ii. HTML

HyperText Markup Language (HTML) refers to the Hypertext authority system which can transmit text, data, images, sound, multimedia file types accross a network.

2 Mention Five services provided by the internet. (05 marks)

- World Wide Web (WWW)
- E-mail
- Mailing Lists
- Chat Rooms
- Instant messaging (IM)
- News Groups
- Internet Forums / Message boards
- Voice Over Internet Protocol (VoIP)
- E-commerce
- E-banking
- E-Learning
- E-publishing

3 Today internet is becoming part of the human life.

(a) Describe any three positive effects of the internet to society (03 marks)

- Information resources: the internet offers research information to students and users with the help of Numerous websites and search engines.
- Faster communication: it offers a speedy communication when using services such as Email, Chat, Commerce, etc.
- E-commerce: Online shopping is possible using numerous websites such as eBay etc. People can find both new and lost long friends, find jobs, business opportunities.
- Online services: One can access online services such as hotel reservations, pay for Bills and Taxes, etc.
- Formation of communities: The internet enables many forums involving

debates and discussions.

(b) State any two negative effects of Internet to the society. (02 marks)

- Theft of personal information: When using an unsecured possibility that your personal details such as credit card number, bank account info, etc may be accessed by Cyber artists.
- Virus threat: Computers on the internet are very prone to virus attacks, which may lead to crashing of hard disk or data loss.
- Spamming: Unwanted / Unsolicited E-mails in bulk are very frustrating as they make the internet connection very slow and unreliable.
- Easy access to Pornography: Unrestricted access to porn may have a bad influence on the mental health especially in Teens / Children.
- Social disconnect: when many people are engulfed in a virtual world of socialization, this may lead to drifting apart of friends and family members.

4(a) Identify three requirements needed for an internet connection (03 marks)

- Internet service provider (ISP)
- Internet software such as Lotus Notes, Outlook, etc.
- Transmission medium such as wireless (satellites, microwaves, WiFi, etc)
- Data terminal Equipment

(b) The internet has various uses in business

(i) State one advantage of using Email in business (01 mark)

- It offers a speedy communication to business clients
- It is reliable compared to other forms of communication
- One can communicate to multiple people at the same time using the mail merge feature.

5. Give five factors that lead to a slow internet speed. (05 marks)

- Quality of ISP (Internet Service Provider). Some ISPs provide slow connections because of outdated technology.
- Age of Computer set used: computers with outdated technology (old processor) slow down the connection speed.
- Type of communication medium used. Physical transmission medium is slow compared to Wireless.
- Distance of broadcasting service. ie. if far away from the computers.
- Type of web browsers. Some browsers may be using outdated technology.
- Weather. Prevailing bad weather conditions may affect internet speed.

6. (a) What do you understand by Internet Service Provider (ISP)? (02 marks)

This is a company that supplies Connections to the internet, including offering services related to the internet.

6(b) Give three example of ISPs in Uganda today (03 marks)

- Africell Uganda
- Uganda telecom limited
- Mobile Telecommunications network (MTN)
- Airtel Uganda
- Iway Broadband
- Inconnect

7 Briefly describe the following as used in internet (05 marks)

(a) URL

This is an acronym for Uniform Resource Locator. It is the global address of a website and other resources on the Worl Wide Web (WWW)

It is a string of characters that specify the address of a web page.

(b) Uploading

This is the process of transferring files (Text, Audio, Video, Graphics) from one computer system to another or to a secondary storage device or the internet)

(c) Downloading

This is the process of Retrieving or bringing copies of files (Text, Audio, Video, Graphics) over to your computer or storage device from another location such as the internet.

(d) Surfing

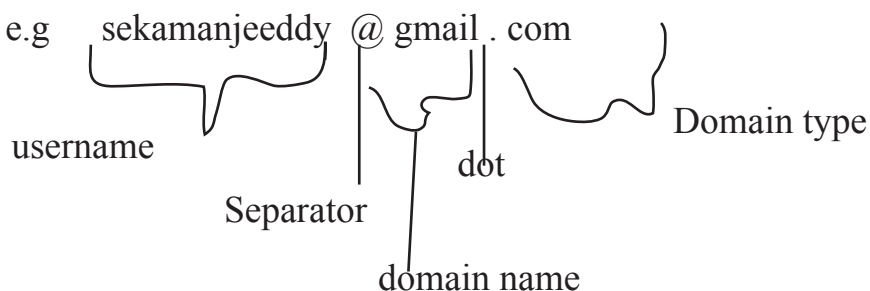
This is the process of accessing Data from the internet

(e) Online meetings

This is where people who are far away can chat virtually using services such as video conferences, skypeing, etc.

8. With an example, describe the main parts of an email address (05 marks)

- Username: this specifies the identity of the recipient of the email
- @ : this at symbol acts as a separator between the user name and the domain name.
- Domain name: this identifies the domain that hosts the email account.
- Dot (.): this separated the domain name and domain type
- Domain type: this specifies the category of the domain



9(a) Distinguish between sign in and sign up as used in emails. (02 marks)

Sign in is used to access content of an already existing email account by use of a username and password. **While**
Sign up is used to create a new email account.

(b) State three examples email software. (03 marks)

- Yahoo mail
- Gmail
- Hotmail
- Ovimail

10(a) Define the term protocol as used with the internet (02 marks)

These are rules that govern how communication over the internet is carried out.

(b) Mention any three protocols used on the internet. (03 marks)

- Internet Protocol (IP): an address that uniquely identifies each computer on the internet.
- File Transfer Protocol (FTP): an internet standard that allows users to upload and download files with computers.
- HyperText Transfer Protocol (HTTP): a set of rules by which HTML documents are transferred over the Web.
- Transmission Control Protocol / Internet Protocol (TCP/IP): this is a protocol suite that determines how computers connect, send and receive information on the internet.

11 State the function of the following fields as used in emails (05 marks)

i To

This specifies to whom the message was sent. The field where you type in the recipients email address.

ii. Subject

This provides a hint as to what the message is all about

iii. Carbon Copy (CC)

This tells us that the message was “carbon copied” to another user. In other words this field is used when one wants to send a copy of the email to other recipients.

iv. Blind Carbon Copy (BCC)

This field is often used if additional copies of the same email message is to be sent out to other recipients but without each of them knowing about it.

v Attachment

This is a textual, graphical, audio or video file that accompanies an email. It can be downloaded by the recipient for use.

12(a) Write this acronym ISP in full.

(01 mark)

Internet Service Provider

(b) State any four services provided by ISPs.

(04 marks)

- Internet access
- Domain name registration
- Web hosting
- Providing customized email addresses
- Access to software tools
- Provide fire walls
- Manage internet traffic e.g. By use of dedicated lines.
- Provide backup storage of data.

13 The use of email is becoming so popular as a communication method.

(a) Mention any three advantages of email software over the other traditional methods of communications such as the postal system. (03 marks)

- The message sent is usually instant
- Email is more secure since there may be no intermediate persons
- It is possible to send the message content to multiple people e.g. using the mail merge feature.
- It is convenient to as one can access it from anywhere at any time
- A person can access a variety of information cheaply such as audio, text, graphics and video as attachmnents.
- It takes less time to compose and send the message.

(b) What are the two disadvantages associated with the use of emails as a communication method. (02 marks)

- the Email system is not possible without an internet connection.
- the Email sent with attachments is susceptible to virus and worm infection
- the Email system does not favor computer illiterates.
- It only accommodates Intangible data (soft copy)
- It is expensive to set up an internet connection for sending emails.

14 Explain the following terms as used in Electronic mail

(05 marks)

i. Compose

This is the process of creating a new mail.

ii. Inbox

This is the storage location of incoming mail

iii. Sign out

This is the process of exiting an email account.

iv. Forward

This feature allows one to pass on a received mail to other recipients.

v. Check mail

This feature enables a user to view all the details of a received mail.

15(a) An email compose window consists three main elements: header, message and signature. Mention three items contained in the header. (03 marks)

- Recipient's address
- The subject
- Attachment

(b) State the function of a modem in data communication (02 marks)

To convert digital data to analog and vice versa.

16(a) (i) What do you understand by mail etiquette as applied in sending mails. (01 mark)

These are the moral rules (social code) to be observed when using email services.

