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COMPUTER SCIENCE

11

This special guide is prepared
on the basis of New Syllabus
and Govt. Key

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Publications

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Less Strain Score More

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PREFACE

“Loyola Computer Science “ is in your hands.

Students with average IQ always struggle to cope up studies. They always seek for the best, sources to learn and score high marks.

The pattern of the question being asked in the exams has changed dramatically and the difficulty level has also increased considerably. To succeed in board exams and to actualize your dream, you are required to prepare strategically and study in a focused manner.

This book gives important tips which covers the entire chapter.

Loyola serves the above cited purpose in perfect manner.

- Specially designed for coaching students of different levels.
(Slow learners, average and Topper students)
- Lot of additional questions are given for toppers
- The “EC Computer Science” is prepared with due care on the lines of the Govt. Examination Valuation, the easy method of studying, the lesson and the perfect way of answering the questions.
- The answers are well prepared, briefly and easily for the students to study without any difficulty and stress.
- Simplified text matter
- Focused on coverage of textbook.
- MCQ’s are framed based on new pattern.
- Included Govt. question papers with their key.
- Comprehensive questions are designed for average and above average students based on key points.

Wish you All the Best

Loyola Publication



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**Introduction to Computers-An Overview****Computer:**

- It is an electronic device that processes the input according to the set of instructions provided to it and gives the desired output at a very fast rate.

Vacuum tube:

- Vacuum tubes contain electrodes for controlling electron flow and were used in early computers as a switch or an amplifier.

Transistors:

- The transistor (“transfer resistance”) is made up of semi-conductors.
- It is a component used to control the amount of current or voltage used for amplification/modulation of an electronic signal.

Punched cards:

- Punch cards also known as Hollerith cards are paper cards containing several punched or perforated holes that were punched by hand or machine to represent data.

Machine Language:

- Machine language is a collection of binary digits or bits that the computer reads and interprets.

Assembly language:

- An assembly language is a low-level programming language.

Integrated Circuits:

- The IC is a package containing many circuits, pathways, transistors, and other electronic components all working together to perform a particular function or a series of functions.

Microcomputer:

- Micro computer is used to describe a standard personal computer.

High-level languages:

- A high-level language is a computer programming language that isn't limited by the computer, designed for a specific job, and is easier to understand.

Natural Language Processing (NLP):

- Natural Language Processing is a method used in artificial intelligence to process and derive meaning from the human language.

Robotics:

- Robot is a term coined by Karel Capek in the 1921 to play RUR (Rossum's Universal Robots).
- It is used to describe a computerized machine designed to respond to input received manually or from its surroundings.

Nanotechnology:

- Nanotechnology is an engineering, science, and technology that develops machines or works with one atom or one molecule that is 100 nanometers or smaller.

Bioengineering:

- A discipline that applies engineering principles of design and analysis to biological systems and biomedical technologies.

PART I - TEXT BOOK EVALUATION

Section - A

Choose the Correct answer

1. First generation computers used

- (a) Vacuum tubes
- (b) Transistors
- (c) Integrated circuits
- (d) Microprocessors

Ans : (a) Vacuum tubes

2. Name the volatile memory **March-2023**

- (a) ROM
- (b) PROM
- (c) RAM
- (d) EPROM

Ans : (c) RAM

3. Identify the output device **March-2020**

- (a) Keyboard
- (b) Memory
- (c) Monitor
- (d) Mouse

Ans : (c) Monitor

4. Identify the input device

- (a) Printer
- (b) Mouse
- (c) Plotter
- (d) Projector

Ans : (b) Mouse

5. ____ Output device is used for printing building plan.

- (a) Thermal printer
- (b) Plotter
- (c) Dot matrix
- (d) Inkjet printer

Ans : (b) Plotter

6. Which one of the following is used to in ATM machines

- (a) Touch Screen
- (b) Speaker
- (c) Monitor
- (d) Printer

Ans : (a) Touch Screen

7. When a system restarts which type of booting is used.

- (a) Warm booting
- (b) Cold booting
- (c) Touch boot
- (d) Real boot

Ans : (a) Warm booting

8. Expand POST

- (a) Post on self Test
- (b) Power on Software Test
- (c) Power on Self Test
- (d) Power on Self Text

Ans : (c) Power on Self Test

9. Which one of the following is the main memory?

- (a) ROM
- (b) RAM
- (c) Flash drive
- (d) Hard disk

Ans : (b) RAM

10. Which generation of computer used IC's?

- (a) First
- (b) Second
- (c) Third
- (d) Fourth

Ans : (c) Third

Section - B

Very Short Answers

1. What is a computer?

Computer is an electronic device that processes the input according to the set of instructions provided to it and gives the desired output at a very fast rate.

