COMPUTER STUDIES

**JS 1 Second term 2024/2025 Session**

**Week**

**1-2 Generations of Computer**

**3-4. Application of ICT in Every day life**

**5. ICT and Development of Society**

**6. Information Transmission**

**7. Introduction to Computer Monitor**

**8. System Unit**

**9. Word Processing**

Generations of Computers

The development of electronic computers can be divided into five generations depending upon the technologies used. They include:

First Generation of Computers (1942-1955)

The beginning of the commercial computer age is from UNIVAC (Universal Automatic Computer). It was developed by two scientists Mauchly and Echert at the Census Department of the United States in 1947. The first generation computers were used during 1942-1955. They were based on vacuum tubes Examples of first-generation computers are ENIVAC and UNIVAC-1.

Advantages

1. Vacuum tubes were the only electronic component available during those days.

2. Vacuum tube technology made it possible to make electronic digital computers.

3. These computers could calculate data in a millisecond.

Disadvantages

1. The computers were very large.

2. They consumed a large amount of energy.

3. They heated very soon due to thousands of vacuum tubes.

4. They were not very reliable.

5. Air conditioning was required.

6. Constant maintenance was required.

7. Non-portable.

8. Costly commercial production.

9. Limited commercial use.

10. Very slow speed.

11. Limited programming capabilities.

12. Used machine language only.

13. Used magnetic drums which provide very fewer data storage.

14. Used punch cards for input.

15. Not versatile and is very faulty.

Second Generation Computers (1955-1964)

The second-generation computers used transistors. The scientists at Bell Laboratories developed the transistor in 1947. These scientists include John Barden, William Brattain and William Shockley. The size of the computers was decreased by replacing vacuum tubes with transistors. Examples of second-generation computers are IBM 7094 series, IBM 1400 series and CDC 164 etc.

Advantages

1. Smaller in size as compared to first-generation computers.

2. The 2nd generation Computers were more reliable

3. Used less energy and were not heated.

4. Wider commercial use

5. Better portability as compared to first-generation computers.

6. Better speed and could calculate data in microseconds

7. Used faster peripherals like tape drives, magnetic disks, printers etc.

8. Used Assembly language instead of Machine language.

9. Accuracy improved.

Disadvantages

1. A cooling system was required

2. Constant maintenance was required

3. Commercial production was difficult

4. Only used for specific purposes

5. Costly and not versatile

6. Punch cards were used for input.

Third Generation Computers (1964-1975)

The Third generation computers used the Integrated Circuit (IC). Jack Kilby developed the concept of the integrated circuit in 1958. It was an important invention in the computer field. The first IC was invented and used in 1961. A single IC chip may contain thousands of transistors. The computer became smaller in size, faster, more reliable and less expensive. Examples of third-generation computers are IBM 370, IBM System/360, UNIVAC 1108 and UNIVAC AC 9000 etc.

Advantages

1. Smaller in size as compared to previous generations.

2. More reliable.

3. Used less energy

4. Produced less heat as compared to the previous two generations of computers.

5. Better speed and could calculate data in nanoseconds.

6. Used fan for heat discharge to prevent damage.

7. Maintenance cost was low because hardware failure is rare.

8. General purpose

9. Could be used for high-level languages.

10. Good storage

11. Versatile to an extent

12. Less expensive

13. Better accuracy

14. Commercial production increased.

15. Used mouse and keyboard for input.

Disadvantages

1. Air conditioning was required.

2. Highly sophisticated technology is required for the manufacturing of IC chips.

Fourth Generation Computers (1975-Present)

The fourth generation computers started with the invention of the Microprocessor. The Microprocessor contains thousands of ICs. Ted Hoff produced the first microprocessor in 1971 for Intel. It was known as Intel 4004. The technology of integrated circuits improved rapidly. The LSI (Large Scale Integration) circuit and VLSI (Very Large Scale Integration) circuit was designed. It greatly reduced the size of the computer. The size of modern Microprocessors is usually one square inch. It can contain millions of electronic circuits. Examples of fourth-generation computers are Apple Macintosh & IBM PC.