(ii) State one mail etiquette (01 mark)

→ USENET

(b) SPAM is known to be unsolicited mail inbox. State three potential harm that such mail can bring. (03 marks)

- It leads to congestion of mail box.
- They sometimes carry malware / viruses
- They can be an avenue for fraud
- They sometimes contain porn content which is undesirable.

17(a) Mention three factors to consider when choosing a suitable ISP (03 marks)

- Initial connection cost
- The subscription fees for the services
- The available band width.
- Authenticity
- Additional value services such as web hosting, firewalls, backup storage of data
- Experience in the internet field.

(b) Give any two features of the electronic mail (02 marks)

- Inbox for storing incoming mails
- Outbox for storing outgoing mails
- Sent box for storing sent mails.
- Indication for read and unread mails
- Enables attachments
- The mail is sent instantly
- Enable people to send many copies of the same messages to many people.

18 Isiko's company email address is edkenisk@tashleysICTenterprises.com. Describe the parts of his email address.

i. **edkenisk:** is the username

ii. **@** : the separator between the username and domain name.

- iii. **TashleysICTenterprises:** is the domain name.
- iv. **dot(.) :** this separates the domain name from the domain type.
- v. **Com :** identifies the category of the domain in this case commercial

19. Describe the following internet communication services. (05 marks)

i. Email

This is a method of exchanging digital messages from an author to one or more recipients across the internet or other computer networks.

ii. Chat rooms

This is any technology ranging from real-time online chat over instant messaging and online forums to fully immersive graphical social environment.

iii. Mailing lists

This is a group subscribers to an organization thus the organization uses this list to send material to multiple recipients.

iv. News groups

These are discussion groups / forums within the Usenet system for messages posted from different locations.

v. Internet forums / message boards

These are online discussion sites where people hold conversations in the form of posted messages. In this case messages are temporarily archived.

20(a) What is a domain name?

This is a unique name that denotes a company. An organization, society or group on the internet.

(b) State four top domain names. (04 marks)

- .com
- .org
- .net
- .gov
- .edu
- .mil

21(a) Explain the following internet communication services. (02 marks)

i. Instant Messaging (IM)

This is a set of communication technologies used for text-based communication between two or more participants over internet or other types of networks.

ii. VoIP

VoIP (Voice Over Internet Protocol) refers to the communication protocols, technologies, methodologies and transmission techniques involved in the delivery of voice communication and multimedia sessions over internet protocol network (IP).

21(b) State any three precautions that should be taken when downloading content from the internet. (03 marks)

- Do not download from unknown sites
- Be sure that your internet connection is stable and does not break.
- Ensure that there exists enough storage space for the content to be downloaded.

22. Mobile phones can compliment networked computers for internet access.

(a) Mention three advantages of using mobile phones for internet access. (03 marks)

- they are portable, thus can be used from anywhere.
- they are readily available
- they are cheaper to users
- immediate contact is available
- they offer faster connections
- they save time which would be wasted in crowded internet cafes.

(b) Give two disadvantages of mobile phones for internet access. (02 marks)

- they can easily be lost
- they have limited display of content
- Large volumes of data may not be downloaded
- Some phones cannot browse certain websites.
- Better Internet connections may be limited to advanced phones such as smart phones.

23(a) Write these acronyms in full. (02 marks)

i. GSM

Global System for Mobiles

ii. GPRS

General Packet Radio Service

(b) List down three input / output devices needed for video conferencing. (03 marks)

- Webcam
- Microphone
- Speaker

24. Mention the meaning of the following domain types (05 marks)

i. com

Commercial business

ii. Org

Nonprofit Organization

- iii. **edu**
education
- iv. **net**
Networking organization
- v. **gov**
Government agency

25(a) Explain what is meant by World Wide Web (WWW) (02 marks)

This is an internationally complex system of servers or web servers that communicate with each other over the internet with client machines running browser software

(b) Describe the popular types of E-commerce carried over the internet. (02 marks)

- Online shopping: customers can view, select, order and pay for their merchandize online. Customers can use Electronic fund transfer method or E-Money to pay goods and services.
- Online advertisement: advertisers pay for the search service and customers can be targeted for specific types of Ads on the basis of their search results.
- Online banking: this involves the Electronic transfer of funds using credit card applications.

26 Explain the following terms as related to the world wide web. (05 marks)

i. Web browser

This is an application software or program designed to enable users access, retrieve and view and other resources on the internet eeg. Google chrome, Mozilla fire fox

ii. Search engines

These are programs that enable user to search for documents on the World Wide Web e.g. Google, Yahoo search, Dog pile, Bing, etc.

iii. Web server

This is a computer that satisfies users requests for web pages.

iv. Web master

This is a person who creates, maintains and manages a website often for a business, organization.

v. Home page

This is the starting page or table of contents for a website

27(a) Define the term URL

This is an Acronym for Uniform Resource Locator and it refers to a string of characters that specify the address of a web page.

27(b) With an example state the three main parts of a URL. (04 marks)

- Protocol
- Webserver's domain name
- File name

28(a) Distinguish between a hyperlink and a Hypertext (02 marks)

A hyperlink is a string of clickable text or graphics that points to another Webpage or document **While**

A hypertext is a web page that has hyperlinks to other web pages.

(b) State any three features of a web browser. (03 marks)

- The display area for displaying a web page
- Navigating tools for moving back and forth in a site.
- The refresh button for reloading a web page
- A combo box for entering the URL address.
- A button for terminating the process of loading a webpage.
- A button for taking a surfer to the default homepage for the browser.

29(a) Explain these terms as used in the internet (02 marks)

i. URL

This is an Acronym for Uniform Resource Locator and it refers to a string of characters that specify the address of a webpage.

ii. Web browser

This is an application software or program designed to enable users access, retrieve and view documents and other resources on the internet.

(b) List down three examples of web browsers you know. (03 marks)

- Google chrome
- Mozilla fire fox
- Internet Explorer
- Opera
- Netscape
- Mosaic
- Safari
- Sea Monkey

30 Briefly describe these types of websites. (05 marks)

i. Online social Networking

These are websites that build online communities who want to interact with other people socially or meet people to share their interests e.g myspace, Google +, twitter, facebook.

ii. Information website

These are websites that enable information or resource sharing over the web eg. Wikipedia.org.

iii. Ecommerce websites

These are dynamic websites that carry out business transactions electronically over the internet e.g. business.com googlebusiness, Alibaba.com

iv. Internet blog

These are sites generally used to post online diaries, journals which may also include discussion forums. e.g. Xanga, blogger.

v. A wiki

This is a website that allows its users to add, edit its contents via a web browser using a richtext editor or markup language.

31(a) Distinguish between a web page and a website (02 marks)

A webpage is a file (document) that can be accessed and read over the World Wide Web **While**

a website is a collection of related webpages

(b) Mention any three main activities that can be carried out on an active web page. (03 marks)

- Select an item
- Navigate through the webpage
- View the content on the webpage
- Print the page
- Follow links to other pages
- Download items that are downloadable on the page
- Copy items from the webpage
- Refresh the page

32 Study the URL below and answer the questions that follow:

<http://www.unhcr.org/countries/uganda>

(a) Explain the various parts of the URL (04 marks)

- http (hypertext transfer protocol) defines the protocol or scheme by which to access the webpage.
- “www.unhcr.org” identifies the domain name of the computer (server) where the webpage resides. In this case the server is located at unhcr.
- ‘Countries’ represents the path of the URL
- ‘Uganda’ is the document name that is currently opened.

(b) What is the top level domain in the URL. (01 mark)

Org (Organization)

33(a) What is meant by Multimedia sites?

(01 mark)

These are websites for entertainment and news mainly containing videos, music, radio broadcasts, live TV.

(b) Mention four examples of multimedia sites.

(04 marks)

- YouTube
- Fan fridge
- Free Book search
- FindSounds
- Meta Cafe
- Musgle

34. Explain these terms as used in the world wide web

(05 marks)

i. Surfer

This is a person who spends time exploring the world wide web

ii. Web portal

This is a website that provides specialized services such as email, searching, news updates, financial updates weather and links to selected websites.

iii. Browsing

This is the process of navigating through webpages and websites over the internet.

iv. Newgroups

These are organised groups of internet users sharing ideas and interests.

v. VoIP

Is a method for taking analog audio signals and turning them into digital data that can be transmitted over the internet. (Second definition of VoIP).

