Chapter- 1

EVALUATION OF COMPUTER

STUDY NOTES

VARIOUS CALCULATING DEVICES

300-BC ABACUS

- Abacus was the first mechanical device used for calculations. It was developed in China.
- It was made up of a wooden frame with rods, each having beads.
- The frame was divided into two parts – Heaven and Earth.
- Each rod in Heaven has 2 beds and each rod in Earth had 5 beds.
- Abacus was used for addition, subtraction, multiplication, and division.

PASCAL'S ADDING MACHINE

- Blaise Pascal, a French mathematician, invented an adding machine called Pascal's Calculator, at the age of 19, in the year 1642.
- It is used gears, wheels, and dials.
- On this machine, numbers were displayed by rotating the wheels, it was capable of performing addition and subtraction.
- The gear principle was further employed in many mechanical calculators, Taxi metre is a perfect example of a mechanical calculator.

LEIBNIZ CALCULATOR

- Leibniz, the famous German mathematician improved on the Pascal's machine in 1671 to make the Leibniz calculator. It was a mechanical device.
- Apart from performing addition and substraction, the Leibniz calculator could even do multiplication, division, and find square roots.

EARLY IT INVENTORS

CHARLES BABBAGE

- Charles Babbage, a British mathematician, is considered as the Father of Computers.
- He invented a working model of the mechanical computer called the Difference engine in 1822 and the Analytical engine in 1833.
- The Analytical Engine had five units – Input, Output, Store, Mill, and Control.
- These units worked like the modern computer. All the computers that are used now a days, are based on it.

- Store was used for storing the data and Mill was used as a Calculating Unit.
- The Control unit was used for supervising all the units.

AUGUSTA ADA LOVELACE

- Lady Augusta Ada Lovelace, was an English mathematician and writer. She is chiefly known for her work on Charles Babbage's Analytical engine.
- She is considered as the First Programmer who suggested Binary Data storage (0 and 1) instead of decimal number system.

GEORGE BOOLE

- George Boole was an English mathematician.
- He linked them with the binary number system and represented positive results by 1 and the negative ones by 0.
- This theory of Boolean Logic became the fundamental principle for the design of computer circuitry.

DR HERMAN HOLLERITH

- Herman Hollerith, an American statistician, invented the Tabulating machine.
- This machine was capable of reading data, processing it, and giving the desired output.
- The input in this machine was given through punched cards.
- These punched cards were used to record and store data or information.

JOHN VON NEUMANN

- A modern type of computer came into existence with john von Neumann's development of software, writing in binary code.
- It was John von Neumann who started the practice of storing data and instructions in binary code, in the memory. Neumann joined hands with Presper Eckert (American electrical engineer) andJohn Mauchly (American physicist) in a consulting role and built EDVAC using binary code in 1950.
- EDVAC's concept of storing different programs on punched cards led to the advancement of computers that we know today.

HOWARD AIKEN

- Howard Aiken was a primary engineer in IBM.
- He developed the first automatic sequence-controlled calculator, Mark I in 1944.
- This machine was capable executing long computations automatically.

ENIAC

- Electronic Numerical Integrator and Computer (ENIAC), the first general purpose electronic digital computer was invented by John Mauchly and J. Presper Eckert in 1946.
- It consisted of 18,000 vacuum tubes and was 1000 times faster than Mark I.
- It could add two large numbers in 200 microseconds.

UNIVAC I

- Universal Automatic Computer I (UNIVAC I) was the world's first commercially available computer, designed by J. Presper Eckert and John Mauchly in 1951.
- It was the first computer to handle both numeric and text data. It was also the first computer that was equipped with magnetic tape unit. It used buffer memory.

GENERATIONS OF COMPUTERS

The evolution of the present day computer can be classified into generations of computers.

Generation/ Period	Data Input	Data Output	External Storage	Language	Examples
1st 1940 – 1956	Punched Cards and Paper Tapes	Printouts	Magnetic Tapes	Machine, Assembly	UNIVAC, ENIAC, EDVAC
2nd 1956-1963	Punched Cards and Paper tapes	Printouts	Magnetic Tapes	Fortran, Cobol, Basic, PL/1	IBM1400 and 700 series IBM 350
3rd 1964-1971	Keyboard	Monitor	Magnetic Disks	Sophisticated OS were used, Pascal, Fortran, Cobol, RPG	IBM System-360 Apple 1, Altair
4th 1972-Present	Keyboard, Mouse, Scanner etc.	Monitor, Printers, Speakers	Magnetic disks with higher capacity	Use of special software for maintaining large database RDBMS, C++ in 1985	CRAY ½ Apple II VAX 9000

TYPES OF COMPUTERS

Computers can be classified into the following types.

MICRO COMPUTERS

- These computers are small in size and cheap.
- They are usually designed for personal use, therefore, are also called Personal Computers.
- They are mainly used in homes, schools, offices, shops, banks, etc. these computers are given different names according to their usage.

Example : Commodore 64, IBM PC.

Desktop Computers:

- These computers are designed to fit comfortably on top of desks.
- They typically come with several units, such as monitor, CPU, keyboard, and mouse, which are connected to each other and work like a single unit.