2. Distinguish between data and information.

Data	Information
Data is defined as an unprocessed collection of raw facts, suitable for communication, interpretation or processing.	Information is a collection of facts from which conclusions may be drawn.
Example: 134, 17 'Helena', 'C'	Example: Helena is 17 years old

3. What are the components of a CPU?

The CPU has three components which are Control Unit, Arithmetic and logic unit (ALU) and Memory unit.

4. What is the function of an ALU?**March-2020**

- 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.

5. Write the functions of control unit.**March-2023**

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?

Memory unit is used to temporarily store the programs and data when the instructions are ready to execute.

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.	An output unit is any hardware component that conveys information to users in an understandable form.
Example: Keyboard, Mouse etc.,	Example: Printer, Monitor etc.,

8. Distinguish Primary and Secondary memory.

Primary Memory	Secondary memory
It is used to temporarily store the programs and data when the instructions are ready to execute.	It is used to store the data permanently.
It is volatile, the content is lost when the power supply is switched off.	It is non-volatile, the content is available even after the power supply is switched off.
Example: RAM.	Example: CD-ROM, DVD ROM, Hard Disk

Section - C Short Answers

1. What are the characteristics of a computer?**March-2023**

Important computer characteristics are Speed, Accuracy, Storage Capacity, Versatility and Diligence.

a) Speed :

Computer is very fast calculating device. It can execute basic operations like subtraction, addition, multiplication and division at a few microseconds. It can move and copy data at a speed in the order of billion instruction per second.

b) Accuracy :

Computer always gives accurate results. The accuracy of Computer does not go down when they are used continuously for hours together. It always gives accurate results.

c) **Storage capacity :**

Computer have a very large storage capacity. A large volume of information can be stored in the memory of computer and information can be retrieved correctly when desired.

d) **Versatility :**

- The working of computer with different types of data is known as versatility.
- That means computer can perform different types of job efficiently.
- Computer can works with different type of data and information such as visuals, text, graphics & video etc. So, versatility is a most important characteristic of computer.

e) **Diligence :**

A Computer can work for long hours with the same accuracy and speed because it is free from problems of boredom or lack of concentration

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

Computers play a vital role in our day to day life in the fields education, research, travel and tourism, weather forecasting, social networking, e-commerce, Banking, Insurance, Robotics etc.

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

- 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.

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

Printer, Plotter ,Speakers ,Multimedia Projector, Monitor

5. **Differentiate optical and Laser mouse.**

Optical Mouse	Laser Mouse
Optical Mouse uses light source instead of ball to judge the motion of the pointer.	Laser Mouse uses Laser Light.
Optical mouse is less sensitive	Laser Mouse is highly sensitive
Optical mouse can be used towards surface.	Laser Mouse is highly can be used on any hard surface.

6. **Write short note on impact printer.****Impact printers:**

- Impact printers print with striking of hammers or pins on ribbon.
- Impact printers can print on multipart (using carbon papers) by using mechanical pressure.
- Example:** Dot Matrix printers and Line matrix printers.
- **Dot matrix printer** that prints using a fixed number of pins or wires.
- **Line matrix printers** use a fixed print head for printing.

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

- Parallel and Distributed computing.
- Computers have become smarter, faster and smaller.
- Development of robotics.
- Natural Language Processing.
- Development of Voice Recognition Software.

8. Write the significant features of monitor.

- Monitor is the most commonly used output device to display the information. It looks like a TV.
- 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).