35 Write these acronyms in full

(05 marks)

i. PDAs

Portable Digital Assistants

ii. HTML

HyperText Markup Language

iii. IBM

International Business Machine

iv. Wi-Fi

Wireless Fidelity

v. ATA

Analog telephone adapters

36(a) Explain what is meant by Internet Telephony? (02 marks)

This refers to a broad range of services over the internet such as transmitting voice, video and even fax that were traditionally performed over the telephone line.

(b) Mention three different ways internet telephony can be used. (03 marks)

● PC to PC

Users can connect to anyone else using the same program for real time video chatting over an existing internet connection.

● PC to Phone

Some programs such as skype allow a computer user to dial an actual phone number, so that one user is using their computer microphone and the other user is using telephone.

● PC to Fax

Internet telephony can be used to send fax transmissions to a physical fax machine.

● Phone to Phone services

Where a user needs to purchase a device (such as Cisco PAP2T) and plug it into an internet router, thus allowing any phone to be plugged in it.

● Mobile phone to PC or phone

Skype provides free applications for smart phones to enable skype users to enable free phone calls or at a small fee.

37(a) The emerging usage of the icts has the Electronic form of payment (e-payment) used by most service sectors in organizations. Mention any three companies / government entities in Uganda using e-payment system. (03 marks)

- Uganda Revenue Authority (URA) e-tax
- UMEME
- National Water and Sewerage Cooperation
- Kampala Capital City Authority

(b) State two advantages of using the e-payment method rather than the traditional way of money payment. (02 marks)

- It is fast and more reliable.
- Eliminates issues of forgery and bribery
- eliminates issues of fraud since there is no cash payment in the organization.
- Money paid is in safe custody

38(a) State three technological requirements for people who use internet telephony. (03 marks)

- Pentium - class PC with standard sound card having microphone input jack and headphone / speaker output jack.
- An internet connection of high speed.
- Internet telephone software such as Microsoft Net Meetings
- A microphone to pick up your voice.
- A speaker for hearing the person you are calling
- PC headset
- PC camera / Webcam

(b) Describe one advantage and one disadvantage of using internet telephony over the traditional conventional way. (02 marks)

(I) Advantage

- Low cost

Some internet telephony companies allow free PC to PC calls for its software users.

- Allow for conferencing calling

Some internet telephony companies offer a conference calling feature as part of the service package for no additional fee.

- Portability

Internet telephony services work anywhere the user finds available broadband access.

(ii) Disadvantages

- Poor broadband connection makes Internet telephony unreliable.

- Older computers with slower processors and limited RAM may not support internet telephony calls.

- It has limited emergency call support

- Electricity - if power goes out or if the laptop battery runs low it may take with an internet connection, thus no internet telephony.

OBJECTIVE QUESTIONS

ANSWERS IN BOLDED / DARK BLACK COLOUR

1. The text name of an IP address is referred to as:
 A. World Wide Web
B. Domain name
 C. Web browser
 D. Electronic mail
2. The section of the Internet that allows people to exchange text messages and attach multimedia files is called?
 A. File transfer
C. Electronic mail
 B. Local network
 D. Net-Posting
3. Which facility found in the Internet that can allow long distance computing?
 A. Gopher
D. Telnet
 B. HTML
 C. Usenet
4. Which of the following programs can enable the user to locate and display webpages on the Internet?
 A. Window XP
B. A browser
 C. Front page
 D. Notepad
5. Computers that can access contents like programs or data files of storage area of another computer are called?
A. Client computers
 B. Micro computers
 C. Mainframe computers
 D. Special computers
6. Sending files from your local computer to be stored on the Internet computers is referred to as?
 A. Storing
B. Uploading
 C. Retrieving
 D. Downloading
7. Which Internet protocol that guides file transmission across the Internet from one site to your local computer?
 A. TCP/IP
D. HTTP
 B. SMTP
 C. FTP
8. A reference to data that the reader can directly follow while navigating Internet webpages is called?
A. Hyperlink
 B. Linkage
 C. HTML
 D. Reference
9. The following characterize the features of the Internet, except?
 A. Electronic mail
B. Computer maintenance
 C. Long Distance Computing
 D. Electronic commerce
10. Which of the following is a company that deals with providing Internet connection services to individuals or organizations?
 A. DSL
C. ISP
 B. CTIC
 D. IBM
11. Global connection of computers (host) connected together is referred to as?
 A. Network
D. Internet
 B. Electronic mail
 C. Connectivity

12. Which of the following websites provide social network to users around the world?

A. Facebook	C. Rediffmail
B. Hotmail	D. Yahoo
13. A file that combines text, graphics, audio, video, and animations together is called?

A. Multiple file	C. Multimedia file
B. Parallel file	D. Mixture
14. Which of the following is the key requirement for sending and receiving electronic messages on the Internet?

A. Microprocessor	C. P. O. Box number
B. E-mail Address	D. IP-address
15. Which of the following applications is one of web browsing programs?

A. Mozilla Firefox	C. Macromedia Dreamweaver
B. Microsoft publisher	D. Microsoft windows
16. Documents that can be linked together and are written by the use of HTML language are called?

A. Word documents	C. Web pages
B. Text documents	D. Source programs
17. A method of a server that automatically downloads content or updates to your computer is called?

A. Pull technology	C. Webcasting
B. E-mailing	D. Messaging
18. Which of the following is a common format compressing audio files?

A. MPEG	C. GIF
B. MP3	D. JPEG
19. Which of the following is not the URL protocol?

A. http://	C. ftp://
B. smtp://	D. mailto://
20. Which of the following is the name of the computer that stores and distributes news group messages?

A. News Hard disk	C. News Server
B. News Processor	D. News Agent
21. Which of the following is not necessarily an Internet Netiquette?

A. To avoid sending abusive messages.	
B. To avoid typing the message while shouting	
C. To avoid reading someone's private message	
D. To avoid writing a message using capital Letters.	
22. The use of the computing resources that are delivered as a service over the Internet is referred to as?

A. Tele-conferencing	C. Web casting
B. Cloud computing	D. Electronic commerce.

23. In the URL <http://www.physicstudies.com/mac/malco/mechaniscs.html> , which is the actual file to be located?
A. www.physicstudies.com C. **Mechanics.html**
B. [Malco/mechanics.html](http://www.physicstudies.com/mac/malco/mechaniscs.html) D. [http://mechanics.html](http://www.physicstudies.com/mac/malco/mechaniscs.html)
24. A person responsible for maintaining one or many websites of an organization is referred to as?
A. **Web master** C. Web technician
B. Web developer D. Web site
25. Which of the following websites is owned by a commercial organization?
A. **www.textbooks.com** C. www.fooddistribution.org
B. www.scientific.co.ug D. www.medicalfield.net
26. Which of the following is the correct format of an IP address of the computers in the local network?
A. **197.89.30.1** C. 188.89.78.45.9
B. 198.79.34 D. 196.67.1
27. Which of the following are the common tools for all computers communicating over the net?
A. Machine language C. Network topologies
B. **Internet protocols** D. IP addresses
28. Which of the following guarantees that packets will be delivered in the same order they were sent?
A. **Transmission Control Protocol** C. File Transmission Protocols
B. Simple Mail Transmission Protocol D. Hypertext-Transfer-Protocol
29. Which of the following is the correct format of an IP?
A. 198.11.11.4.0 C. 198.11.0
B. **198.11.11.0** D. 198.11.11.12.4.0
30. Human being cannot follow the identities of various devices that are connected to the internet which are identified by their IP addresses, instead human can easily follow?
A. **Domain names** C. Operating systems
B. Domain name systems D. Authoritative servers.
31. Which of the following does not characterize the components of the domain name?
A. **Type of computer** C. Type of Organization
B. Host computer name D. Country name.
32. Which of the following communication protocols specifies the format of packets and the addressing scheme?
A. IP C. **TCP**
B. SMTP D. HTTP

