**V.M.G.RAJASEKARAN – RAMANI SRI SARADA SAKTHI MAT. HR. SEC. SCHOOL**

**STD: XI COMPUTER SCIENCE**

## CHAPTER – 1 INTRODUCTION TO COMPUTER

### SECTION – A

**Choose the correct answer:**

1. First generation computers used
   **(a) Vacuum tubes** (b) Transistors
   (c) Integrated circuits (d) Microprocessors
2. Name the volatile memory
   (a) ROM (b) PROM **(c) RAM** (d) EPROM
3. Identify the output device
   (a) Keyboard (b) Memory **(c) Monitor** (d) Mouse
4. Identify the input device
   (a) Printer **(b) Mouse** (c) Plotter (d) Projector
5. ..... Output device is used for printing building plan, flex board, etc.
   (a) Thermal printer **(b) Plotter** (c) Dot matrix (d) inkjet printer
6. In ATM machines, which one of the following is used to
   **(a) Touch Screen** (b) speaker (c) Monitor (d) Printer
7. When a system restarts ..... ..... which type of booting is used.
   **(a) Warm booting** (b) Cold booting (c) Touch boot (d) Real boot.
8. Expand POST
   (a) Post on self Test (b) Power on Software Test
   **c) Power on Self Test** (d) Power on Self Text
9. Which one of the following is the main memory?
   (a) ROM **(b) RAM** (c) Flash drive (d) Hard disk
10. Which generation of computer used IC's?
    (a) First (b) Second **(c) Third** (d) Fourth

### SECTION-B

**Short Answers:**

**1. What is a Computer?**

- ✓ A **computer** is an electronic device that manipulates information, or data. It has the ability to store, retrieve, and process data.
- ✓ Computer works faster than human being and given the values more accuracy and reliable.

**3. What are the component of the computer?**

1. Input Unit
2. Central Processing Unit (Control Unit, Arithmetic Logic Unit, Memory Unit)
3. Output Unit

**2. Distinguish between Data and Information.**

| Data: | Information: |
|---|---|
| Data is defined as an unprocessed collection of raw facts, suitable | ✓ Information is a collection of facts from which |

| | |
|---|---|
| for communication, interpretation or processing. | conclusions may be drawn. |
| For example, 134, 16, 'Kavitha', 'C' is data. This will **not give any meaningful message.** | For example Kavitha is 16 years old. This information is about Kavitha **and conveys some meaning**. This conversion of data into information is called data processing. |

**4. Write the functions of Arithmetic and Logic Unit**

- ✓ The ALU is a part of the CPU where various computing functions are performed on data.
- ✓ The ALU performs arithmetic operations such as addition, subtraction, multiplication, division and logical operations.
- ✓ The result of an operation is stored in internal memory of CPU.
- ✓ The logical operations of ALU promote the decision-making ability of a computer.

**5. Write the functions of control unit.**

The control unit controls the flow of data between the CPU, memory and I/O devices. It also controls the entire operation of a computer.

**6. What is the function of memory?**

The Memory Unit is of two types. which are primary memory and secondary memory. The primary memory is used to temporarily store the programs and data when the instructions are ready to execute. The secondary memory is used to store the data permanently.

**7. Differentiate Input and Output unit.**

| Input Unit | Output Unit |
|---|---|
| Input unit is used to feed any form of data to the computer, which can be stored in the memory unit for further processing. **Example: Keyboard, mouse, etc.** | An Output Unit is any hardware component that conveys information to users in an understandable form. **Example: Monitor, Printer etc.** |

**8. Distinguish between Primary memory and Secondary Memory.**

| Primary memory | Secondary Memory |
|---|---|
| The **Primary Memory** is volatile, that is, the content is lost when the power supply is switched off. | The **Secondary memory** is non volatile, that is, the content is available even after the power supply is switched off. |
| The Random Access Memory (RAM) is | Hard disk, CD-ROM and DVD ROM are |

| | |
|---|---|
| an example of a main memory. | examples of secondary memory. |

## SECTION - D

**Explain in detail:**

**1. What are the Characteristics of Computer?**

- ✓ Computer is the powerful machine.
- ✓ It can perform large number of tasks.
- ✓ The main capacities of computer are work length, speed accuracy, diligence, versatility memory and automation and lots of more tasks.