Advantages

1. More powerful and reliable than previous generations.

2. Small in size

3. Fast processing power with less power consumption

4. Fan for heat discharging and thus to keep cold.

5. No air conditioning is required.

6. General purpose

7. Commercial production

8. Less need for repair.

9. Cheapest among all generations

10. All types of High-level languages can be used in this type of computers

Disadvantages

1. The latest technology is required for the manufacturing of Microprocessors.

Fifth Generation Computers (Present & Beyond)

Scientists are working hard on the 5th generation computers with quite a few breakthroughs. It is based on the technique of Artificial Intelligence (AI) or Biochip. With A.I computers can understand spoken words, imitate human reasoning and respond to their surroundings using different types of sensors. Scientists are constantly working to increase the processing power of computers. They are trying to create a computer with real IQ with the help of advanced programming and technologies. IBM Watson computer is one example that outsmarts Harvard University Students. The advancement in modern technologies will revolutionize the computer in future.

Advantages

1. They are very portable

2. They are much faster than the previous ones.

3. Easy to repair

4. They function with natural language

Disadvantages

1. It could lead to unemployment due to AI replacing jobs.

2. They can be used for spying on people.

3. Creating AI with human-like intelligence is a difficult and time-consuming task.

4. It is a potential tool for scammers to scam people through the internet

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### **Application of ICT in Everyday Life**

### Meaning of ICT

ICT is an acronym that stands for Information and Communication Technology.

### Definition of ICT

ICT can be defined as technologies that provide access to information through telecommunications.  
Information and Communication Technology deals with the use of diverse technological tools and resources to convert, store, protect, process, transmit and retrieve information.  
It comprises computers, networks, satellite communications, robots, videotext, cable television, electronic mail, electronic games and automated office equipment.

## Uses of ICT

The three main uses of ICT include the following:  
**1. Communication**  
Information can be transmitted from one place to the other with the use of ICT. For example, sending and receiving e-mail messages, making phone calls, audio and video conferencing, sending and receiving fax messages, chatting and instant messages etc.  
**2. Information Processing and Management**  
It can be used in storing, retrieving and manipulating data and information, typing letters, notes and other documents, keeping records of inventory, transmitting information etc.  
**3. Timing and Control**  
It can be used in manipulating and controlling equipment used in aircraft, ships, oil rings, automated teller machines (ATMs), and scientific research. It can also be used in monitoring and reporting on the status of equipment etc.

## ICT and the Society

Today, almost the whole world depends on ICT. No organization can do without information technology. Learning institutions, industries, banks, hospitals, supermarkets etc. all depend on it in carrying out their daily activities. ICT has led to the development of so many things and reduced the world to a global village.

## ICT and Development of society

The impacts of ICT in society include:  
(a) Education  
ICT has been used in schools by students and teachers in searching for knowledge and educative materials.  
(b) Commerce  
ICT has brought about the easiest way of buying and selling goods on the internet which is called e-commerce (Electronic Commerce). In e-commerce, the prospective buyer will book or register for the needed goods or services which will be delivered to them within a stipulated time.  
(c) Communication  
ICT has been a major part of communication, the use of the internet, and video conferencing; one can communicate with other people outside one's country.  
(d) Banking  
ICT has made all banks go online i.e. have internet access in their branches which makes their transactions easier. The use of Automated Teller Machine (ATM) is connected to the internet which pays money to different bank customers.  
(e) Manufacturing  
ICT is used in almost all manufacturing companies e.g. Textile industry, AutoCAD in engineering etc. this makes it so simple for industries/factories to produce many things within a few minutes or hours since everything has been programmed.  
(f) Libraries  
Almost all libraries are now using information and communication technology (ICT) one can log books in and out.

Technology and Data Processing lesson notes and other educational support materials.