33. Which of the following is the main role of Simple Mail Transfer Protocol (SMTP)?
 - A. Assigning dynamic IP
 - B. Establishing the connection between two hosts
 - C. Sending e-mail messages between servers**
 - D. Uploading e-mail messages to electronic server.
34. Which protocol that can allow IP addresses of the devices on the network to be assigned automatically?
 - A. DHCP**
 - C. POP
 - B. FTP
 - D. IMAP
35. Which of the following is the “DNS root zone” of the domain name system’s hierarachy?
 - A. Top level domaina**
 - C. Second level domains
 - B. Lower level domains
 - D. Third level domains
36. Which of the following protocols uses the TCP/IP based networks, such as the Internet to have its files transferred from one host to another?
 - A. Hypertext Transfer Protocol
 - C. Uniform Resource Locator.
 - B. Simple Mail Transfer Protocol
 - D. File Transfer Protocol**
37. When you enter URL in your browser and http protocol appears at the beginning of your URL this means you are sending the http request to?
 - A. File server
 - C. E-mail server
 - B. Web server**
 - D. IMAP and FTP
38. Which of the following protocols are used by the local e-mail clients to retrieve e-mail messages from a remote server over a TCP/IP connection?
 - A. POP and IMAP**
 - C. POP and HTTP
 - B. FTP and HTTP
 - D. IMAP and FTP
39. In the URL “www.comuters.ict.ug” , which label represents top domain?
 - A. www.
 - C. ict.ug
 - B. computers
 - D. .ug**
40. The following are well known Internet search engines, xcept?
 - A. www.microsoft.com**
 - C. www.yahoo.com
 - B. ww.google.com
 - D. www.youtube.com
41. The act of downloading is a common task that can only be implemented by?
 - A. ftp**
 - C. http
 - B. html
 - D. ip
42. A group of e-mail names and addresses given a single name is referred to as?
 - A. E-mail chart
 - C. Newsgroup
 - B. Mailing list**
 - D. Mail server
43. The codes of conduct that all Internet users are supposed to observe are called?
 - A. Internet laws
 - C. ethics
 - B. Etiquettes
 - Netiquettes**

44. A web application which allows people to add, modify, or delete content in collaboration with others is called?
A. A blog
B. A wiki
C. A page
D. A site
45. Which of the following e-mail features can allow an email message to be sent to many recipients but no single recipient will know that the same message was sent to other recipients?
A. TO:
B. CC:
C. BCC:
D. Subject
46. Which of the following describes the vast network of networks?
A. Extranet
B. www
C. Internet
D. WAN
47. Which of the following can be taken as one of the advantages of using e-mail to communicate?
A. Accuracy
B. Attachments
C. Security
D. Bandwidth
48. Which of the following devices are at the requesting end of the network?
A. Clients
B. Servers
C. Routers
D. Bridges
49. The information organized by interconnected documents or webpages is referred to as?
A. Hypertext
B. Website
C. Hyperlink
D. Internet
50. The incoming e-mail messages can be found in an e-mail feature which is called?
A. E-mail folder
B. Inbox
C. Outbox
D. Draft

Chapter Contents: Data Communication & Networking

Introduction to Data Communication and networking

Computer Networks

1(a) What is meant by data communication?

(01 mark)

This refers to the high speed data exchange between computers and or other electronic devices via network media such as cables or wireless.

(b) Briefly explain any four elements of data communication. (04 marks)

- i. Sender: This refers to a device that initiates an instruction to transmit data and instructions e.g. a source computer
- ii. Receiver: This is a device that accepts the data signals from the source device.
- iii. Transmission medium: This is a communication channel or path over which the data signals are sent. e.g. Cables or wireless
- iv. Protocol: This is a set of rules and procedures for exchanging information among computer devices on a network. e.g. Ethernet, TCP/IP.
- v. Messages: The data / content / information to be relayed or transmitted over a transmission medium.
- Vi. Communicating device / signal converter: a device that converts data or instructions from the sending device into signals that can be carried by a transmission medium to a receiver.

2(a). Distinguish between Physical and wireless transmission media (02 marks)

Physical transmission media provides a physical path usually restricted along which signals are relayed e.g. cables **While**

Wireless transmission media transmits data signals from one point to an other without using physical connections.

(b) Give any three factors to consider when choosing a communication / transmission media. (03 marks)

- Speed of data transmission
- Cost of media
- Installation costs
- Data security
- Country / company policy
- Availability in the market
- Size of the network.

3(a) Explain the term Network Protocol.

(02 marks)

This is a set of rules and procedures for exchanging information among computer devices on a network. Protocols define how the transmission channel is established, how information is transmitted and how errors are detected and corrected.

3(b) Name any three networking protocols (03 marks)

- File Transfer Protocol (FTP)
- Transmission Control Protocol / Internet protocol (TCP/IP)
- Ethernet
- HyperText Transfer Control Protocol (HTTP)
- Telnet

4(a) Distinguish between Digital and analog data. (02 marks)

Digital / Discrete data is data that is encoded / represented as distinct values usually in binary form (0's and 1's) **while**

Analog / Continuous data is data encoded according to a continuous physical parameter such as height etc.

(b) Why is the binary system mostly used during data transmission? (03 marks)

- Its simplicity is universally recognizable
- Digital data have greater immunity to noise than analog data
- It allows flexible processing of the data

5(a) What are data communication tools? (01 mark)

These are tools that enable you to emulate (learn) and test networks

(b) Give two features that differentiate manual from electronic data communication. (04 marks)

Manual	Electronic
Does not require subscription or payment for usage in communication.	Requires some form of subscription payment for the service.
They are cheap to maintain	Are costly to maintain especially when servicing of hardware.
The range of communication is limited to a gathering especially in ceremonial settings such as rituals	The range of communication is quite wide, globally using tools such as Emails, mobile phones IMs
Usually involve messengers or couriers eg. Postal services, Office messengers	Usually involve use of internet facility such as email, IMs

6(a) Mention any two Guided Transmission media in data transmission (02 marks)

- Twisted pair cables
- Coaxial cables
- Optical fibers

6(b) Outline three causes of degradation of signals during data transmission. (03 marks)

- i. Presence of Noise (unwanted signals)
- ii. Interference from other signals
- iii. Poor weather / environment conditions which leads to signals to travel lesser distance
- iv. Faulty or poor quality hardware equipments.
- v. Dortion: due to change of shape of signal which may be caused by attenuation.

7. Explain the following terms as used in data communication (05 marks)

i. Bandwidth

This is the maximum amount of data that can be transmitted by a communication medium in a fixed amount of time.

ii. Network topology

This is the physical or logical arrangement / organization of computers, communication media and other peripherals to facilitate data flow in a network.

iii. Duplex

This refers to a transmission of data signals in both directions simultaneously

iv. Simplex

This is transmission of signals in only one direction.

v. Half duplex

This is where transmission of signals is possible in both directions but one direction at a time.

8(a) What is meant by the term wirelss technology?

Wireless technology is a kind of data signal transmission from one point to an other without using physical connections.

(b) Mention any four wireless technology used in data transmission (04 marks)

- Satellite (broadcasting) communication
- Bluetooth
- Wi-Fi (Wireless Fidelity)
- Infrared
- Microwaves

9(a) Distinguish between Baseband and Broadband transmission of signals in data communication (02 marks)

Baseband transmsion is where only one signal can be sent at a time since it utilizes the full capacity of the transmission medium **while**

Broadband transmission is where several signals can be sent simultaneously over the same transmission medium but at different frequencies.

- Baseband is digital signal **while** Broadband is analog signal.

9(b) Give three advantages of Optical fibre in data transmission (03 marks)

- It has greater capacity in terms of bandwidth. Thus hundreds of GBps over tens of kilometers have been demonstrated.
- Are highly secure, as they are resistant to tapping, eavesdropping
- Enable faster data transmission since they use light to transmit data.
- Are immune to electromagnetic and electrical interference which bring about noise
- It is cheap when transmitting for long distances.
- Has lower attenuation which is constant over a wide range.

10. Explain the following data transmission techniques (05 marks)

● **Blue tooth**

This is a technology standard of exchanging data over short distances using short wavelength radio transmission over mobile devices.

● **Satellite**

This broadcasting transmission in effect from a microwave relay station where or more ground based microwave transmitters / receivers are linked together.

● **Wi-Fi**

This is a popular technology that allows an electronic device to exchange data wirelessly (using radio waves) over a computer network, including high speed internet.

● **Infrared**

This is a technology standard of electromagnetic radiation used for data transfer in industrial, scientific and medical application

● **Microwaves**

This is a technology of radio waves which is extremely used for point to point telecommunication.

11. The advantages out way disadvantages of using Mobile phones as a communication medium compared to the traditional way of communication. Mention three advantages and two disadvantages of using mobile phones.

(a) Advantages

- the message can be received instantly
- Mobile phones are faster in communication
- They offer at most privacy during communication
- They favor both literates and illiterates
- They can be used from anywhere as long there is reception of network signals
- Most mobile phones provide a variety of services eg. Internet connectivity, games, radio, TV and teleconferencing, etc.