Laptop :

- These computers are small and can be placed on the lap.
- These are battery operated and portable.
- Laptops are more expensive than desktop computers.
- These computers are mainly used by business travelers.
- Laptops usually come with 13-15 inches screen.

Tablets :

- These computers are smaller and lighter than laptop computers but bigger than smart phones.
- Instead of a keyboard and mouse, tablets use touch sensitive screen for typing and navigation.
- Tablets generally have a screen size between 7-10 inches.

MINI COMPUTERS

- These computers are bigger in size than the micro computers.
- They have higher processing speed and are costlier than micro computers.
- These computers can support 4 to about 200 users simultaneously.
- They are used in blanks, universities, and in any other big organizations.

Example : PDP-8.

MAINFRAME COMPUTERS

- These computers are very powerful.
- They are big in size and have a large memory and high speed.
- They are designed to tackle huge amount of data.
- More than hundred users can use a mainframe computer simultaneously. These computers are used in networked environment.
- Mainframe computers are very expensive and used in large business organizations, universities, banks, scientific laboratories, airline and railway ticket reservation, stock exchange market etc.

Examples : IBM Z series, PDP-10, and System Z10.

SUPER COMPUTERS

- They are the most powerful computers with a huge processing speed.
- These computers are used for weather forecasting, space research, satellite control etc.

Example : CRAY-I, CRAY-2, PARAM, Tianhe-2, Sunway TaihuLight etc.

BRAIN DEVELOPER

SECTION –A

A. Fill in the blanks

1. The first mechanical calculating device was **Abacus**
2. **Howard Aiken** invented the first automatic sequence-controlled calculator-Mark I.
3. **Summit** is the world's fastest Supercomputer.
4. The first general purpose electronic computer was **ENIAC**
5. The Analytical engine was invented by **Charles Babbage.**

B. State True or False

1. UNIVAC-I was the first computer to handle both numeric and text data. **True**
2. Charles Babbage invented the Difference engine in 1822. **True**
3. The first generation computer used transistors. **False**
4. The Tabulating machine was invented by J. Presper Eckert. **False**
5. George Boole developed the Boolean logic. **True**

C. Match the following

A	B
Lady Augusta Lovelace	The first programmer
Second generation computers	Transistors
Blaise Pascal	Pascaline
Third generation computers	Integrated circuit
MICRAL	1973

D. Application-based questions.

1. Raman works in the National Weather forecasting agency. Which type of a computer does he use to forecast the weather conditions ?

Ans:Super computer

2. Which type of computers do Indian Railways use to interact with the customers for the booking and cancellation of tickets ?

Ans:Mainframe computer

SECTION –B

A. Multiple-choice questions.

1. The era of first generation computers was ……

   (a) 1920 – 1936 (b) 1940-1956 (c) 1950-1958

2. …….. is an example of Super Computer.

   (a) Tianhe-2 (b) IBM PC (c) ENIAC

3. …… are used in homes, schools, shops, offices, banks, etc.

   (a) Micro computers (b) Mini computers (c) Super computers

4. Punched cards were designed by ……..

   (a) John Mauchly (b) Herman Hollerith (c) John von Neumann

5. The …… language was used in first generation of computers.

   (a) Cobol (b) Machine (c) RDBMS

B. Answer the following questions.

1. **Name the first mechanical calculator, produced commercially.**

Ans:"ThomasArithmometer" was the first mechanical calculator produced commercially.

2. **Who is considered as the Father of Computers?**

Ans: Charles Babbage is considered as the father of computer.

3. **Which was the first general purpose electronic digital computer and who invented it ?**

Ans: ENIACwas the first general purpose electronic digital computer. It was invented by John Mauchly and J Presper Eckert.

4. **Write any three features of fourth generation computers.**

Ans:i)Fourth generation computers are small in size.

ii) Very cheap

iii)Special software is used to maintain large database.

5. **Name the various types of Microcomputers. Explain any two.**

Ans: Various types of microcomputers are Desktop, laptop, tablet.

Desktop Computers:

- These computers are designed to fit comfortably on top of desks.
- They typically come with several units, such as monitor, CPU, keyboard, and mouse, which are connected to each other and work like a single unit.

Tablets :

- These computers are smaller and lighter than laptop computers but bigger than smart phones.
- Instead of a keyboard and mouse, tablets use touch sensitive screen for typing and navigation.
- Tablets generally have a screen size between 7-10 inches.

6. **Write a short note on the Abacus.**

- **Ans:**Abacus was the first mechanical device used for calculations. It was developed in China.
- It was made up of a wooden frame with rods, each having beads.
- The frame was divided into two parts – Heaven and Earth.
- Each rod in Heaven has 2 beds and each rod in Earth had 5 beds.
- Abacus was used for addition, subtraction, multiplication, and division.

7. What is the difference between a Laptop and Tablet

Ans:

Tablets :	**Laptop :**
❖ These computers are smaller and lighter than laptop computers. ❖ Instead of a keyboard and mouse, tablets use touch sensitive screen for typing and navigation. ❖ Tablets generally have a screen size between 7-10 inches.	❖ These computers are small and can be placed on the lap. ❖ These are battery operated and portable. . ❖ Laptops usually come with 13-15 inches screen.