

1ST TERM SS1 DATA PROCESSING NOTE

SUBJECT: DATA PROCESSING

CLASS: SS1

SCHEME OF WORK

WEEK TOPIC

1. INTRODUCTION TO DATA PROCESSING
2. HISTORY OF COMPUTING
3. DIGITALIZATION OF DATA
4. DATA AND INFORMATION
5. HISTORY OF COMPUTER
6. CLASSIFICATION OF COMPUTERSI.
7. CLASSIFICATION OF COMPUTERSII.
8. ICT APPLICATION IN EVERYDAY LIFE
9. THE ART OF INFORMATION PROCESSING
10. INFORMATION TRANSMISSION
11. MEDIUM OF INFORMATION TRANSMISSION I
12. MEDIUM OF INFORMATION TRANSMISSION II
13. REVISION
14. EXAMINATION

REFERENCES

- Data Processing for senior Secondary Education by Hiit Plc.
- WAPB Computer Studies for Senior Secondary I by Adekunle et al.
- On-line Materials.

WEEK ONE

TOPIC: INTRODUCTION TO DATA PROCESSING

In this chapter, you shall learn about what is data and information; the difference between data and information. Attempt to distinguish between manual and electronic data processing.

DEFINITION OF DATA

The term data means any basic fact which may be input to some processing system. A processing system is one where computations, comparisons and general manipulation of data are done. The processing may be people or machine e.g the computer.

Information on the other hand, is the end – result of a processing system. The information is needed by management for decision making. The relationship between data and information is shown in the diagram below:

————→————→ INPUT PROCESSING OUTPUT

WHAT IS DATA PROCESSING?

Data processing is the task of using a collection of basic facts to produce information, usually it has no value in itself until it is subjected to analysis, validations and comparisons with other data produce result (information), for example a collection of weights of individuals do not turn useful information for decision making.

However when the set of data is processed such as searching for individual with a maximum or minimum weight or the weight of all concerned in the study, information is produced.

Management can decide on the basis of each information to assign special duties to the fellow with the maximum or minimum weight. Other use could be made on such information depending upon the situation prevailing on the organization and their special needs.

Therefore, data processing is an operation on computer data which involves the entering, sorting, updating and retrieving of information using computer.

PROPERTIES OF DATA

1. Collected/Captured
2. Prepared
3. Presented
4. Precise
5. Complete
6. Accurate
7. Purposeful
8. Assigned

DATA PROCESSING CYCLE

The data processing cycle describes the stages of data processing. It involves the following stages:

- Data gathering
- Data collation
- Input stage
- Processing stage
- Storage stage
- Output stage

Element of data processing;

→→→INPUT PROCESSINGOUTPUT

Data is often required for various purposes. Even the same item of data may be used in a great variety of ways depending upon the user's objectives.

Most data processing work may be viewed as consisting of data, processor and output. Usually, storage also features since both data and program instructions need to be stored.

EVALUATION

1. Differentiate between data and information
2. Define data processing

DATA PROCESSING ACTIVITIES

Data processing activities involve the following:

1. **INPUT:** involves three steps; collection, verification/validation and coding
2. **PROCESSING:** involves classification, sorting, calculating, converting and storing
3. **OUTPUT:** involve retrieving, converting and communication.

INPUT ACTIVITY

1. **COLLECTION:** involves gathering data from various sources and assembling it at one location.
2. **VERIFICATION/VALIDATION:** after data have been gathered, its accuracy and completeness must be checked. This is an important step that helps to eliminate the possibility of Garbage-In – Garbage-out(GIGO)
3. **CODE:** data must be converted into machine readable form so that it can be entered into the processing system. Entering data via a computer terminal and keyboard is one example of coding.

PROCESSING ACTIVITY

- a) **CLASSIFICATION:** Classification involves categorizing data according to certain characteristics to make it meaningful to the user. For example, sales data can be grouped according to salesperson, product type, customer or any other classification useful to management.
- b) **SORT:** This involves arranging the grouped data element into predetermined sequence to facilitate processing. For example, an employee number can be last. Sorting can be done on numbers, letters, special characters or a combination of them. After it has been classified, data may be stored.
- c) **CALCULATION:** The arithmetical or logical manipulation of data is referred to as calculation. Examples include computation of students' grade –point averages, customers' bank balances and employee's wages.
- d) **SUMMARISE:** Reducing large amount of data to concise, usable form is called summarizing. The logical reduction of data is necessary to provide information that is useful.
- e) **STORE:** this involves the storing of data not immediately needed; data could be stored on a disk, tape or CD-ROM.

OUTPUT ACTIVITY

This involves retrieving data, printing data and data communication.