(b) Disadvantages

- They are expensive in terms of usage and maintenance
- Can easily be stolen
- When they develop mechanical faults, they ruin communication
- They cannot be used in areas where there is no network coverage
- Sometimes they are susceptible to tapping or eaves dropping by security agencies of the government hence depriving privacy of an individual.
- Over exposure to radiations from these phones leads to health problems.

**12 Mention one application of the following Data transmission techniques.
(05 marks)**

(a) Twisted pair cables

- It is used with in buildings for LANs supporting personal computers
- It is the most commonly used medium for digital signaling e.g. for connections to a digital switch.
- It is the most commonly used medium in wired telecommunication networks and is the workhorse for communication within buildings.

(b) Satellite

- They are used in television distribution
- In long distance telephone transmission
- In private business networks eg. when transmitting a program from a central location to the satellite, to local stations then to individuals
- For radio audio services in instances where listeners roam a continent listening to the same radio programming anywhere.
- For internet access in remote areas that cannot access broadband connection
- Communication satellites are used for military communication applications, such as Global Command and Control systems.

(c) Bluetooth

- For wireless control of and communication between a mobile phone and a hands free headset.
- Wireless networking between PCs in a confined space and where little bandwidth is required.
- Personal security application on mobile phones for prevention of theft or loss of items.
- For wireless control of and communication between a mobile phone and a bluetooth compatible car radio stereo system

(d) **Wi-Fi**

- Used in personal computers to connect a network resource such as the internet via a wireless network access point.
- Used in video game consoles to connect a network resource.
- Used in digital audio player to connect a network resource.

(e) **Microwaves**

- They are used in broadcasting and telecommunication transmission such as televisions broadcasts.
- They are used in Radio astronomy e.g when determining the distance to the moon or mapping the invisible surface of Venus through cloud cover.
- They are used in navigation such as the Global position system (GPS)
- They are used in micro-ovens during the heating process in industrial process (drying and curing of products)
- They are used to transmit power over long distances eg in Solar power satellites with systems with large large solar arrays that would beam power down to the earth's surface via microwaves.

13(a) Define the term Computer Network.

(01 mark)

This is a collection of computers and other hardware devices linked together using communication media for purpose of communication and resource sharing.

(b) Oregon high school is considering to set up a computer network in its premises. They have contracted an IT professional for advice on this task. Briefly mention any four purposes of computer networking. (04 marks)

- To enable resource sharing like printers, storage devices, modems, application programs, data etc.
- To enable remote communication between devices using services such as Emails, chatrooms, instant messaging, teleconferencing, etc.
- To enable distributed processing facilities. eg. data can be processed from many terminals and then stored on a common server.
- To enable data security and management. A network administrator can easily monitor and manage a company's sensitive data with high security
- To ensure cost effectiveness and reliability in an organization. Reduces chances of data loss.

- 14 State five factors an IT professional considers before setting a computer network for an organization. (05 marks)**
- Cost of installation. An organization has to choose a network basing on cost effectiveness and within their budget.
 - Number of computers and other hardware devices to be connected.
 - The communication medium to be used such as cabling systems or wireless technology.
 - The architecture of the buildings to be used.
 - The number of users to access the network. A bigger number of users requires a large network.
 - The bandwidth to be used on the network. This will determine the speed of the network.
 - Expansion of the network. The future expansion of a network will depend on the topology used, .ie. a star topology easily enables future expansion.
 - The technicalities involved in setting the network.
 - The safety provisions of the network.

- 15(a) Distinguish between Physical and Wireless transmission technology. (02 marks)**

Physical transmission technology provides a physical path usually restricted along which signals are relayed e.g. cables **while** Wireless transmission technology transmits data signals from one point to another without using physical connections.

- (b) Give any three advantages of using wireless technology compared to other traditional technologies. (03 marks)**
- It is a cheaper deployment of a Local area Networks (LANs)
 - It is faster to setup as it does not have many connections to made.
 - Enables expandability. Adding new devices / computers to the network is easy
 - Mobility. It can be used in remote locations provided there is network coverage

- 16(a) What are data Communication tools? (01 mark)**

These are tools that enable you to emulate and test networks

- (b) Briefly explain the following services offered by data communication tools (04 marks)**

i. Email

This is a method of exchanging digital messages from the author to one or more recipients across a computer network or the internet.

ii. Skype

This is a service that allows users to communicate with peers by voice using a microphone, by video using a webcam and instant messaging using internet.

iii. Instant messaging (IM)

This is a set of communication technologies used for text based messaging between two or more participants over the internet or other types of networks.

iv. News groups

These are forums or discussion groups usually within the Usenet system, for messages posted from many users in different locations.

17. Give any five requirements of setting up a computer network. (05 marks)

- Clients / workstation
- Server
- Transmission media (either physical or wireless)
- Network Interface card (NIC)
- Routers / bridges / gateways
- Protocols
- Network software

18(a) Write these acronyms in full as used in computer networks (03 marks)

(i) LAN

Local Area Network

(ii) WAN

Wide Area Network

(iii) MAN

Metropolitan Area Network

(b) Mention two uses of a LAN to a school environment (02 marks)

- It acts as an Access point to the internet with installation of a gateway
- For monitoring of computer users.
- For communication among users
- To enable resource sharing like printers, storage devices, modems, application programs, data, etc among users.

19 Briefly describe five limitations with the use of Wireless Fidelity (Wi-Fi) as a communication medium. (05 marks)

- Wi-Fi networks have a limited range thus bars distant network devices from communication. The range varies with frequency.
- Wi-Fi has a high power consumption compared to other standards such as Bluetooth.
- Mobile use of Wi-Fi over a wide range is limited, for instance in automobile moving from one hotspot to another.
- Wi-Fi is less secure than wired connection (Ethernet) since the intruder does not need physical connection.
- Wi-Fi possess a high data security risk especially for open wireless access to a LAN.
- There is interference. Wi-Fi connections can be disrupted or speed lowered.

20 Give one function of each of these network devices (05 marks)

(i) Terminal

This is the work station / client / computer from where data is sent or received.

(ii) Server

→ This is the main computer that facilitates data transmission

→ It is the computer running software that enables it to serve specific requests from other computers / clients

(iii) Transmission media

This is a communication channel or path over which data signals are sent from source to destination. This can either be physical or wireless.

(iv) Network interface card (NIC) / Network Adapter

It is a piece of computer hardware designed to allow computers to physically access a networking medium

(v) A Switch

→ This a multipurpose device which gets input signals in one port and sends the output signals to many of its other ports.

→ It is a device that forwards and filters chunks of data communication between ports based on MAC addresses in the packets.

21(a) Distinguish between Peer to Peer and client server models in computer networks. (02 marks)

A Peer to Peer network model allows any user to share files and other resources with any other user and does not require central dedicated both the client and server. In this model each computer acts as both client and server **While**

In a Server -Client network model environment, files are stored on a centralized high speed file server PC that is made available to client PC. All other networking devices such as printers and internet connections are routed through the server.

(b) Mention three advantages of a client server model over Peer to Peer client model network. (03 marks)

- Centralization: Resources and data security are controlled through the server.
- Scalability: Any or all other elements can be replaced individually as the needs increase
- Flexibility: New technologies can easily be integrated into the system
- Interoperability: All components (clients, servers and network) work together
- Accessibility: Server can be accessed remotely and across multiple platforms.

22(a) Describe these classifications of Network software (02 marks)

i. Network Operating systems

This is Operating system specifically designed to optimize the networked computers ability to respond to service requests.

ii. Network Protocols

This is a set of rules and procedures for exchanging information among computer devices on a network.

23(a) Define the term Computer Network

(01 mark)

This is a collection of computers and other hardware devices linked together using communication media for purpose of communication and resource sharing.

(b) Give four limitations of computer networking

- Costly and complicate: It is expensive to install cables and other network devices and also to maintain the network.
- Unreliability / Downtime: A fault in the network server, switches, routers can prevent the whole network from working.
- Security concerns: Networks are prone to hackers and crackers.
- Harmful content: The internet is full of harmful / inappropriate content such as porn. The internet may also expose one to scams.
- Virus issue: Computer networks are prone to virus attacks which may eventually spread and corrupt the data.