### **Information Transmission**

## Definition of Information Transmission

Information Transmission is the process of sending out processed data from one person or place to another in a meaningful form through a communication medium.

## Methods of Information Transmission

There are two methods of transmitting information, namely:  
A. Ancient Method of Information Transmission  
B. Modern Method of Information Transmission

## Ancient Methods of Transmitting Information

These are the methods used by our forefathers before the development of modern technology in passing on information.  
They include the following:  
**a. Oral (Face to Face) Communication**  
This is a method whereby the sender (informant) meets with the receiver (recipient) face-to-face to pass information across.  
**b. Beating Drums**  
Drum beating is another way of transmitting information from the sender to the receiver. Drums are used to informing the Villagers of certain invents such as hunting, farming, death announcements etc. Every event has its unique tune that the villagers can understand.  
**c. Smoke Signals** This method is used to pass information by bush burning to alert the people in the environment of the incoming danger.  
**d. Making representation**  
Information could be sent from one village to another with the use of representation. E.g. tying a cutlass with a red cloth will inform the receiver that something bad is coming if proper attention is not taken.  
**e. Town Crier**  
Information is transmitted by the town crier by shouting the information repeatedly around the town.  
**f. Drawing diagrams**  
The diagram will be drawn on the walls or the backs of trees. The messages are always understood by the person it was made for.  
**g. Carrier pigeons:** These are specially trained pigeons that were used to transmit messages over long distances. They can fly back to their home loft, even if they were released in a foreign location. This method was especially useful for military purposes.

### Advantages of Ancient Methods of Transmitting Information

i. Simple and inexpensive: These methods do not require any sophisticated technology, so they are relatively simple and inexpensive to use.  
ii. Reliable: They can be used in areas with poor reception or where there is no electricity.  
iii. Secure: They are less likely to be intercepted or hacked.  
iv. Flexible: It can be used in areas with no infrastructure.

### Disadvantages of Ancient Methods of Transmitting Information

i. These methods are much slower than modern methods.  
ii. They cannot be used to transmit information over long distances.  
iii. These methods are more prone to errors than modern methods, as they rely on human interpretation.

## Modern Methods of Transmitting Information

With the development in technology, it is now possible to pass information straight to the audience. Ancient means of communication have been replaced by more efficient modern ones. Modern means of transmitting information include:  
**a. Writing**  
Instead of making marks or using objects to communicate, in modern times, information can be transmitted by writing, which is done either by hand or by using machines such as computers or typewriters.  
**b. Printing Machine**  
Printed materials are just like typewritten ones. Printing allows the mass production of informative materials that could be spread far and wide e.g. production of invitation cards, handbills newspapers etc.  
**c. Radio**  
Voice information is broadcast to a group of people in a geographical location at the same time within a few minutes.  
d. Television  
This is used to broadcast information in form of both voice and pictures to people in a different locations.  
**e. Internet**  
This means international network, information, in this case, is globally broadcast to the whole world for those that have an interest in updating themselves.  
**f. Fax**  
This transmit text and graphic messages from one location to the other, it might be within the country or outside the country with the use of a series of numbers called fax number.  
**g. Telephone**  
Telephone allows people’s voices to be transmitted over long or short distances.  
**h. Telex**  
A telex machine is used to transmit textual information from one person to another usually over a long distance.  
**i. Satellite**  
A satellite is an object which has been placed into orbit by human endeavour in other to improve sending radio, telephone and internet signals to any part of the world. Such objects are sometimes called artificial satellites to distinguish them from natural satellites such as the moon.  
**j. GSM**  
GSM means Global System for Mobile Communication. We use this to send and receive phone calls. One benefit of a GSM phone is the addition of a SIM card or Subscriber Identification Module.