IMPORTANCE OF DATA PROCESSING

The art of management is increasing as our society becomes more competitive and more technologically advance. The volume of data being generated is correspondingly increasing and becoming unmanageable. On the other hand, the need to make information available, timely and accurately is becoming more vital in the competitive world in which we have found ourselves. It is when a large volume of data is required to be processed speedily and accurately that Data Processing becomes indispensable.

GENERAL EVALUATION

1. What is data processing?
2. Describe a typical data processing cycle.
3. Describe what is involved in each stage of data processing.
4. Why is computer a better tool for data processing?
5. Discuss why data processing is important in business organization.

READING ASSIGNMENT

Data Processing For Senior Secondary School by Hiit.

WEEKEND ASSIGNMENT

1. What is data processing?
2. Describe and explain a typical data processing cycle.

WEEK TWO

TOPIC: HISTORY OF COMPUTING

EARLY MECHANICAL COUNTING/CALCULATING DEVICES

1. Abacus
2. Slide rule

EARLY ELECTRO-MECHANICAL COUNTING DEVICES

1. John Napier bone
2. Blaize Pascal machine
3. Gottfried Leitbnitz machine
4. Joseph Jacquard Loom
5. Charles Babbage analytical machine

EARLY ELECTRONIC COUNTING DEVICES:

1. Herman Hollerith punch card
2. John Von Neumann machine

Man has put in every effort to have better methods of calculations. As a result of man's search for fast and accurate calculating devices, the computer was developed. Essentially, there are three kinds of calculating devices: manual, mechanical and automatic.

ABACUS

The first calculating device was probably Abacus. The Chinese invented it. It is still in use in some countries because of its simple operation. It is made up of a frame divided into two parts by a horizontal bar and vertical threads. Each thread contains some beads. It was used to calculate simple addition and subtraction.

NAPIER'S BONE

The need for a better calculating device was felt as time passed. John Napier, a Scottish mathematician, invented a set of eleven rods, with four sides each which was used as a multiplication tool. These rods were made from bones and this was the reason why they were called Napier Bones. The rods had numbers marked in such a way that, by placing them side by side, products and quotients of large numbers can be obtained.

EVALUATION

1. Explain types of early counting devices.
2. How does Abacus and Napier's function.

PASCALINE

The first mechanical calculating machine was invented in 1642, by Blaise Pascal, a French mathematician. Numbers were entered by dialling a series of numbered wheels in this machine. A sequence of wheels transferred the movements to a dial, which showed the result.

Through addition and subtraction were performed the normal way, the device could perform division by repeated subtraction and multiplication by repeated addition.

LEIBNITZ CALCULATING MACHINE

Gottfried Wilhelm Von Leibnitz invented a computer that was built in 1694. It could add and after changing some things around, it could multiply. Leibnitz invented a special stepped gear mechanism for introducing the added digits and this is still being used.

JACQUARD'S LOOM

Jacquard's loom was one of the first machines that were run by a program. Joseph Jacquard changed the weaving industry by creating a loom that controlled the raising of the thread through punched cards. Jacquard's loom used lines of holes on a card to represent the weaving pattern.

PUNCHED CARD

During the years 1920 and 1930, the punched card system developed steadily. A standard card was divided into 80 columns and 12 rows. Only one character could be represented in the 80 columns, thus providing a maximum of 80 characters per card. Punching one, two or three holes in any one column represented a character. Holes were punched into a blank card by a punch machine whose keyboard resembled that of a typewriter.

NUMBER SYSTEM (REVISION)

To effectively use the computer, it is therefore necessary to know how data is represented and communicated to. There are different ways of representing data in the number system, namely:

1. Decimal System
2. Binary System
3. Octal System
4. Hexadecimal Number System.

GENERAL EVALUATION

1. How does Abacus and Jacquard's loom function?
2. What type of operation can Pascaline perform?
3. Explain the four number system.
4. List any four early counting devices.

READING ASSIGNMENT

Read Chapter 1, Pg1-3, A Handbook on Computer Studies, By Niyi Adekolegan.

WEEKEND ASSIGNMENT

1. Describe a standard Punch Card.

2. Explain Decimal Number system.

WEEK THREE

TOPIC: DIGITALIZATION OF DATA

Digitalization is the process of converting information into digital format. This information may represent an object, image, sound, document or a signal (usually an analog signal) organized into discrete set of its points or samples. This is the binary data that computers and many devices with computing capacity (such as digital camera and digital hearing aids) can process.

Digitalization can also be defined as the integration of digital technologies into everyday life.

BENEFITS OF DIGITALIZATION

1. Long term preservation of documents
2. Orderly archiving of documents
3. Easy and customized access to information
4. Easy information dissemination through images and text, CD-ROM, Internet, Intranet and extranets.