24. Describe each of these computer network terms.

(05 marks)

i. Local Area Network (LAN)

This is a network used to interconnect many computers with in a given local area, usually premises of a single organisation building such as a school.

ii. Metropolitan Area Network (MAN)

This refers to the interconnection within geographical limits of a city or town. MAN may be owned by a single company that has many other branches across a metropolitan area each having its own LAN.

iii. Wide Area Network (WAN)

This is a network used to interconnect a number of widely dispersed computers in various cities of a country or different countries. These networks usually have telephone lines, underground coaxial cables, satellite and microwave communication. Consists of many MANS and LANs connected together to form a large network.

iv. Wireless Local Area Network (WLAN)

This is a kind of local area network that uses non physical network connection to communicate to nodes. Usually this does not involve use of cabling medium for data transmission.

v. Wireless Fidelity (Wi-Fi)

This is a popular technology that allows an electronic device to exchange data wirelessly (using radio waves) over a computer network, including high speed internet connection.

25(a) Describe any two Network protocols

(02 marks)

- Internet Protocol (IP) : This does the packet forwarding and routing
- Interworking Packets exchange: This is a network protocol for packet forwarding and routing.
- NetBEUI: This provides data transport services NetBios and application

25(b) State three functions of networking operating systems (03 marks)

- It responds to requests from application programs running on the network
- It helps implement network security features.
- It enables various processes on the network to communicate with each other
- It provides access to network resources such as printers, files, modems
- Supports network services like network card drivers and protocols

26. Ascertain school lab wants to connect its computers to form a LAN.

(a) Mention one network device which would have to present before networking (01 mark)

- Clients / workstation
- Server
- Transmission media (either physical or wireless)
- Network interface card (NIC)
- Routers / bridges / gateways
- Protocols
- Network software

(b) Give two reasons why WLAN would be preferred to a cable LAN. (02 marks)

- It is a cheaper deployment of a Local Area Networks (LANs)
- It is faster to setup as it does not have many connections to be made.
- Enables Expandability. Adding new devices / computers to the network is easy.
- Mobility. It can be used in remote locations provided there is network coverage.

(c) Give two reasons why the school should not use bluetooth technology. (02 marks)

- This technology is limited to only a few devices
- It cannot support higher band width applications
- It has a limited range / area of reach.

27 (a) Define the term Infrared (01 mark)

This is a technology standard of electromagnetic radiation with longer wavelengths than those of visible spectrum used for data transfer in industrial, scientific and medical applications.

(b) State any four applications of Infrared (04 marks)

- They are used in night vision using infrared illuminations to observe people and animals without being detected
- Are used in Astronomy using sensor equipped telescopes to penetrate dusty regions of space; to detect objects such as planets.
- Infrared imaging cameras are used to detect heat loss in insulated systems
- Weather forecasting.

28(a) What is meant by Network operating system? (01 mark)
 This is operating system specifically designed to optimize the networked computers ability to respond to service requests.

(b) Give four examples of network operating systems (04 marks)

- UNIX / Linux
- Macintosh Operating system (Mac OS)
- Novell Netware
- Cisco Internetwork Operating Sytstem
- Microsoft windows server

29 Mention one function of the following networking devices (05 marks)

i. Router

This is a device that connects multiple computers to a single Digital Subscriber Line (DSL) for internet access

ii Bridge

This reduces the amount of traffic on a LAN by dividing it into segements and address filtering

iii Gateway

This is a network device that allows access from one network to another eg. from a LAN to a WAN.

iv Repeater

This is a device that receives data signals from one point of a network, then amplifies an transmits it to other parts of the network.

v. Network software

This is software that is designed to help set up, manage and monitor computer networks.

13. Which of the following statements describes a ring network topology?
 - A. Each computer is directly connected with all the rest of computers in the network.
 - B. There is no cable connected from computer to computer.
 - C. One computer is connected to all other computers in the network.
 - D. Each computer in the network is connected to two other computers.**
14. Which of the following network topologies that if a node has data to send to another node it broadcasts it to all other nodes?
 - A. Ring network topology
 - C. Bus network topology**
 - B. Mesh network topology
 - D. Star network topology
15. Which type of computer network that the Bluetooth standard can be best used to enable transmission?
 - A. Wireless Personal Area Network
 - C. Wireless Wide Area Network
 - B. Local Area Network
 - D. Personal Area Network**
16. Which of the following network topologies that if one node fails leads to the shutdown of all the others?
 - A. Star topology
 - C. Ring topology**
 - B. Bus topology
 - D. Tree topology
17. Which of the following devices can be used to connect networks together to access the Internet?
 - A. Router**
 - C. A switch
 - B. Network Interface Card
 - D. A-repeater
18. If a network consists of data / information supplying computer to other computers and requesting microcomputers then this network is called?
 - A. Client-to-Server LAN**
 - C. Local Area Network
 - B. Peer-to-Peer LAN
 - D. Wide Area Network
19. Which of the following is not a major component of a Local Area Network?
 - A. Wired connections
 - C. Computers with network interface cards
 - B. Network Operating Systems
 - D. Uninterruptible Power Supply**
20. Which of the following computers will you use to store shared programs?
 - A. Client computer
 - C. Server computer**
 - B. Standalone computer
 - D. General Purpose computer
21. Which of the following devices can allow your computer to communicate over the computer network?
 - A. A bridge
 - C. NIC**
 - B. A server
 - D. A hub
22. Which type of computer network needs a device called Access Point (Hotspot) in order to access information on the Internet?
 - A. Wireless Local Area Network**
 - C. Metropolitan Area Network
 - B. Wide Area Network
 - D. Internet and the World Wide Web.

- Sekamanje Eddy ©**

34. Which of the following is not the element of data communications system?
A. Sender
B. Server
C. Message
D. Receiver
35. Which of the following that governs the way data is transmitted over the computer network?
A. Transmission rate
B. Network topology
C. Operating systems
D. Network protocols
36. The subdivided units of data travel over the computer networks are referred to as?
A. Messages
B. Packets
C. Data signals
D. Documents
37. Which of the following devices that is used to convert digital signals into analog signals and also convert analog signals into digital signals?
A. Modem
B. Switch
C. Bridge
D. Router
38. Demodulation means?
A. Conversion from digital to analog signals
B. Conversion from data to information
C. Conversion from analog to digital signals
D. Conversion from information to data
39. If the transmission can be possible in two way directions but only one direction at a time can be referred to as?
A. Simplex transmission
B. Parallel transmission
C. Half duplex transmission
D. Full duplex transmission
40. The use of token as a means of giving a chance to one of the computers in the network to communicate is commonly done in?
A. Star network topology
B. Ring network topology
C. Tree network topology
D. Bus network topology
41. Which transmission mode that is most common when data is transmitted within the computer system?
A. Serial transmission
B. Full duplex
C. Parallel transmission
D. Half duplex
42. Which of the following are the two forms of serial data transmission mode?
A. Asynchronous and Synchronous
B. Analog signals and Digital signals
C. Half duplex and Full duplex
D. Fiber optic and Coaxial cables
43. When sending data signals from a network to the computer you need the conversion at the interface which is?
A. Serial to parallel
B. Simplex to parallel
C. Parallel to serial
D. Parallel to simplex
44. Subdividing a block of message in equal units before transmission is referred to as?
A. Circuit switching
B. Modulation
C. Packet switching
D. Demodulation

45. Wireless transmission media can also be referred to as?
A. Guided media
B. Unguided media
C. Bounded media
D. Physical media
46. The act of a transmitter establishing the connection with the receiver before transmission takes place is the characteristic of?
A. Circuit switching
B. Synchronization
C. Serialization
D. Parallelization
47. Which of the following is a common technology used in a wireless LAN?
A. http
B. wi-fi
C. ftp
D. ip
48. The purpose of twisting cable wires is to achieve the following, except?
A. Electrical noise immunity
B. Increase bandwidth of cables
C. Reduce bit error rate
D. Long distance signal transmission
49. The following are the unbounded transmission media, except?
A. Bluetooth
B. Fiber optic
C. Radio
D. Infrared
50. Which of the following waves of data signals are used for multicast communication?
A. Radio waves
B. Hardcopy state
C. Bluetooth waves
D. Microwaves.

**Chapter Contents: System security, ICT ethical issues
&
emerging technologies**

Computer security system

Privacy and ICT ethical issues

Emerging Technologies

ICT Industry

1(a) What is meant by Computer security? (01 mark)

This refers all processes and mechanisms by which Computer-based equipment, information and services are protected from unintended or unauthorized access, change or destruction.