### Advantages of Modern Methods of information Transmission

i. Information can be transmitted much faster than ancient methods.  
ii. It is not limited by distance.  
iii. They are less prone to errors.  
iv. Information can be transmitted in many ways

### Disadvantages of Modern Methods of information Transmission

i. These methods require more complex and sophisticated technology.  
ii. They are more expensive to use than ancient methods.  
iii. Vulnerable to attack  
iv. They can be addictive

## Means of Information Transmission

There are two means of transmitting information  
**i. Electronic Means of Information Transmission:** As the name implies, it relies on electrical signals to convey information.

### Examples of Electronic Means of Transmitting Information

They include

* Prints
* Telephone
* Radio
* Television
* Fax
* Satellite
* Internet
* GSM

**ii. Non-Electronic Means of Transmitting information**  
The means do not require electrical signals for information to be transmitted.

### Examples of non-electronics means of transmitting information

They include:

* Oral
* Beating of drums
* Fire lighting
* Whistling
* Drawing diagrams
* Making representation

## Modes of Receiving Information

Messages can be received by three major ways. These include:  
i. Audio  
ii. Visual  
iii. Audio-visual  
**Audio:** This is a mode of communication where data are received via sound or voice without seeing the pictures. E.g. through Radio, Telephone, Beating of drums, Town crying (except the town crier is closer) etc  
**Visual:** This is a mode of receiving information through prints or pictures alone without sound or voice e.g. prints, Drawings, Computer printers, Telex, fax machines etc  
**Audio-visual:** This is a mode of receiving information in both visual and audio form; i.e. both hearing sound and voice, and seeing pictures. E.g. Television, Oral, etc

**Introduction to Computer Monitor**

What is a Computer Monitor?

A computer monitor is an electronic device that displays video and graphics generated by a computer. It is also known as a Visual Display Unit (VDU).

**Types of Computer Monitors:**

1. Cathode Ray Tube (CRT) Monitor: Uses an electron gun to shoot beams of electrons onto a phosphorescent screen to display images.

2. Liquid Crystal Display (LCD) Monitor: Uses a layer of liquid crystals to block or allow light to pass through a matrix of pixels to display images.

3. Light Emitting Diode (LED) Monitor: Uses an array of LEDs to illuminate a liquid crystal display to produce images.

4. Plasma Monitor: Uses individual cells filled with a gas, such as neon or xenon, which are electrically charged to display images.

5. Touchscreen Monitor: A monitor that allows users to interact with the computer by touching the screen.

**Functions of a Computer Monitor:**

1. Displaying Graphics and Text: The monitor displays the output of the computer's graphics card.

2. \*Providing Visual Feedback: The monitor provides visual feedback to the user, allowing them to interact with the computer.

3. \*Displaying Video: The monitor can display video content, such as movies and games.

**Importance of a Computer Monitor:**

1. Output Device: The monitor is the primary output device of a computer.

2. User Interface: The monitor provides a visual interface between the user and the computer.

3. Productivity: A good monitor can improve productivity and reduce eye strain.

Homework:

Research and write a short report on the latest advancements in computer monitor technology.

Here is a class note on “System Unit”:

**System Unit**

What is a System Unit?

A system unit, also known as a central unit or base unit, is the main component of a computer that contains the electronic components that make up the computer’s brain.

**Components of a System Unit:**

1. \_Central Processing Unit (CPU): The CPU, also known as the processor, is the brain of the computer and performs calculations and executes instructions.

2. \_Motherboard: The motherboard is the main circuit board of the computer that connects all the hardware components together.

3. \_Memory (RAM):\_ Random Access Memory (RAM) is a type of computer storage that temporarily holds data and applications while the computer is running.

4. \_Power Supply:\_ The power supply provides power to all the components of the computer.

5. \_Storage Drive:\_ A storage drive, such as a hard drive or solid-state drive, stores the computer’s operating system, programs, and data.

6. \_Graphics Card:\_ A graphics card, also known as a video card, is responsible for rendering images on the computer screen.

7. \_Sound Card:\_ A sound card is responsible for producing sound on the computer.

**Functions of a System Unit:**

1. \_Processing Data:\_ The system unit processes data and performs calculations.

2. \_Storing Data:\_ The system unit stores data and programs.