Section - D
Explain in details

1. Explain the basic components of a computer with a neat diagram.**March-2019****Basic components of a computer:**

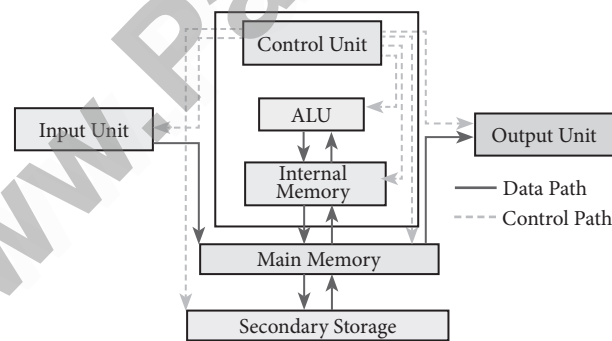
- Input unit
- Central Processing Unit(Arithmetic and Logic Unit, Control Unit)
- Output Unit
- Memory Unit

Function of a computer:

- Every task given to a computer follows an Input- Process- Output Cycle (IPO cycle).It needs certain input, processes that input and produces the desired output.
- The input unit takes the input, the central processing unit does the processing of data and the output unit produces the output.
- The memory unit holds the data and instructions during the processing.

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 etc.*components of a computer***Central Processing Unit:**

- CPU is the major component which interprets and executes software instructions.
- CPU 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 provide 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.
- Control Unit controls the entire operation of a computer.

Output Unit:

An Output Unit is any hardware component that conveys information to users in an understandable form.

Example: Monitor, Printer etc.

Memory Unit:

- The Memory Unit is of two types which are a 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.
- The Primary Memory is volatile, that is, the content is lost when the power supply is switched off.
- The Random Access Memory (RAM) is an example of the main memory.
- The Secondary memory is non-volatile, that is, the content is available even after the power supply is switched off.
- Hard disk, CD-ROM and DVD ROM are examples of secondary memory.

2. Discuss the various generations of computers. March-2023

First Generation Computer:

Year : 1940-1956

Main Component: Vacuum tubes

Merits/ Demerits :

- Big in size
- Consumed more power
- Malfunction due to overheat
- Machine Language was used
- **Example:** ENIAC, EDVAC, UNIVAC 1
- **Second Generation Computer:**
- **Year :** 1956-1964
- **Main Component:** Transistors
- **Merits/ Demerits :**
- Smaller compared to First Generation
- Generated Less Heat
- Consumed less power compared to first generation
- Punched cards were used
- First operating system was developed - Batch Processing and Multiprogramming Operating System
- Machine language as well as Assembly language was used.

Example: IBM 1401, IBM 1620, UNIVAC 1108

Third Generation Computer:

Year : 1964-1971

Main Component: Integrated Circuits (IC)

Merits/ Demerits :

- Computers were smaller, faster and more reliable
- Consumed less power.
- High-Level Languages were used

Example:

IBM 360 series, Honeywell 6000 series

Fourth Generation Computer:

Year: 1971-1980

Main Component:

Microprocessor - Very Large Scale

Integrated Circuits (VLSI)

Merits/ Demerits:

- Smaller and Faster
- Microcomputer series such as IBM and APPLE were developed
- Portable Computers were introduced

Fifth Generation Computer:

Year: 1980-till date

Main Component:

Ultra Large Scale Integration (ULSI)

Merits/ Demerits:

- Parallel, Processing
- Super conductors

- Computers size was drastically reduced.
- Can recognise Images and Graphics
- Introduction of Artificial Intelligence and Expert Systems
- Able to solve high complex problems including decision making and logical reasoning

Sixth Generation Computer:

Year: In future

Merits/ Demerits:

- Parallel and Distributed computing
- Computers have become smarter, faster and smaller
- Development of robotics
- Natural Language Processing
- Development of Voice Recognition Software

3. Explain the following:**a. Inkjet Printer****b. Multimedia projector****c. Bar code / QR code Reader****a. Inkjet Printers:**

- Inkjet Printers use colour cartridges which combined Magenta, Yellow and Cyan inks to create colour tones.
- A black cartridge is also used for monochrome output.

- Inkjet printers work by spraying ionised ink at a sheet of paper.

- The speed of Inkjet printers generally ranges 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.

b. 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.

c. Bar Code / QR Code Reader:

- A Bar code is a pattern printed in lines of different thickness.

- The 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 interpret the image.