(b) With examples explain the various forms of computer security. (04 marks)

- Data security: This is a means of protecting a database from destructive forces or unauthorized users. Data security can be in form of backup, data masking, disk encryption.
- Physical security: This is the protection of personnel, hardware, programs, networks and data from physical circumstances and events leading to serious losses or damage to an organization. This security can be in form of use of Fire extinguishers, use of sensors and CCTV to guard against intrusion by burglars.

2(a) Explain the meaning of “hardware security threats” (02 marks)

This is a situation where a person can maliciously, forcefully gain access to hardware with an intent to steal or destroy data saved on them.

(b) Mention any three possible threats to data security. (03 marks)

- Computer viruses
- Phishing
- Cracking
- Hacking
- Eaves dropping
- Sabotage
- Surveillance
- Fraud

3. Briefly explain the meaning of the following Terms as regards to computer security. (05 marks)

i. Hacking

This is the act of breaking into a computer system to gain unauthorized access. This may also involve defeating security capabilities, use of unauthorized revelation of passwords.

ii. Denial of service Attack

This is an attempt to make a machine or network resources unavailable to its intended users. It may also involve efforts of one or more people to temporarily interrupt or suspend services of a host connected to the internet such as those of banks, credit card payments gateways.

iii. Spam

This is the Unsolicited sending of bulk email to users of an internet such as email accounts.

iv. Data masking

This is the process of Obscuring or masking of specific data within a database table or cell to ensure that data security is maintained and sensitive information is not exposed to unauthorized personnel.

v. Data erasure

This is a method of software based overwriting that completely destroys all electronic data residing on a hard drive or other digital media to ensure that no sensitive data is leaked when an asset is retired or reused.

4. Natural disasters can cause loss of data

(a) Mention three ways of ensuring that data and programs are not lost in case of a disaster. (03 marks)

- Make a backup. This is the making a duplicate (copy) of the data
- Store data / information in a network
- Store data to areas which are not prone to natural disasters.
- Build information systems with structures that can withstand natural disasters.

(b) State two ways of recovering data loss through accidental erasure. (02 marks)

- Make use of backups
- Use the Undo command to reverse the delete action
- Recover the lost data through the recycle bin. Restore it.
- Use the data recovery utility

5(a) Explain any three Internet / Network attacks. (03 marks)

- Hardware security mechanisms: A situation where a person can maliciously, forcefully gain access to hardware with an intent to steal or destroy data saved on them.
- Denial of service attack: This is a mechanism mostly by hackers meant to disrupt data flow and communication between machines, making system resources unavailable.
- Sniffing: The act of intercepting TCP/IP packets while getting transferred on a network.
- Virus and worms: These attacks have the ability to destroy data and also replicate themselves in programs and files.
- Trojan horses : These are useful tools by hackers to try and break into a private network.

(b) Suggest ways of protecting against each of any two of the above network / Internet attacks.

- We can protect against Hardware security threats by use of a locking mechanism for desktop or use of chain mechanisms for laptops.
- We can protect against Denial of service attacks by use of firewalls.
- Sniffing can be protected against by use of firewalls.
- Virus and worms can be protected against by use of Genuine Antivirus software.

6(a) What is a Computer Virus?

(01 mark)

This is a piece of malicious software designed to infect a computer system.

Or

It is a mini program that duplicates itself and attaches its replica to other programs and documents.

(b) List any four ways through which a virus spreads. (04 marks)

- By use of a removable storage device such as flash disk, memory card which has been contaminated.
- As an email attachment
- Downloading content on the Internet
- As part of another program
- From pirated software
- Through infected proprietary software

7(a) In any country, security agencies usually employ the mechanisms of Tapping and Eaves dropping in cases of attacking down crime. Distinguish between the terms Eaves dropping and Tapping. (02 marks)

Eavesdropping is the act of secretly listening to private conversation of others without their consent **while**

Tapping involves acquiring data by redirecting a communication between two entities.

(b) Mention any three crimes associated with cyber terrorism (03 marks)

- Online black mail
- Denial of service attacks
- Identity theft

8(a) Explain the term Backup as regards Computer security? (01 mark)

Backup refers to the making of copies of data so that additional copies may be used to restore the original after a data loss event.

(b) Give two instances where a backup is required? (02 marks)

- In case of natural disasters such as fire outbreaks, earth quakes
- In the event of hackers or cracking of the original data
- In case of data loss due to virus infection
- In the event of hard disk crashing

(c) Suggest two control measures to guard the illegal activities of hackers. (2mk)

- Use of Data encryption mechanisms
- Using firewalls at the network gateway
- Use of burglar proof doors and security lock devices
- Use of security mechanisms such as sensors and CCTV against intrusion
- Ensuring password usage by authenticate users of data system

- 9 The terminologies below involve computer security**
By choosing a correct alternative fill in the following statements that follow
Logic bomb Sniffing eavsdropping (05 marks)
Fraud Denial of service Spoofing
- (a) Spoofing is a situation in which a person or program successfully masquerades as another by falsifying data and there by gaining an illegitimate advantage.
- (b) The use of a computer system to create fake documents, hide information or cheat unsuspecting public with intention of gaining monetary benefits is called Fraud.
- (c) The malicious software that is triggered with time is called Logic Bomb
- (d) Denial of service Is an attempt to make a machine or network resources unavailable to its intended users.
- (e) Sniffing is the act intercepting TCP/IP packets while they are getting transferred on a network.

10(a) Explain what is meant by the term Hacking (02 marks)

This is the act of seeking and exploiting weaknesses in a computer system or computer network. A hacker may be motivated by multitude of reasons such as profit, protest or challenge.

(b) Mention three forms of Hacking (03 marks)

- Vulnerability scanner - a tool used to quickly check computers on a network for known weaknesses
- Password cracking - process of recovering passwords illegally from data that has been stored or transmitted by a computer system.
- Packet sniffer - an application that captures data packets which can be used to capture passwords and other, data in transit over a network.
- Spoofing attack (phishing) - is a situation in which a person or program successfully masquerades as another by falsifying data and there by gaining an illegitimate advantage.
- Root kit - a set of programs which work to subvert control of the Operating system from its legitimate operators.

11 Briefly describe five symptoms of a virus infection (05 marks)

- Programs on your system start to load slower.
- The system mysteriously shuts itself down or starts itself up and there is a great deal of unanticipated disk activity.
- You mysteriously lose access to a disk drive or other system resources because the virus has changed the settings on the device to make it un-useable.
- Your system suddenly does not reboot or gives you unexpected error messages during start up.
- Program sizes change from the installed versions.
- Unusual files appear on your hard drive or files start to disappear from system.

- 12. Explain the following types of viruses. (05 marks)**
- (a) Trojan horse**
These are malicious programs that enter a system or network under the disguise of another program.
- (b) Stralath virus**
This is a virus type that disguises itself by redirecting commands round itself to avoid detection.
- (c) Computer worm**
This is a malicious program that auto replicates or is capable of multiplying itself there by using up all the available memory space.
- (d) Polymorphic virus**
This is a kind of virus which changes form / hides from the antivirus software or it will encrypt itself to avoid detection.
- (e) Retro virus**
This kind of virus directly attacks or bypasses the antivirus software installed on the computer.

- 13(a) What is meant by data Control? (01 mark)**
This refers to the measures and policies taken to ensure data security.
- (b) Jenifer the school secretary has lost all her data in the computer. She suspects that either someone hacked into her computer system or it was due to a hardware failure. Mention four ways she should have used to protect her data. (04 marks)**
- Making regular backups of your data
 - By use of Hardware based mechanisms for protecting data such as use of security tokens to physically access a hardware resource.
 - Data masking
 - Use of Genuine antivirus software to scan against malicious software
 - Perform regular maintenance of computers
 - Password - protect documents
 - Use disk encryption mechanisms
 - Install a Firewall at the Network gateway to guard against intrusion of Hackers.

- 14(a) Distinguish between Data encryption and passwording documents. (2mks)**
Data encryption involves the transformation of data information into non-readable forms to ensure data security when being transmitted over a network **while** Passwording of documents is a mechanism used to protect documents from unauthorized access.