**2. Write the applications of computer.**

**Application of computer**

The various applications of computers in today's arena :

1. Business
2. Education
3. Marketing
4. Banking
5. Insurance
6. Communication
7. Health Care
8. Military
9. Engineering Design

**3. What is input device? Give two examples.**

Input device is used to feed any form of data to the computer, which can be stored in the memory unit for further processing.

**Example:** Keyboard, mouse , Scanner, Fingerprint scanner, Track Ball, Retinal Scanner, Light pen etc.

**4. Name any three output devices.**

**Output devices:**

Monitor, Printer, Plotter, Speaker, Multimedia Projectors are the output devices.

**5. Differentiate optical and Laser Mouse.**

| Optical Mouse Laser Mouse | Laser Mouse |
|---|---|
| Measures the motion and acceleration | Measures the motion and acceleration |

| | |
|---|---|
| of pointer. | of pointer. |
| It uses light source instead of ball to judge the motion of the pointer. | Laser Mouse uses Laser Light. |
| Optical mouse has three buttons. | Laser mouse has three buttons |
| Optical mouse is less sensitive towards surface. | Laser Mouse is highly sensitive and able to work on any hard surface. |

**6. Write short note on impact printer.**

**Impact Printers**

These printers print with striking of hammers or pins on ribbon. These printers can print on multi-part (using carbon papers) by using mechanical pressure.

**Example:** Dot Matrix printers and Line matrix printers are impact printers.

**7. Write the characteristics of sixth generation.**

**Sixth Generation Computer.**

- ✓ In the Sixth Generation, computers could be defined as the era of intelligent computers, based on Artificial Neural Networks.
- ✓ One of the most dramatic changes in the sixth generation will be the explosive growth of Wide Area Networking.
- ✓ Natural Language Processing (NLP) is a component of Artificial Intelligence (AI).
- ✓ It provides the ability to develop the computer program to understand human language.

**8. Write the significant features of Monitor.**

**Significant features of Monitor:**

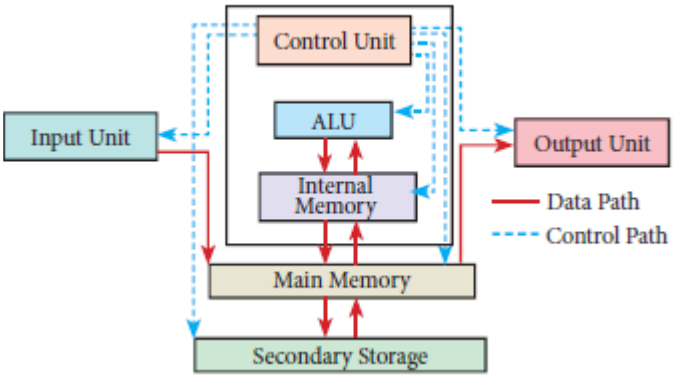
- ✓ Monitor is the most commonly used output device to display the information.
- ✓ Pictures on a monitor are formed with picture elements called PIXELS.
- ✓ Monitors may either be Monochrome which display text or images in Black and White or can be color, which display results in multiple colors.
- ✓ There are many types of monitors available such as CRT (Cathode Ray Tube), LCD (Liquid Crystal Display) and LED (Light Emitting Diodes).
- ✓ The monitor works with the VGA (Video Graphics Array) card.
- ✓ The video graphics card helps the keyboard to communicate with the screen.
- ✓ It acts as an interface between the computer and display monitor.
- ✓ Usually the recent motherboards incorporate built-in video card.

## SECTION - D

**Explain in detail**

**1. Explain the basic components of a computer with a neat diagram.**

The computer is the combination of hardware and software. Hardware is the physical component of a computer like motherboard, memory devices, monitor, keyboard etc., while software is the set of programs or instructions. Both hardware and software together make the computer system to function.