TECHNOLOGY OF DIFFERENT INFORMATION AGE

The ages are:

1. Stone age
2. Iron age
3. Middle age
4. Industrial age
5. Electronic age

Information age	Tools used	Purpose	Time period	Examples of tools in that age
Stone age	Stone	Sewing, cutting, counting, defence, transaction, storage, pottery exhibitions.	Below 12 th century	Basalt, sandstone flint etc.
Iron age	Iron	Defence, Agric	12 th century	Hoes and cutlass
Middle age	Writing materials	Knowledge transfer, education	12 th and 13 th century	Pen feather etc
Industrial age	Coals	Power development, faster movement	Late 18 th and early 19 th century	Cars, Ships etc

Electronic age	Computer	Storage, accuracy, speed. Timeliness	Late century above	19 th and	Circuit, Processor.
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EVALUATION

1. State the different information ages.
2. State the tools used in each age.

EARLY COUNTING DEVICES

In the early days of man's existence on earth, counting and simple arithmetic were performed using different parts of the body and some other counting aids. The following are devices used by people of ancient times.

1. Fingers and Toes
2. Stone
3. Sticks
4. Pebbles
5. Cowries

DISADVANTAGES OF EARLY COUNTING DEVICES

1. They are difficult to carry about.
2. Counting and calculation takes a lot of time.
3. They are prone to mistakes.
4. They cannot be used to count or calculate large numbers.
5. Their results cannot be easily remembered.
6. They have no storage facilities.

READING ASSIGNMENT

A Handbook on computer studies for schools, pgs 1-3, by NiyiAdekolegan.

WEEKEND ASSIGNMENT

1. Mention any THREE early counting devices.
2. List any TWO disadvantages of early counting devices.

COMPONENTS OF A COMPUTER SYSTEM

A computer system consists of three main parts otherwise called components. They are :

1. Hardware
2. Software
3. People ware

HARDWARE COMPONENT

The computer hardware could be defined as the physical parts of the computer that we see, feel and handle. It consists of device for input, processing, storage, output and communications.

Hardware can be divided into two sections:

1. System Unit
2. The peripherals

HARDWARE

Hardware is the physical parts of the computer system that you can see and touch. They are the components that make up the visible computer. It consists of devices for input, processing, storage, output and communications.

The basic parts of computer hardware can be divided into:

1. System Unit
2. Peripherals

CPU/SYSTEM UNIT

The CPU is the brain of computer system and it can be subdivided into:

1. Control Unit
2. Arithmetic and Logic Unit
3. Memory Unit

CONTROL UNIT

This is the unit of the computer system that fetches instructions from the main storage, interprets them and issues all the necessary signals to the components making up the system.

ARITHMETIC AND LOGIC UNIT

This part of the CPU is where all arithmetic operations are carried out in the computer. This unit is also involved in decision making. Logic functions such as less than (<), equal (=), greater than (>) etc which are operations of comparisons are used for decision making.

MEMORY UNIT

The memory or primary storage unit is the place in the computer where the program and the data are stored. The computer memory is divided into two namely:

1. Random Access Memory (RAM)
2. Read Only Memory (ROM)

PERIPHERALS

The peripherals are devices outside the CPU but function under the control of the CPU e.g. mouse, keyboard, printer etc.

EVALUATION

1. What are the components of the computer system?
2. What are the classes of hardware?

SOFTWARE

Software is the set of instructions that is used to direct the computer hardware to perform its tasks. That is, it is a set of instructions that makes the users do work and allows the computer to operate. Software is basically programs i.e. another name for software is program. A program is the sequence of instructions given to a computer to solve a given problem or accomplish a given task. There are two main classes of software which are:

1. System software
2. Application software

SYSTEM SOFTWARE

These are programs written by the manufacturer to control the smooth running of the computer.

APPLICATION SOFTWARE

These are programs written by programmers to instruct the computer to perform a particular task.

EVALUATION

1. What is software?
2. What is the difference between system and application software?

PEOPLE WARE

These are people who make and use the computer. They range from professional users to operational users. A user could also be anyone who makes use of computer. Without people, the computer cannot work. There two main classes of people ware:

1. Computer professionals.
2. Computer users.

EVALUATION

1. Can the computer system work without people?
2. Software is subdivided into.....and
3. What are the three components of the system unit?
4. Explain the function of each component of the CPU.

PERIPHERALS

Peripherals are in three categories:

1. Input Devices
2. Output Devices
3. Auxiliary Storage Devices

EVALUATION

1. What is the difference between input and output device?
2. Give four examples of auxiliary device.

READING ASSIGNMENT

Hiit @ Schools For Senior Secondary Education, Data Processing, By HiitPlc, Pgs 13-15

WEEKEND ASSIGNMENT

1. What is a program?
2. Mention the main parts of a computer.

WEEK FOUR

TOPIC: DATA AND INFORMATION

Data is raw, unorganized or unprocessed facts that need to be processed. Data can be something simple and seemingly random and useless until it is organized.