PART II - ADDITIONAL QUESTIONS**I. Choose the best answer**

1. _____ is the first calculating device

- (a) ENIAC (b) Analytical Engine
(c) IBM 1401 (d) Abacus

Ans: (d) Abacus

2. Analytical engine was invented in _____

- (a) 1837 (b) 1911
(c) 1992 (d) 1839 Ans: (a) 1837

3. The period of first generation computer is _____.

- (a) 1956-1967 (b) 1940-1956
(c) 1964-1971 (d) 1980-1995

Ans: (b) 1940-1956

4. _____ is the component used in second generation computers.

- (a) Transistors (b) VLSI
(c) Vacuum tubes (d) ULSI

Ans: (a) Transistors

5. The period of Second generation computers is _____.

- (a) 1956-1964 (b) 1956-1969
(c) 1980-1997 (d) 1964-1974

Ans: (a) 1956-1964

6. The period of Third generation computers is _____.
 (a) 1942-1956 (b) 1956-1965
 (c) 1964-1971 (d) 1984-1990
Ans: (c) 1964-1971
-
7. _____ component was used in third generation computers.
 (a) VLSI (b) Transistors
 (c) IC (d) ULSI **Ans: (c) IC**
-
8. The period of fourth generation computer is _____.
 (a) 1942-1956 (b) 1971-1980
 (c) 1964-1974 (d) 1980-1998
Ans: (b) 1971-1980
-
9. _____ is the component used in fourth generation computers.
 (a) ICS (b) ULSI
 (c) VLSI (d) Transistor
Ans: (c) VLSI
-
10. The period of fifth generation computers is _____.
 (a) 1971-1983 (b) 1980-till date
 (c) 1964-1974 (d) 1940-1957
Ans: (b) 1980-till date
-
11. In _____ generation Robotics was developed.
 (a) Fourth (b) Third
 (c) Fifth (d) Sixth **Ans: (d) Sixth**
-
12. Expansion of NLP is _____.
 (a) Natural Language Problem
 (b) Natural Language Processing
 (c) Network Landing Program
 (d) Network Locality Program
Ans: (b) Natural Language Processing
-
13. Expansion of ANN is _____.
 (a) Automated Neural Network
 (b) Aligned Neurons Network
 (c) Artificial Neural Network
 (d) Artificial New Network
Ans: (c) Artificial Neural Network
-
14. Computer is the combination of _____.
 (a) Programs, Data
 (b) hardware , software
 (c) software, firmware
 (d) Data, Information
Ans: (b) hardware, software
-
15. _____ holds the data and instructions during the processing.
 (a) ROM (b) EEPROM
 (c) Memory unit (d) SDRAM
Ans: (c) Memory unit
-
16. _____ is the Expansion of CPU.
 (a) Control proceeding unit
 (b) Central processor unified
 (c) Central processing unit
 (d) Control processing unit
Ans: (c) Central processing unit
-
17. In _____ Optical Mouse was invented.
 (a) 1964 (b) 1976
 (c) 1988 (d) 1986
Ans: (c) 1988
-
18. CPS Expansion is _____.
 (a) Character per second
 (b) Copy per section
 (c) Code per Segment
 (d) Character per script
Ans: (a) Character per second
-
19. VLSI expansion is _____.
 (a) Vertical lexical stage integrated circuits
 (b) Verified logical small integer circuits
 (c) Very large scale integrated circuits
 (d) Voltage large scale integrated circuits
Ans: (c) Very large scale integrated circuits
-
20. _____ interprets and executes software instructions.
 (a) CPU (b) Keyboard
 (c) Program (d) Memory Unit
Ans: (a) CPU

21. _____ device used CCD chip.
 (a) Printer (b) Scanner
 (c) Plotter (d) Digital Camera
Ans: (d) Digital Camera

22. CRT expansion is _____
 (a) Cathode Ray Tube
 (b) Cathode Radio Tabular
 (c) Cathod Rays Technology
 (d) Cathode Radix Technology
Ans: (a) Cathode Ray Tube

23. LCD expansion is _____
 (a) Lifted Cathode Diodes
 (b) Lifted Cluster Display
 (c) Liquid Crystal Display
 (d) Laptop Cyber Display
Ans: (c) Liquid Crystal Display