**Input Unit**

Input unit is used to feed any form of data to the computer, which can be stored in the memory unit for further processing.
**Example:** Keyboard, mouse,

**Central Processing Unit:**

CPU is the major component which interprets and executes software instructions. It also controls the operation of all other components such as memory, input and output units. It accepts binary data as input process the data according to the instructions and provides the result as output.
The CPU has three components which are Control unit, Arithmetic and logic unit (ALU) and Memory unit.

**Arithmetic and Logic Unit:**

The ALU is a part of the CPU where various computing functions are performed on data. The ALU performs arithmetic operations such as addition, subtraction, multiplication, division and logical operations. The result of an operation is stored in internal memory of CPU. The logical operations of ALU promote the decision-making ability of a computer.

**Control UniT:**

The control unit controls the flow of data between the CPU, memory and I/O devices. It also controls the entire operation of a computer.

**Memory Unit :**

The Memory Unit is of two types which are primary memory and secondary memory. The primary memory is used to temporarily store the programs and data when the instructions are ready to execute. The secondary memory is used to store the data permanently.

**Output Unit:**

An Output Unit is any hardware component that conveys information to users in an understandable form. **Example: Monitor, Printer etc.**

**3. Explain the following:**

**a. Inkjet Printer b. Multimedia projector c. Bar code / QR code**

**Inkjet Printers:**

- ✓ Inkjet Printers use colour cartridges which combined Magenta, Yellow and Cyan inks to create color tones. A black cartridge is also used for monochrome output.
- ✓ Inkjet printers work by spraying ionized ink at a sheet of paper.
- ✓ The speed of Inkjet printers generally range from 1-20 PPM (Page Per Minute).
- ✓ They use the technology of firing ink by heating it so that it explodes towards the paper in bubbles or by using piezoelectricity in which tiny electric currents controlled by electronic circuits are used inside the printer to spread ink in jet speed.
- ✓ An Inkjet printer can spread millions of dots of ink at the paper every single second.

**Multimedia Projectors:**

Multimedia projectors are used to produce computer output on a big screen. These are used to display presentations in meeting halls or in classrooms.

**Bar Code / QR Code Reader:**

A Bar code is a pattern printed in lines of different thickness. Te Bar code reader scans the information on the bar codes transmits to the Computer for further processing. The system gives fast and error free entry of information into the computer.

**QR (Quick response) Code:**

The QR code is the two dimension bar code which can be read by a camera and processed to interpreter the image

**4. Explain the Input Devices.(any 5 )**

**Input Devices:**

**Keyboard:**

- ✓ Keyboard (wired / wireless, virtual) is the most common input device used today. The individual keys for letters, numbers and special characters are collectively known as character keys.
- ✓ This keyboard layout is derived from the keyboard of original typewriter. The data and instructions are given as input to the computer by typing on

the keyboard. Apart from alphabet and numeric keys, it also has Function keys for performing different functions.

- ✓ There are different set of keys available in the keyboard such as character keys, modifier keys, system and GUI keys, enter and editing keys, function keys, navigation keys, numeric keypad and lock-keys.

**Mouse:**

- ✓ Mouse (wired/wireless) is a pointing device used to control the movement of the cursor on the display screen.
- ✓ It can be used to select icons, menus, command buttons or activate something on a computer.
- ✓ Some mouse actions are move, click, double click, right click, drag and drop.

**Scanner:**

- ✓ Scanners are used to enter the information directly into the computer's memory.
- ✓ This device works like a Xerox machine.
- ✓ The scanner converts any type of printed or written information including photographs into a digital format, which can be manipulated by the computer.

**Fingerprint Scanner:**

- ✓ Finger print Scanner is a fingerprint recognition device used for computer security, equipped with the fingerprint recognition feature that uses biometric technology.
- ✓ Fingerprint Reader / Scanner is a very safe and convenient device for security instead of using passwords, which is vulnerable to fraud and is hard to remember.

**Track Ball:**

- ✓ Track ball is similar to the upside- down design of the mouse.
- ✓ The user moves the ball directly, while the device itself remains stationary. The user spins the ball in various directions to navigate the screen movements.