TYPES OF DATA

- Qualitative data: is a descriptive information (it describes something).
- Quantitative data: is a numerical information.

CLASSIFICATION OF QUANTITATIVE DATA

- Continuous data
- Discrete data

EXAMPLES OF DATA

1. Numbers
2. Name of thing, place or animal
3. Words
4. Measurements Descriptions of things

SOURCES OF DATA

1. Television
2. Internet
3. Articles
4. Government documents
5. Newspapers and Magazines
6. Textbooks

EVALUATION

1. Define data.
2. Mention the two types of data

INFORMATION

Information can be defined as a processed data that is meaningful to the user. Information can be used in the decision making process.

EXAMPLES OF INFORMATION

1. Student ID card
2. Weather report
3. Student's Report card
4. National passport

SOURCES OF INFORMATION

1. Internet
2. Database
3. Magazine/Newspaper
4. Document
5. Census Board

WAYS OF HANDLING DATA

1. Electronic Methods
2. Non – Electronic Methods

GENERAL EVALUATION

1. Define information
2. Differentiate in tabular form, between data and information
3. Give four examples of data.
4. State any five sources of information.

READING ASSIGNMENT

Hiit @ Schools , data Processing for Senior Secondary Education, Pgs 8 – 9.

WEEKEND ASSIGNMENT

1. Explain the two ways of handling data.
2. List five examples each of

WEEK FIVE

TOPIC: HISTORY OF COMPUTERS

Sub-topic: Generations of Computers

The history of computer development is often referred to in reference to the different generations of computing devices. We have five generations of computers.

A generation refers to the state of improvement in the product development process. With each new generation, the circuitry has gotten smaller or miniaturized hence speed, power, and computer memory has proportionally increased leading to new discoveries in the tech world that affect the way we live, work and play.

FIRST GENERATION

Electronic machine which was distinct from mechanical computers evolved about 1945. UNIVAC is a good example of this generation of computers.

Computers of this generation were characterized by:

1. They used Vacuum tubes.
2. They were very large and expensive.
3. They were very bulky.
4. They had a low retentive memory.
5. They generated a lot of heat.

SECOND GENERATION

Second generation computers were the replacement of vacuum tubes. Second generation computers utilized primary discrete TRANSISTORS. They had limited capability but were more advanced than the first generation computers.

FEATURES

1. They were more reliable than the first generation.
2. They could perform calculations.
3. They had a more efficient storage facility.
4. They generated lesser heat compared with the first generated computers.

THIRD GENERATION

Third generation computers utilized INTEGRATED CIRCUIT [ICs] technology, Small Scale Integration [SSI] with more sophisticated software capability like multi-programming, multi-processing and operating systems as resource managers.

The following can be noted in third generation computers:

1. Faster input and output.
2. Increased storage capability
3. Increased process capability
4. Ability to display pictures and musical sound

EVALUATION

1. Mention the characteristics of first generation computers.
2. What did the second generation make use of?

FOURTH GENERATION

Fourth generation computers appeared at about 1975. The technologies that characterized these machines were LARGE SCALE INTEGRATION (LSI) and VERY LARGE SCALE INTEGRATION (VLSI). The computers produced at this period were of a higher capability in terms of speed, storage and of superior performance over their counterparts of the third generation.

FIFTH GENERATION

These generations of computers made use of ARTIFICIAL INTELLIGENCE (AI). This category of computer was built around the following objects.

1. To build super computer i.e computers which could perform operation in the range of 10 billion instructions per seconds.
2. They were designed to have capacities like sight and hearing as well as capability to stimulate human thoughts e.g robots.

EVALUATION

1. What did the fourth generation use?
2. Fifth generation computers is built on what technology?

GENERAL EVALUATION

1. The first generation uses as its circuitry.
2. List four features of the second generation computer.
3. What is the difference between AI and Expert system?
4. VLSI means

WEEKEND ASSIGNMENT

1. Give the full meaning of the following acronyms:
 1. IC
 2. VLSI
 3. SSI
 4. LSI
 5. AI
2. Explain the Fifth generation computers.
3. What is artificial intelligence?
4. Explain second generation of computers.