3. \_Providing Power:\_ The system unit provides power to all the components of the computer.

4. \_Controlling Peripherals: The system unit controls the computer’s peripherals, such as the keyboard, mouse, and printer.

**Importance of a System Unit:**

1. \_Brain of the Computer:\_ The system unit is the brain of the computer and performs all the calculations and executes instructions.

2. Connects Hardware Components: The system unit connects all the hardware components of the computer together.

3. Provides Power: The system unit provides power to all the components of the computer.

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### **Word Processing**

## Definition of Terms

**Word Processing:**Word processing means using the computer to create, edit, and print document.  
**Word processor:**A word processor is an electronic device or computer software application, which performs the task of composition, editing, formatting, and printing of documents.  
**Text Document:** Text document is something written, printed, or online document that presents data in the form of an articles, letter, memorandum, report, etc.

## Examples of Word Processors

There are many word processing software packages available today, such as  
WordStar  
MS-word  
Corel WordPerfect  
WordPad  
Notepad  
WPS writer, etc

## Application Areas of Word processing Software

i. Offices  
ii. Publishing  
iii. Journalism  
iv. Education  
v. Articles

## Steps Involved in Loading Microsoft Word

There are two ways of loading Microsoft word:  
a. If the icon of the package is on desktop, double click on it for it to open  
b. If the icon is not on the desktop, follow the step below:  
i. Click the Start Button  
ii. Click on all program  
iii. Select and click Microsoft office  
iv. Select and click Microsoft Word

## MS-Word Processing Environment

The word window is made up of many components that are displayed onscreen at the start of the program such as:  
**a. Title bar:** The title bar is the top part of the window displaying MS Word. It displays the name of the active document.  
**b. Menu bar:** The menu bar contains commands for word operation. E.g Home, Insert, view, insert, page layout, etc  
**c. Status bar:** bottom of the window it displays the status of the document  
**d. Toolbar:** Toolbar serves as short cuts for common commands such as save, print, new, open, undo, etc.  
**e. Work space:** it is the area where actual word processing is done.  
**f. Formatting toolbar:** This toolbar contains shortcut to the commands used for formatting text. You can change your word or line paragraph to bold, italic or underline,

## Facilities Available in a Word Processor

**a. Type document:** the Keyboard is used to type a document. You type a document by pressing the relevant keys on the keyboard in order to arrive at the desired word.  
**b. Edit document:** This is the ability to change text by adding, deleting and rearranging letters, words, sentences and paragraph.  
**c. Store document:**Word processor gives the opportunity of accessing a previously saved file or document either on the computer or on external storage facility.  
**d. Move, copy and paste:** A word, line or text, paragraph, page or diagram can be moved from one document to another. It could also be within a document that for one line to the other. It can also be from one application package to the other, e.g., from CorelDraw to Microsoft Word.

## Features of a Word Processor

Word processor varies considerably, but all word processors support the following basic features:  
**Insert text:**Allows you to insert text anywhere in the document  
**Delete text:** Allows you to erase characters, words, lines, or passages.  
**Cut and paste:**Allows you to remove a section of text from one place in a document and insert it somewhere else  
**Copy:**Allows you to duplicate a section of text  
**Page size and Margins:** allows you to define various page size and margins.  
**Search and replace:** Allows you to search for a particular word or phrase and also replace one group of characters with another everywhere that first group appears.  
**Word wrap:**The word processor automatically moves to the next line when you have filled one line with text.  
**Headers, footers, and page numbering:** Allows you to specify customized headers and footers the word process will display at the top and bottom of every page  
**Font Specification:** Allows you to change font attributes within a document.  
**Spell Checker:**A utility that allows you to check the spelling of words. It will highlight any word that it does not recognize  
**Thesaurus:** Allows you to search for synonyms without leaving the word processor  
**WYSIWYG (what you see is what you get):** With WYSIWYG, a document appears the display screen exactly as it will look when printed. ETC