**Retinal Scanner:**

- ✓ This performs a retinal scan which is a biometric technique that uses unique patterns on a person's retinal blood vessels.

**Light Pen:**

- ✓ A light pen is a pointing device shaped like a pen and is connected to a monitor.
- ✓ The tip of the light pen contains a light-sensitive element which detects the light from the screen enabling the computer to identify the location of the pen on the screen.
- ✓ Light pens have the advantage of 'drawing' directly onto the screen, but this becomes hard to use, and is also not accurate.

**Optical Character Reader:**

- ✓ It is a device which detects characters printed or written on a paper with OCR, a user can scan a page from a book.
- ✓ The Computer will recognize the characters in the page as letters and punctuation marks and stores.
- ✓ The Scanned document can be edited using a word processor.

**Bar Code / QR Code Reader:**

- ✓ A Bar code is a pattern printed in lines of different thickness. Te Bar code reader scans the information on the bar codes transmits to the Computer for further processing.
- ✓ The system gives fast and error free entry of information into the computer.

**QR (Quick response) Code:**

The QR code is the two dimension bar code which can be read by a camera and processed to interpreter the image

**Voice Input Systems:**

- ✓ Microphone serves as a voice Input device. It captures the voice data and sends it to the Computer.
- ✓ Using the microphone along with speech recognition software can offer a completely new approach to input information into the Computer.

**Digital Camera:**

- ✓ It captures images / videos directly in the digital form.
- ✓ It uses a CCD (Charge Coupled Device) electronic chip.
- ✓ When light falls on the chip through the lens, it converts light rays into digital format.

**Touch Screen:**

- ✓ A touch screen is a display device that allows the user to interact with a computer by using the finger.
- ✓ It can be quite useful as an alternative to a mouse or keyboard for navigating a Graphical User Interface (GUI).
- ✓ Touch screens are used on a wide variety of devices such as computers, laptops, monitors, smart phones, tablets, cash registers and information kiosks.
- ✓ Some touch screens use a grid of infrared beams to sense the presence of a finger instead of utilizing touch-sensitive input.

**Keyer:**

- ✓ A Keyer is a device for signaling by hand, by way of pressing one or more switches.
- ✓ Modern keyers have a large number of switches but not as many as a full size keyboard.
- ✓ Typically, this number is between 4 and 50.
- ✓ A keyer differs from a keyboard, which has "no board", but the keys are arranged in a cluster.

**4. Explain the Output Devices.(any 5 )**

**Output Devices:**

**Monitor:**

- ✓ Monitor is the most commonly used output device to display the information.
- ✓ Pictures on a monitor are formed with picture elements called PIXELS.
- ✓ Monitors may either be Monochrome which display text or images in Black and White or can be color, which display results in multiple colors.
- ✓ There are many types of monitors available such as CRT (Cathode Ray Tube), LCD (Liquid Crystal Display) and LED (Light Emitting Diodes). The monitor works with the VGA (Video Graphics Array) card.
- ✓ The video graphics card helps the keyboard to communicate with the screen.
- ✓ It acts as an interface between the computer and display monitor.
- ✓ Usually the recent motherboards incorporate built-in video card.
- ✓ The first computer monitor was part of the Xerox Alto computer system, which was released on March 1, 1973.

**Printers:**

- ✓ Printers are used to print the information on papers. Printers are divided into two main
- ✓ categories:

1. Impact Printers –
   **Example:** Dot Matrix printers and Line matrix printers are impact printers.
2. Non Impact printers
   **Example:** Laser printers and Inkjet printers are non-impact printers.

**Plotter:**

Plotter is an output device that is used to produce graphical output on papers. It uses single color or multi color pens to draw pictures.

**5. Explain the Types of Printers.**

There are two types of printers. They are

1. Impact Printers
2. Non-impact Printers

**Impact Printers**

These printers print with striking of hammers or pins on ribbon. These printers
can print on multi-part (using carbon papers) by using mechanical pressure.
**Example:** Dot Matrix printers and Line matrix printers are impact printers.