Generations Of computers	Year of development	The Technology Used	Characteristics	Software Instruction	Storage Capacity	Operating System	Relative Speed
First	1940-1956	Vacuum tube	Very big and slow in operation	Machine language	Small internal storage (magnetic drum)	Single user (Jobs scheduled manually)	1 Hz per second
Second	1956-1963	Transistor	Less heat generation	High level & Assembly	Magnetic Core storage	Single user (jobs scheduled automatically)	(100 Hz per second)
Third	1964-1971	Integrated circuit	Transistors were miniaturized and placed on silicon chips (100 – 1000 chips), called semiconductors which increased the speed and efficiency of computers. Use of keyboards and monitors.	Multiprogramming Facilities	Magnetic disks tape	Multiple users (time-sharing)	100 Hz per second
Fourth	1971-Present	Microprocessor (with VLSIC)	1000 and above silicon chips. Computers become smaller to be held on the palm. Speed also increased the more. Uses mouse, keyboards and monitors.	Introduction of Non-procedural language	Flexible internal (HDD, SSD)& external storage (flash, CD-ROM, DVD)	Multiple users (distributed systems)	1 million Hz per second and above

Fifth	Present and beyond	AI and Expert system	10 ⁶ silicon chips and above. Devices that responds to natural language input and are capable of learning and self-organisation.	Introduction of object oriented programming language	Small but powerful network Storage on high mass storage servers	Multiple users (cloud computing)	1 billion Hz per second and above
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GENERAL EVALUATION

1. Differentiate between the first and second generation of computers.
2. Which of the generation of computer uses microchips?
3. Which of the generation of computers used VLSIC?
4. What is non-procedural programming?

WEEK SIX

TOPIC: CLASSIFICATION OF COMPUTER I

Computers can be classified based on the following:

1. Type
2. Size
3. Functionality/purpose

CLASSIFICATION OF COMPUTER BY TYPE (Type of Data handled):

Computers can be classified by types into THREE major types. They are:

DIGITAL COMPUTER

ANALOGUE COMPUTER

HYBRID COMPUTER

- **DIGITAL COMPUTER**

This is the most common type of computer today. It measures physical quantities by counting. Examples are calculator, digital wrist watches, digital fuel dispenser etc.

- **ANALOGUE COMPUTER**

This type of computer is used to measure and process continuous data such as speed, temperature, heartbeat etc. Examples are speedometer, thermometer etc.

- **HYBRID COMPUTER**

This type of computer combines the features of digital and analogue computers together. It is a combinations of digital and analogue computers.

EVALUATION

1. List the classification of computers according to type
2. Explain the difference between the classifications of computer according to type.

CLASSIFICATION OF COMPUTER BY FUNCTIONALITY

Classification of computer according to purpose can be grouped into two (2), namely:

1. General purpose computers
2. Special purpose computers

- **SPECIAL PURPOSE COMPUTERS**

These are computers designed solely to solve a restricted class of problem e.g computer for medical diagnosis, weapon guidance, traffic control, weather study and forecast etc.

- **GENERAL PURPOSE COMPUTERS**

These are computers designed solely to solve a vast variety of problems e.g it can be used for Word processing and at the same time used for graphics, database, spreadsheet etc.

GENERAL EVALUATION

1. What is the difference between general purpose computers and special purpose computers?
2. Explain the following: digital, analogue and hybrid computers.
3. Give any two examples of general purpose computer.
4. Mention classification of computer by purpose.

READING ASSIGNMENT

Hiit Data Processing For Senior Secondary Education, Pg 13

WEEKEND ASSIGNMENT

1. List the classifications of computers according to type.
2. Explain the difference between the classifications of computers according to type.

WEEK SEVEN

TOPIC: CLASSIFICATION OF COMPUTERS II

Sub-Topic: Classification of Computers by Size

Computers can be generally categorized into four, namely:

1. Super computers

2. Mainframe computers
3. Mini computers
4. Micro computers

SUPER COMPUTER

These are the largest, fastest and most expensive computers. The cost is several millions of dollars and the speed is between 600 million to 900 million instructions per second (MIP).

Another name for super computer is MONSTER. Scientists in weather forecasting, exploration make use of super computers. It can also be used for complex calculations e.g CRAY, X-MP etc.

MAINFRAME COMPUTERS

A mainframe computer is a large computer in terms of price, size of internal memory and speed. It has a variety of peripheral devices such as printers, plotters etc more than those found with small computers, except small computers with large amount of external storage.

Mainframe computers usually need a specialized environment to operate, with dust, temperature and humidity carefully controlled. They are used in large establishments e.g banks, airports etc. Examples of Mainframe computers are IBM 360/370, NCR-V 8800.

EVALUATION

1. What is another name for super computer?
2. Mention TWO examples of mainframe computer.

MINI COMPUTERS

Mini computers were developed in the 1970s for specialized tasks (i.e they are special purpose computers). They are smaller and less powerful and less expensive than mainframes.

Mini computers, as they are called, are easier to install and operate e.g PDP II, VAX 750/6000, NCR 9300, DEC, HP 3000 etc.

MICRO COMPUTERS

A microcomputer is a computer whose central processing unit (CPU) is based on a microprocessor.

Micro computers are at present the most popular of computers. They are very small. The capability is generally not as many and not as complex as mini computers or Mainframe computers. They are easy to use. Another name for microcomputer is Personal Computer (PC).