24. VGA expansion is _____
 (a) Visualize Graphing Adapter
 (b) Video Graphing Adapting
 (c) Video Graphics Array
 (d) Voice Graphite Array
Ans: (c) Video Graphics Array

25. _____ is considered as the father of computers.
 (a) Charles Babbage (b) William
 (c) John Napier (d) Blaise Pascal
Ans: (a) Charles Babbage

26. ENIAC was invented by _____.
 (a) J. Presper Eckert & John Mauchly
 (b) J. Napier
 (c) J. Van Nueman & Herman Hollerith
 (d) J. Mauchaley
Ans: (a) J. Presper Eckert & John Mauchly

27. BIOS expansion is _____
 (a) Basic Input Output System
 (b) Bipolar Input Output System
 (c) Battery Input Output Systems
 (d) Booting Input Output Systems
Ans: (a) Basic Input Output System

28. CPS expansion is _____.
 (a) Character Per Seconds
 (b) Character Per Second
 (c) Calculations Per Second
 (d) Correction Per Second
Ans: (b) Character Per Second

29. LED expansion is _____.
 (a) Light Emitting Diode
 (b) Lifted Eluster Display
 (c) Liquid Erystal Display
 (d) Laptop Extract Display
Ans: (a) Light Emitting Diode

30. USB - expansion is _____.
 (a) Uniform Serious Bus
 (b) Uniform Serial Bus
 (c) Universal Serial Bus
 (d) Universal Serial BAS
Ans: (c) Universal Serial Bus

31. ALU - expansion is _____.
 (a) Accumulator Logical Unit
 (b) Arithmetic Logical Unit
 (c) Arithmetic Language Unit
 (d) Arithmatic Logic Unit
Ans: (b) Arithmetic Logical Unit

32. CCD - expansion is _____.
 (a) Camera Charged Device
 (b) Charged Coupled Device
 (c) Changed Couple Device
 (d) Couple Changed Device
Ans: (b) Charged Coupled Device

33. GUI - expansion is _____.
 (a) Geographical User Interfade
 (b) Graphical User Informative
 (c) Geographical User Information
 (d) Graphical User Interface
Ans: (d) Graphical User Interface

II. Answer the following questions (2 & 3 Marks)

- | | |
|--|--|
| <p>1. Write short notes on First Generation Computer.
 First Generation Computer:
 Year: 1940-1956
 Main Component: Vacuum tubes
 Merits/ Demerits:</p> <ul style="list-style-type: none"> ➤ Big in size ➤ Consumed more power ➤ Malfunction due to overheat ➤ Machine Language was used <p>Example: ENIAC, EDVAC, UNIVAC 1</p> <hr/> <p>2. Write short notes on Second Generation Computer.
 Second Generation Computer:
 Year: 1956-1964
 Main Component: Transistors
 Merits/ Demerits:</p> <ul style="list-style-type: none"> ➤ Smaller compared to First Generation ➤ Generated Less Heat ➤ Consumed less power compared to first generation ➤ Punched cards were used ➤ First operating system was developed - Batch Processing and Multiprogramming Operating System ➤ Machine language as well as Assembly language was used. <p>Example: IBM 1401, IBM 1620, UNIVAC 1108</p> <hr/> <p>3. Write short notes on Third Generation Computer.
 Third Generation Computer:
 Year: 1964-1971
 Main Component: Integrated Circuits (IC)
 Merits/ Demerits:</p> <ul style="list-style-type: none"> ➤ Computers were smaller, faster and more reliable ➤ Consumed less power. ➤ High-Level Languages were used <p>Example: IBM 360 series, Honeywell 6000 series</p> | <p>4. Write short notes on Fourth Generation Computer
 Fourth Generation Computer:
 Year: 1971-1980
 Main Component: Microprocessor Very Large Scale Integrated Circuits (VLSI)
 Merits/ Demerits:</p> <ul style="list-style-type: none"> ➤ Smaller and Faster ➤ Microcomputer series such as IBM and APPLE were developed ➤ Portable Computers were introduced <hr/> <p>5. Write short notes on Fifth Generation Computer.
 Fifth Generation Computer:
 Year: 1980-till date
 Main Component: Ultra Large Scale Integration (ULSI)
 Merits/ Demerits:</p> <ul style="list-style-type: none"> ➤ Parallel, Processing ➤ Super conductors ➤ Computers size was drastically reduced. ➤ Can recognize Images and Graphics ➤ Introduction of Artificial Intelligence and Expert Systems ➤ Able to solve high complex problems including decision making and logical reasoning <hr/> <p>6. Write short notes on Sixth Generation Computer
 Sixth Generation Computer:
 Year: In future
 Merits/ Demerits:</p> <ul style="list-style-type: none"> ➤ Parallel and Distributed computing ➤ Computers have become smarter faster and smaller ➤ Development of robotics ➤ Natural Language Processing ➤ Development of Voice Recognition Software |
|--|--|