**Dot Matrix printers:**

- ✓ A Dot matrix printer that prints using a fixed number of pins or wires.
- ✓ Each dot is produced by a tiny metal rod, also called a "wire" or "pin", which works by the power of a tiny electromagnet or solenoid, either directly or through a set of small levers.

- ✓ It generally prints one line of text at a time.
- ✓ The printing speed of these printers varies from 30 to 1550 CPS (Character Per Second).

**Line matrix printers:**

- ✓ Line matrix printers use a fixed print head for printing.
- ✓ It prints a page-wide line of dots. But it builds up a line of text by printing lines of dots.
- ✓ Line printers are capable of printing much more than 1000 Lines Per Minute, resulting in thousands of pages per hour.
- ✓ These printers also uses mechanical pressure to print on multi-part (using carbon papers).

**Non-Impact Printers**

These printers do not use striking mechanism for printing. They use electrostatic or laser technology. Quality and speed of these printers are better than Impact printers. For example, Laser printers and Inkjet printers are non-impact printers.

**Laser Printers**

Laser printers mostly work with similar technology used by photocopiers. It makes a laser beam scan back and forth across a drum inside the printer, building up a pattern. It can produce very good quality of graphic images. One of the chief characteristics of laser printer is their resolution – how many Dots per inch(DPI). The available resolution range around 1200 dpi. Approximately it can print 100 pages per minute(PPM).

**Inkjet Printers:**

- ✓ Inkjet Printers use colour cartridges which combined Magenta, Yellow and Cyan inks to create color tones.
- ✓ A black cartridge is also used for monochrome output. Inkjet printers work by spraying ionized ink at a sheet of paper.
- ✓ The speed of Inkjet printers generally range from 1-20 PPM (Page Per Minute).
- ✓ They use the technology of firing ink by heating it so that it explodes towards the paper in bubbles or by using piezoelectricity in which tiny electric currents controlled by electronic circuits are used inside the printer to spread ink in jet speed.
- ✓ An Inkjet printer can spread millions of dots of ink at the paper every single second.

**Speakers:**

Speakers produce voice output (audio) . Using speaker along with speech synthesize software, the computer can provide voice output. This has become very common in places like airlines, schools, banks, railway stations, etc..

**Multimedia Projectors:**

Multimedia projectors are used to produce computer output on a big screen. These are used to display presentations in meeting halls or in classrooms.

**2. Discuss the various generations of computers.**

| SN | Generation | Period | Main Component used | Merits/Demerits |
|---|---|---|---|---|
| 1 | First Generation | 1942-1955 |  Vacuum tubes | • Big in size<br>• Consumed more power<br>• Malfunction due to overheat<br>• Machine Language was used |
| First Generation Computers - ENIAC , EDVAC , UNIVAC 1<br>ENIAC weighed about 27 tons, size 8 feet × 100 feet × 3 feet and consumed around 150 watts of power | | | | |
| 2 | Second Generation | 1955-1964 |  Transistors | • Smaller compared to First Generation<br>• Generated Less Heat<br>• Consumed less power compared to first generation<br>• Punched cards were used<br>• First operating system was developed - Batch Processing and Multiprogramming Operating System<br>• Machine language as well as Assembly language was used. |
| Second Generation Computers IBM 1401, IBM 1620, UNIVAC 1108 | | | | |
| | Third | 1964 |  | • Computers were smaller, faster and more reliable |
| 5 | Fifth Generation | 1980 - till date |  Ultra Large Scale Integration (ULSI) | • Parallel Processing<br>• Super conductors<br>• Computers size was drastically reduced.<br>• Can recognize Images and Graphics<br>• Introduction of Artificial Intelligence and Expert Systems<br>• Able to solve high complex problems including decision making and logical reasoning |
| 6 | Sixth Generation | In future |  | • Parallel and Distributed computing<br>• Computers have become smarter, faster and smaller<br>• Development of robotics<br>• Natural Language Processing<br>• Development of Voice Recognition Software |

**M.GEETHA,**

**COMPUTER INSTRUCTOR,**

**V.M.G.RAJASEKARAN – RAMANI SRI SARADA SAKTHI MAT. HR. SEC. SCHOOL**

**VIRUDHUNAGAR.**

**626001**