REASONS WHY MICRO COMPUTERS ARE WIDELY USED

1. They are cheap.
2. They have small sizes.
3. They do not require special environment for their operations.
4. They can be used anywhere.

GENERAL EVALUATION

1. Mention four classifications of computers by size.
2. Differentiate between mini and microcomputers.

3. Give two examples of minicomputer.
4. Mainframe computers are used for

READING ASSIGNMENT

HiIT @ Schools for Senior Secondary Education Data Processing, pg14-15

WEEKEND ASSIGNMENT

1. a) List any two examples of mini computers.
b) What is another name for microcomputers?
2. List any two reasons why micro computers are widely used.

WEEK EIGHT

TOPIC: ICT APPLICATION IN EVERYDAY LIFE

INTRODUCTION

ICT has turned this world to a global village. Apart from communication, that is, reaching people both far and near; it has also made the work easier and better.

Better productivity, salaries, health care and even farming and education.

SECTORS WHERE ICT HAS PLAYED MAJOR ROLE

1. Education
2. Banking
3. Industry
4. Commerce

EDUCATION

ICT is applied in the education sector in the following ways:

1. Research for teaching materials, online conference etc.
2. ICT or computers are used as a reference tools.
3. ICT or computer is used by the researchers to collect and process data.
4. Computers are used as administrative tools.
5. ICT offers interactive learning.

BANKING SECTOR

1. Banks use computers to control the entire banking system.
2. On-line transactions by customers are possible 24 hour.
3. Accessing company account by businessmen On-line.
4. Supervision of banking activities by bank administrators.

INDUSTRY

1. Computers are used to facilitate production planning and control system.
2. Automation in the production of goods.
3. Researchers use computers to analyse and collect data for future reference.

4. Computers are used by administrators to oversee the entire operations in the factory.

COMMERCE

1. ICT makes buying and selling easier.
2. Computers are used by customers to connect On-line with Suppliers.
3. Computers are used to keep record of transaction.
4. ICT is applied as a means of communication between customers and the producers.

IMPACT OF ICT ON THE SOCIETY

1. Faster communication speed.
2. Lower communication cost.
3. Reliable mode of communication.
4. Effective sharing of information.
5. Borderless communication.

NEGATIVE EFFECTS OF ICT

1. Insecurity of data
2. Fraud
3. Unemployment
4. Virus threat
5. Cost of setting up ICT gadgets

EVALUATION

1. Define the term ICT.
2. Mention some ICT gadgets.

GENERAL EVALUATION

1. Explain the relevance of ICT in the music industry.
2. What do you understand by saying “ICT has turned the whole world to a Global village”?
3. List any five negative side of ICT.
4. Mention areas where ICT has played key role.

READING ASSIGNMENT

HiIT@ schools Data Processing for Senior Secondary Education, pgs 16-18.

WEEKEND ASSIGNMENT

1. State three uses of ICT.
2. List three ways ICT has assisted in the social development.

WEEK NINE

TOPIC: THE ART OF INFORMATION PROCESSING

DEFINITION

Information processing is the acquisition, recording, organization, retrieval, and dissemination of information.

It refers to the manipulation of digitized information by computers and other digital electronic equipments known as Information Technology (IT).

Information processing systems include business software, operating systems, computers, networks and mainframe. A computer information processor processes information to produce understandable results.

This processing includes the acquisition of information, recording, assembling, retrieval or dissemination of information. For example, in printing a text file, an information processor works to translate and format the digital information for printed form.

- **Procedure for Information Processing**

1. Collation of information
2. Organization of information
3. Analysis of information
4. Interpretation of information

Collation of Information: This is to gather information together, examine it carefully, and compare it with other information to find any differences. It is the assembling of written information into a standard order. Collation differs from classification. Classification is concerned with arranging information into logical categories.

Information can be gathered through the following:

1. internal ii. external

Internal information: Is gotten within an organization e.g about production performance, sales performance, standard operating procedures and manufacturing systems etc.

External Information: The information gotten from outside the organization e.g information about customers and markets.

Organization of information: it refers to the standard protocols by which information is arranged. Data can be organized in various ways. The processes of organizing data include both electronic and non-electronic forms.

Ways of Organizing Information

1. **Category:** Using similarity and relatedness to classify information.
2. **Time:** We can categorize information using time or when time based sequence is important to the information.
3. **Location:** It is another way of organizing information most especially when information relates to a geographical place.
4. **Alphabet:** Alphabet can also be used in sorting information. It is the arrangement of information in an alphabetical order.
5. **Continuum:** This is used when comparing things across a common measure; highest to lowest. Best to worst. First to last etc.

EVALUATION

1. Define Information transmission.
2. List TWO procedures for information processing.

Analysis of information: Is a process of inspecting, cleaning, transforming, and modeling data with the goal of highlighting useful information, suggesting conclusions and supporting decision making.