7. Give notes on Keyboard.**Keyboard:**

- The data and instructions are given as input to the computer by typing on the keyboard
- Keyboard (wired 1 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.

8. Expand VLSI,ULSI

- VLSI - Very Large Scale Integrated Circuits.
- ULSI - Ultra Large Scale Integration.

9. Write notes on NLP.

- Natural Language Processing is the ability of a computer program to understand human language.
- Natural Language Processing is a component of artificial intelligence.

10. Write notes on CPU.

- CPU is the major component which interprets and executes software instructions.
- CPU controls the operation of all other components such as memory unit, input and output units.

11. Write a note on Digital Camera.

- Digital Camera 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.

12. Name the types of Monitors.

- CRT- Cathode Ray Tube
- LCD - Liquid Crystal Display
- LED - Light Emitting Diodes

13. Write notes on VGA.

- The screen monitor works with the VGA (Video Graphics Array).
- 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 motherboard incorporates built-in video card.

14. Write the two main categories of Printer. Printers are divided into two main categories:

- Impact Printers
- Non Impact printers

15. Write notes on Non-Impact printers.

- Non-Impact printers do not use striking mechanism for printing.
 - Non-Impact use electrostatic and laser technology.
 - Quality and speed of these printers is better than Impact printers.
- Example :** Laser printers and Inkjet printers.

16. Differentiate keyer and keyboard.

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

17. Write any two pointing device.

- Mouse
- Light pen

18. Define Pixels.

Pictures on a monitor are formed with picture elements called PIXELS.

19. Expand BIOS ,POST

- BIOS -Basic Input / Output System
- POST-Power on Self Test.

20. Expand ANN, OCR

- ANN- Artificial Neural networks
- OCR -Optical Character Recognition

**21. Give notes on Voice Input Systems:
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.

22. Write notes on light pen.

- light pen is used to draw directly on to the screen.
- light pen is hard to use and not accurate.

23. Write notes on Vacuum tubes .

- Vacuum tubes contain electrodes for controlling electron flow and were used in early computers as a switch or an amplifier.
- Vacuum tubes are big in size and consumed more power.

24. Write notes on Transistor.

- The transistor ("transfer resistance") is made up of semiconductors.
- It is a component used to control the amount of current or voltage or used for amplification! modulation or switching of an electronic signal.

25. Write notes on Punched cards.

Punch cards also known as Hollerith cards are paper cards containing several punched or perforated holes that were punched by hand or machine to represent data.

26. Write notes on Machine language.

- Machine language is a collection of binary digits or bits that the computer reads and interprets.
- In first generation, machined language was used.

27. Write notes on Assembly language.

An assembly language is a low-level programming language.

28. Write notes on Integrated circuits.

- IC is short for Integrated Circuit or Integrated Chip.
- The IC is a package containing many circuits, pathways, transistors, and other electronic components all working together to perform a particular function or a series of functions.

29. Write notes on Nano-technology.

Nano-technology is an engineering, science, and technology that develops machines or works with one atom or one molecule that is 100 nanometers or smaller.

30. Write notes on 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 computer and laptop, monitors, smart phones, tablets, cash registers, and information kiosks.
- Some touch screens uses a grid of infrared beams to sense the presence of a finger instead of utilizing touch-sensitive input.

31. Write notes on High-level language.

A high-level language is a computer programming language that isn't limited by the computer, designed for a specific job and is easier to understand.

32. Write notes on fifth generation computers.

- Super Large Scale Integrated chips
- Parallel Processing
- Superconductors
- Computers very small in size
- Acts more faster
- Usage of High-level languages
- Can recognize Images and Graphs

- Introduction of Artificial Intelligence Software
- Able to solve high complex problems including decision making and logical reasoning.