- (b) Mention three ways to guard your system against computer viruses (3mks)**
- Installing an updated antivirus software.
 - Using Guineine Antivirus software
 - Scanning all external storage devices for viruses before using them with the computer.
 - Avoid downloading content from the internet without being sure of their safety.
 - Sensitizing computer users on the damage caused by viruses
 - Installing a firewall at the network gateway

15(a) What is meant by Computer Crime? (01 mark)

This refers to any Criminal activities which involve the use of ICT's to gain illegal or unauthorized access to access to a computer system with intent of damaging, deleting or altering Computer data.

(b) Briefly describe any four forms of Computer Crime (04 marks)

● Computer Viruses

These are malicious programs that can replicate themselves and harm the computer system on a network without the knowledge of the system users.

● Spam

This is the Unsolicited sending of bulk email mostly for commercial purposes

● Hacking

This is the activity of breaking into a computer system to gain unauthorized access

● Fraud

This is the use of computer system to create fake documents, hide information or cheat unsuspecting public with intention of monetary benefits

● Obsence or Offensive Content

Access and use of harmful or offensive content such as pornography

● Phishing

The act of attempting to acquire sensitive information like paswords, usernames and credit card details by disguising as a trust worth source.

● Cyber stalking

This is the use of ICTs mainly the internet to torture other individuals through false accusation, transmission of threats, damage to data and equipment.

● Identity theft

This is the act of pretending to be someone else by using someone else' identity as one' own.

● Drug traffisking

This involves the use of the ICT's such as encrypted emails, restricted chatrooms to sell illegal substances.

● Cyber terrorism

This is the act of terrorism committed through the use of cyberspace or computer resources.

16(a) What is meant by Computer Fraud?

(02 marks)

This is the use of computer system to create fake documents, hide information or cheat unsuspecting public with intention of monetary benefits.

(b) Mention three forms of Computer fraud

(03 marks)

- Online identity theft
- Salami attack (This is the use of a program to alter data in one's computer system by little margin and then transferring the stolen data to another computer system.)
- Hacking

17(a) Explain the following terms

(02 marks)

(i) Data security

This involves protecting data against unauthorized access, alteration and destruction.

(ii) Privacy

This involves securing personal data so that only the owner can access it.

(b) Mention three precautions a financial institution such as a bank can take to prevent illegal data alterations.

(03 marks)

- Use of Audit trails
- Limit the level of access to data
- Setup log files in the system
- Use of authentication method where the bank staff will be required to log into system whenever they are to gain access.

18(a) Distinguish between Financial Identity theft and Identity Cloning. (2mks)

Financial Identity theft involves use of false identity to obtain goods and services **while** Identity Cloning is the use of another user's information to pose as a false user.

(b) Mention three other forms of Identity theft.

(03 marks)

- Illegal migration
- Terrorism
- Black mail

19(a) Explain the term Cyber stalking

(02 marks)

This is the use of ICTs mainly the internet to torture other individuals through false accusation, transmission of threats, damage to data and equipment.

(b) Write down three forms of cyber stalking

(03 marks)

- Obscene emails
- Abusive phone calls
- false accusations

20 Explain the following terms as used in Computer security. (05 marks)

(a) Spyware

This is an intelligent program that is able to secretly track and collect information about users and their computers eg. cookies

(b) Password

This is a code that must be keyed in so as to gain access to a file or system resource.

(c) Authentication

This is the process of verifying the log on credentials of a user requesting access to a computer system resource.

(d) Log files

These are system files installed in a computer system to maintain a record of how the system is being used.

(e) Firewall

This is a security mechanism installed at the network gateway to block any unauthorized.

21.(a) Distinguish between a hacker and cracker (02 marks)

A hacker is an intruder who destroys codes and passwords in a computer system by use of intelligent guessing mechanisms or using certain software.

while

A cracker is a malicious intruder who breaks into a computer system for illegal purpose. this usually knows the codes and passwords of the system.

(b) List down three destructive activities that hackers do on a computer system (03 marks)

- Infecting system with Computer viruses
- Modifying information in the system
- Deleting the files
- Copying of information

22(a) What is meant by a firewall? (01 mark)

This is a security mechanism installed at the network gateway to block any unauthorized access to the system resources.

(b) Mention two function of a firewall (02 marks)

- Filtering of network traffic or data packets on it.
- Concealing or hiding the true network address during data transmission.

23(a) Distinguish between Cyber terrorist and cyber extortion (02 marks)

A Cyber terrorist is someone who intimidates or coerces a government or organisation to advance his or her political or social objectives by launching computer based attacks against computers, Network and information stored on them **while**

Cyber extortion is a form of cyber terrorism in which a website, email server or computer system is subjected to repeated denial of service or other malicious attacks by demanding money in return for promising to stop the attacks.

(b) Mention three forms of Cyber terrorism (03 marks)

- Online blackmail
- Denial of service
- Identity theft

24(a) What is meant by Computer Crime? (01 mark)

This refers to any Criminal activities which involve the use of ICTs to gain illegal or unauthorized access to access to a computer system with intent of damaging, deleting or altering Computer data.

(b) Briefly describe any four methods of protection against Computer Crime (04 marks)

- Log files

These are system files installed in a computer system to maintain a record of how the system is being used.

- Audit trail

The thorough study done mostly by system administrators on an information system to identify any loopholes that can be used to illegally access the system resources.

- Biometric Analysis

This is a form of access control measure that takes the user's attributes such as finger prints and facial recognition.

- Data encryption

This is the use of unreadable data (cypher) during data transmission which is later decrypted by the recipient.

- Firewalls

This is a security mechanism installed at the network gateway to block any unauthorized access to the system resources.

- Use of guinene and updated antivirus software.

- 85

27(a) What is meant by term Backup?

(02 marks)

This refers to the making of copies of data so that additional copies may be used to restore the original after a data loss event.

(b) Mention three ways of ensuring efficient backup of data

(03 mark)

- Make regular backups
- Backup on removable storage such as secondary storage
- Keep backup media off site
- Set up automatic backup intervals

28 (a) Explain these terms in ICTs

(02 marks)

(i) Intellectual Property

This means that a company or person owns the rights to some kind of technology, innovation.

(ii) Information Privacy

This is about understanding how information technologies impact the privacy of individuals and developing new privacy preserving and secure technologies to protect them.

(b) Mention three forms of Intellectual property

(03 marks)

- Patent rights
- Trademarks
- Copyrightt

29(a) Distinguish between a patent and a trade mark

(o\02 marks)

A patent is a legal instrument declaring that a company or a person has ownership over an idea / technology **while**

A trade mark is a recognisable sign, design or expression which identifies products or services of a particular source from those of other.

(b) List three areas where copyright is used

(03 marks0

- In publication works such as e-publishing, desktop publishing
- Digital broadcasters such as webcasting, digital films and television online
- Protection of data bases
- Responsibility of online providers
- Peer to peer file sharing systems.

30 Mention five ways in which software piracy can be reduced (05 marks)

- Educate users about the dangers of using Pirated software
- Reduce the cost of software
- Use of holograms, a component which comes with the original copies and can not be duplicated.
- Putting up and enforcing legal rules on software piracy
- Encourage the use of open source software
- Use of flexible licensing of software.

31(a) Briefly describe any five emerging technologies (05 marks)

- 4G cellular communication

Fourth Generation (4G) is a system that provides mobile ultra-broadband internet access. For example use of laptops with USB wireless modems to smartphones, and to other mobile devices

- Artificial intelligence

This refers to the intelligence of machines, robots and the branch of computer science used to create it.

- 4G optical disks, hologram data storage

Any form of optical data storage in which information can be recorded or read with 3dimensional resolution one that has the ability to enable DVD sized disks to store data to a level of petabyte.

- General Purpose computing on graphics processing units (GPGPU or GP²U)

The utilization of graphics processing unit to typically handle computation for only computer graphics.

- Radio Frequency identification (RFID)

The use of a wireless non contact system that uses radio frequency electromagnetic fields to transfer data from a tag attached to an object, for purposes of automatic tracking and identification.

32(a) Explain the following terms as used in Emerging technology (02 marks)

i. Artificial intelligence

This refers to the simulation or creating of intelligence similar to humans

ii. Digital forensics

This is a branch of science encompassing the recovery and investigation of materials found in digital devices, often related to computer crime.

(b) Mention three examples of artificial intelligence (03 marks)

- Robotics (motion and simulations)
- Natural language processing - the ability of machines to have the ability to read and understand the languages human speak.
- Perception - the ability to use input from sensors to deduce aspects of the world
- Social intelligence.