Information can then be analyzed by using computers or manual methods.

Information analysis will be very easy using database and spreadsheets.

Process of Analysis Information

1. Skim Scan
2. Determine accuracy, relevance and reliability of information.
3. Differentiate
4. Identify propaganda, bias etc.
5. Recognize omissions and faulty logic.
6. Recognize interrelationships.

Interpretation of information: Is the process through which organizations make sense of new information that they have acquired and disseminated.

Advantages of using computers for Information Processing

1. Tasks can be completed faster.
2. Large amounts of data can be processed by computers having error-free results.
3. Ability to store enormous amounts of data for future use.
4. The high reliability of components inside modern computers enables computers to produce consistent results.
5. Efficiency and productivity can rise.
6. Running cost becomes lower in the long run.
7. Tasks can be completed with little human intervention.
8. Overall security can be raised due to less human intervention.
9. Customer services can be improved due to more efficiently management and operations.
10. Sharing of data among computers makes communication possible.

Disadvantages of using computers for Information Processing

1. Initial investment cost can be high.
2. Extra cost is required to employ specialized staff to operate and design the data processing system.
3. Some jobs may be lost due to computerization and thus lower the morale of staff members.
4. Training and retraining of staff is required.
5. Face to face interactions among staff may be reduced.

GENERAL EVALUATION

1. State the difference between collation and classification of information.

2. Give any three kinds of information that may be gotten from external.
3. List two advantages and disadvantages of information processing.
4. What is interpretation of information?

READING ASSIGNMENT

Hiit @ schools data processing for senior secondary education, pgs 19-21.

WEEKEND ASSIGNMENT

1. Give any two definition of information processing.
2. List four advantages and disadvantages of using computers for information processing.

WEEK TEN

TOPIC: PROCESS OF INFORMATION TRANSMISSION CONTENT.

INTRODUCTION

Information is an important tool for decision making in any organization. The type of information gotten and the method or mode of disseminating this information will determine the effectiveness and productivity of any organization or individual.

Therefore, information transmission is the process of sending and receiving information from one place to another at a particular point in time. It is the transfer of information from the source to a destination through communication media or gadgets.

Methods of Information Transmission:

We have two methods of information, namely

1. Ancient method of information
2. Modern method of information

Ancient method of information are methods of transmitting information from person to person and from one place to another at a particular time. Examples of Ancient source of information transmission are:

1. Town criers
2. Metal gong beating
3. Fire lighting
4. Flags or flashing lights
5. Bind
6. Drum
7. Smoke
8. Story telling

Modern methods of Information Transmission: Technology has brought about changes and an improved system of information transmission through the use of electronic devices.

Newspaper as a mean of information transmission

EVALUATION

1. List the TWO methods of information transmission.
2. Explain one of the TWO methods listed.

Advantages of Wireless Communication

1. Communication has enhanced convey of the information quickly to the consumers.
2. Working professionals can work and access internet anywhere and anytime without carrying cables or wires wherever they go.
3. Doctors, Workers and other professionals working in remote areas can be in touch with medical centres through wireless communication.
4. Urgent situation can be alerted through wireless communication.
5. It is cheaper to install and maintain.

Disadvantages of Wireless Communication

1. Unlimited security threats.
2. Risk of information loss.
3. Need for strong security protocols.

CABLE: Cable used for information transmission is Fiber-optics, also called OPTICAL FIBER, is a technology that allows light to travel along thin glass or plastic wires.

FIBER-OPTIC COMMUNICATION: is a method of information transmission from one place to another by sending pulses of light through an optical fiber.

CLASSIFICATION OF THE MEANS OF TRANSMITTING INFORMATION

1. Electronic means of information transmission

1. **Fax Machine:** It is a technology that sends copies of documents over the telephone lines. It is an example of digital communication system.
2. **Telephone/ Mobile Phone:** Telephone and mobiles are most commonly used means of communication. They are not only very fast but also link far distant locations within no time.
3. **Telegraphy:** Is a communication system in which information over a wire through a series of electrical current pulse, usually in the form of morse code.
4. **Television:** News and entertainment programmes are broadcasted on television. Television can broadcast both audio and video communication.
5. **Radio:** News and entertainment programmes are broadcasted on radio. Radio can be used only for broadcasting the audio messages to a large audience.
6. **Satellite:** Artificial satellites are used to communicate with very distant locations. They are used to live-telecast matches and programmes worldwide.
7. **Internet:** This is very cheap and reliable means of not only for communication but also useful for employment and education.

2. **Non – electronic means of information transmission:** they include Drums, Metal gong, Animal Signs, Horn, Fire lighting etc.

GENERAL EVALUATION

1. Differentiate **between** Electronic and Non – electronic means.
2. State the **advantages** of wireless communication.
3. List its disadvantages.
4. Explain any four types of non – electronic information transmission.