33. Write notes on Hardware and software.

- Hardware are the physical components of a computer like motherboard, memory devices, monitor, keyboard etc.
- Software is the set of programs or instructions.
- Both hardware and software together make the computer system function.

34. Differentiate Impact Printers and Non-Impact Printers.

Impact Printers	Non-Impact Printers
Impact Printers print with striking of hammers or pins on ribbon.	Non-Impact Printers do not use striking mechanism for printing.
Impact Printers can print on multi-part (using carbon papers)	Non-Impact Printers cannot print on multipart
Impact Printers using mechanical pressure	Non-Impact Printers use electrostatic or laser technology.
Low Quality and less speed	Quality and speed of these printers are better than Impact printers.
Example : Dot Matrix printers , Line matrix printers	Example : Laser printers, Inkjet printers

35. Differentiate Dot Matrix Printer and Laser Printer.

Dot Matrix Printer	Laser Printer
Dot Matrix Printers print with striking of hammers or pins on ribbon.	Laser Printers do not use striking mechanism for printing.
Dot Matrix Printers can print on multi-part (using carbon papers)	Laser Printers cannot print on multi-part .
Dot Matrix Printers use mechanical pressure	Laser Printers use electrostatic or laser technology.
Low Quality and less speed	Quality and speed of Laser Printer is better than Dot Matrix Printer

36. Differentiate warm booting and cold booting?

Cold Booting:

- When the system starts from initial state i.e. it is switched on, we call it cold booting or Hard Booting.
- When the user presses the Power button, the instructions are read from the ROM to initiate the booting process.

Warm Booting:

- When the system restarts or when Reset button is pressed, we call it Warm Booting or Soft Booting.
- The system does not start from initial state and so all diagnostic tests need not be carried out in this case.

- There are chances of data loss and system damage as the data might not have been stored properly.

37. Write notes on fingerprint scanner and retinal scanner.

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.

38. Write notes on Retinal Scanner.

Retinal Scanner:

Retinal Scanner performs a retinal scan which is a biometric technique that uses unique patterns on a person's retinal blood vessels.

39. Write notes on Scanner.

- Scanners are used to enter the information directly into the computer's memory.
- Scanners work like a Xerox machine.
- Scanners convert any type of printed or written information including photographs into a digital format, which can be manipulated by the computer.

40. Write notes on Analytical Engine. Why Charles Babbage is called as "Father of Computer"?

- Analytical engine was developed by Charles Babbage in 1837.

- It has (a) Arithmetic Logic Unit (b) Basic Flow Control (c) Integrated memory.
- The concept of Analytical engine led to the development of modern computers.
- So Charles Babbage is called as "Father of Computer".

41. What are the types of Booting?

- Cold Booting
- Warm Booting

42. Write notes on BIOS.

- An Operating system (OS) is a basic software that makes the computer to work.
- When a computer is switched on, there is no information in its RAM.
- At the same time, in ROM, the pre-written program called POST (Power on Self Test) will be executed first.
- This program checks if the devices like RAM, keyboard, etc., are connected properly and ready to operate.
- If these devices are ready, then the BIOS (Basic Input Output System) gets executed.
- This process is called Booting.
- Thereafter, a program called "Bootstrap Loader" transfers OS from hard disk into main memory.
- Now the OS gets loaded (Windows/ Linux, etc.,) and will get executed.

III. Answer the following questions (5 Marks)

1. Explain Impact Printers, Non-Impact printers with an Example.

Impact Printers:

- Impact 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 .

Dot matrix printer:

- 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).
 - 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.
 - Basically, 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 use mechanical pressure to print on multi-part (using carbon papers).
- Non-Impact Printers:**
- Non-Impact 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 ionised ink at a sheet of paper.
 - The speed of Inkjet printers generally ranges from 1-20 PPM (Page Per Minute).
 - They use the technology offering 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.
- 2. Explain input and output devices.**
- 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 Scanners:**
- Fingerprint 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.

Retinal Scanner:

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

Monitor:

- Monitor is the most commonly used output device to display the information.
- It looks like a TV. 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.

Plotter:

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