READING ASSIGNMENT

Hiit @ Schools, Data Processing for Senior Secondary Education, pgs 25 – 29.

WEEKEND ASSIGNMENT

1. State any **FOUR** advantages of wireless communication.
2. Mention **THREE** disadvantages of wireless communication

WEEK ELEVEN

TOPIC: MODES OF TRANSMITTING/RECEIVING INFORMATION

There are different modes of receiving information. We can receive information in audio, visual or audio-visual forms.

1. Audio Information

Information that is in the form of sound (which could be voice) is usually called audio. Examples of information in audio form are music in audio tape, CD, DVD, diskettes, voice narrated text documents, radio broadcasts, telephone conversation, voice calls on the GSM network.

2. Visual Information

Information that we receive in the form of pictures and images are called visual information. Examples are text, graphs and charts in prints (i.e newspapers, magazines, photocards, photo album, books); images transmitted via satellite; pictures on the internet; making representations or drawing diagrams.

3. Audio-Visual Information

This mode of receiving information involves both audio and visual means. Examples are television broadcasts, films (motion pictures) in video tapes, CD and DVD. Other examples are the internet and oral communication.

Short note on radio and television

RADIO

In 1894, the young Italian inventor Guglielmo Marconi began working on the idea of building a commercial wireless telegraphy system based on the use of Hertzian waves (radio waves).

By August 1895, Marconi was field testing his system but even with improvements, he was only able to transmit signals up to one-half mile.

In 1897, he established a radio station on the isle of Wight, England.

In summary, Radio is a means of transmitting information over a long distance; most especially rural areas have access to information transmitted over the radio.

It is all about sending audio messages over a long distance using electromagnetic wave.

TELEVISION

Television is used to transmit both visual and audio messages to large audience over a far distance.

Electronic television was first successfully demonstrated in San Francisco on Sept, 7th, 1927.

The system was designed by Philo Taylor Farnsworth, a 21-year-old inventor who had lived in a house without electricity until he was 14. While still in high school, Farnsworth had begun to conceive of a system that could be coded onto radio waves and then transformed back into a picture on a screen.

There was also a mechanical television system, which scanned images using a rotating disk with holes arranged in a spiral pattern, had been demonstrated by John Logie.

In summary, Farnsworth scanned images with a beam of electrons while John Logie developed a mechanical television.

Television is audio – visual electronic used to transmit both the audio messages and images.

GENERATION EVALUATION

1. How can Radio and Television be used as media of information transmission?
2. Differentiate between Radio and Television.

READING ASSIGNMENT

Surfing the internet to know more on radio and Television,
Hiit @ Schools Data Processing for Senior Secondary Education, pg 23.

WEEKEND ASSIGNMENT

1. List any other THREE examples of modern information transmission.
2. Mention Four ancient methods of information transmission.

WEEK TWELVE

TOPIC: MEDIUM OF INFORMATION TRANSMISSION

Types of Information Transmission medium, namely:

1. Satellite
2. Wireless
3. Cable

SATELLITE: In satellite communication, signal transferring between the sender and receiver is done with the help of satellite. In this process, the signal which is a beam of modulated microwaves is sent towards the satellite. Then the satellite amplifies the signal and sent it back to the receiver's antenna present on the earth surface. All the signal transferring is happening in the space. Thus, this type of communication is known as SPACE COMMUNICATION.

EVALUATION

1. State the three types of information transmission.
2. What are the means of transferring information?

WIRELESS: Wireless communication involves the transmission of information over a distance without the help of wires, cables or any other forms of electrical conductors. The transmitted distance can be anywhere between a few meters (e.g a television's remote control) and thousands of kilometers (e.g radio communication).

Devices used for Wireless Communication

1. Cordless telephones
2. Mobiles
3. GPS Units
4. Wireless computer parts
5. Satellite

CABLE: Cable used for information transmission is Fiber-optics, also called OPTICAL FIBER.

It is a technology that allows light to travel along thin glass or plastic wires. This type of cable is used most commonly in the communication industry, because digital information can be converted into light pulses that move along the length of the wire. Examples of the kinds of information that can pass through a fiber-optic cable are : Telephone calls, the internet and television.

Means of transmitting information

1. Fax Machine
2. Mobile Phone
3. Telegraph
4. Television
5. Radio
6. Satellite
7. Internet

GENERAL EVALUATION

1. What is information transmission?
2. Explain modern method information transmission.
3. Explain space communication.
4. State the differences between the modern and ancient methods of information transmission.

READING ASSIGNMENT

Hiit @ Schools, Data Processing for Senior Secondary Education, pgs 25 -29.

WEEKEND ASSIGNMENT

1. State the types of information transmission.
2. Write short notes on types of information transmission.