Overview of a computer

One marks

1. What is von Neumann concept also called as?
   Stored memory or stored program concept.
2. Who is the father of computer
   Charles Babbage
3. What is a computer?
   It is an electronic machine accept the data, process it, stores the result and gives the desired result.
4. Which is the earliest computing machine
   Abacus
5. Who invented Pascaline?
   Blaise Pascal
6. Expand ENIAC
   Electrical Numerical integrator and computer
7. Expand EDVAC
   Electronic Discrete Variable Automatic Computer
8. Which is the basic electronic component of first generation system?
   Vacuum tube
9. Expand UNIVAC
   Universal Automatic Computer
10. Which is the basic electronic component of second generation system?
    Transistor
11. Which is the basic electronic component of third generation system?
    Integrated circuit (IC)
12. Who developed the first all-electronic computer
    J Presper Eckert and John W Mauchly
13. **What is the function of ALU?**
    It is used to perform arithmetic and logical calculation

Two marks

1. **Explain the role of computer in industry**
   1) Computers are used in all industries where products are designed and manufactured.
   2) Computer Aided Design (CAD) is used to develop products, computer aided manufacturing is used to produce them (CAM).
   3) Almost all companies and factories are populated by computers used for many applications including inventory control, planning and process control etc.
   4) Computers are also used to run robots that create, finish, assemble and test products their components.
2. **Explain the role of computer in education(or school and college)**
   1) Computers are used as teaching tool for the students.
   2) Computer is treated as a subject for the learners.
   3) Internet helped the students as information bank to understand the concept or research their assignment.
   4) Using internet and telecommunication, students can avail the facility of distance education and complete their degrees or courses of far universities sitting at home.

3. **Mention the features of ENIAC**
   It use more than 2000 vacuum tubes , using nearly 18000KM of wires and it occupies more than 167 Sq. meter area
4. **What are the important feature of fifth generation computer**
   Development of storage technology
   Advancement in network technology
   Computers are more intelligent
   Concept of parallel computation
   Concept of VVLSI is developed
5. **Write 2 features of third generation computer**
   1) **Integrated circuits** were used for internal operations.
   2) Minicomputers were introduced.
   3) Development was seen in software.
6. **Mention the different features of first generation computer**
   1) **Vacuum tubes** were used for internal operations.
   2) Magnetic drums were used for memory.
   3) Punched cards were used for input and output.
   4) Low level languages were used for programming.
7. **Explain the role of computer in science and technology**
   1) Powerful computers are used to simulate dynamic processes in the practice of science and engineering.
   2) Super computers have numerous applications in Chemistry, Physics and structured programming and weather forecasting.
   3) Physician use computers to understand the human body and to diagnose disorders.
   4) Used in satellite launching and adjust the relay signals from one point to another.
8. **Write a note on Pascaline.**
   Pascaline is the first mechanical adding machine invented by Blaise Pascal in 1642. This device had eight moveable dials to enter the number of calculation. Using his device we can perform all basic mathematical calculations.
9. **Define the words hardware and software**
   Hardware: The physical parts of a computer that can see and touch
   Software: is simply are the computer programs or the instructions given to the computer in the form of a program is called Software.
10. **Write a note on Hybrid computer**
    A combination of computers those are capable of inputting and outputting in both digital and analog signals. A hybrid computer system setup offers a cost effective method of performing complex simulations. The instruments used in medical science lies in this category. Ex. BP monitoring unit , ECG.
11. **Write 2 features of Second generation computer**
    1) **Transistors** were used for internal operations.
    2) Magnetic core was used as main memory.
    3) Magnetic tapes and disks were used for secondary memory.
    4) High level languages were used for developing programs
12. **Compare the feature of micro and Mini computers**
    Mini Computer
    A mid-sized computer introduced in 1960. In size and power, minicomputers lie between *workstations* and *mainframes*. In general, a minicomputer is a multiprocessing system capable of supporting from 4 to about 200users simultaneously. Generally, servers are

comes in this category.

Micro Computer

This is also called as personnel computer, is introduced in 1970. It contain one or two processor. It can be categorized as

i. **Desktop Computer:** a personal or microcomputer sufficient to fit on a desk, or table.

ii. **Laptop Computer:** a portable computer complete with an integrated screen and keyboard. It

is generally smaller in size than a desktop computer and larger than a notebook computer.

iii. **Palmtop Computer/Digital Diary /Notebook /PDAs:** a hand-sized computer. Palmtops have no keyboard but the screen serves both as an input and output device

13. **Classify the computers based on principles on operations**

a) Analog Computer: An analog computer is a form of computer that uses *continuous* physical phenomena such as electrical, mechanical, or hydraulic quantities to model the problem being solved. Eg: Thermometer, Speedometer, Petrol pump indicator, Multimeter.

b) Digital Computer: A computer that performs calculations and logical operations with quantities represented as digits, usually in the binary number system (0 and 1).They gives the result accurate and faster.

c) Hybrid Computer (Analog + Digital): A combination of computers those are capable of inputting and outputting in both digital and analog signals. A hybrid computer system setup offers a cost effective method of performing complex simulations. The instruments used in medical science lies in this category. Ex. BP monitoring unit , ECG

Five marks

1. **Explain the characteristics of computers**

Speed: Computer can manipulate a large amount of data in fractions of a second. The speed of a computer is much faster than a person handling that operation. The speed of a computer is closely related to the amount of data it must process.

Storage capacity: Computer systems can have unlimited capacity to store the data and also instant recall of stored data.

Accuracy: The computer processes the data accurately as well as quickly. Computers rarely make mistakes and can perform all kinds of complex computation accurately.

Reliability: Computer systems are particularly adept at repetitive tasks as they do not take break or any complaints. They are capable of operating under the worst conditions for extended period of time.

Intangible benefits: There are many companies that utilize the systems for flexibility, ability to growth and give the competitive edge for attracting customers.

Reduced cost: Compared to olden days the cost of computer system reduced a lot.

2. **Explain the functional units of a computer with a neat block diagram**

Computer is designed using 4 basic units. They are

1) Input unit
2) Central processing Unit (CPU)
   a) Control Unit b) Arithmetic Unit c) Registers
3) Memory Unit
4) Output Unit

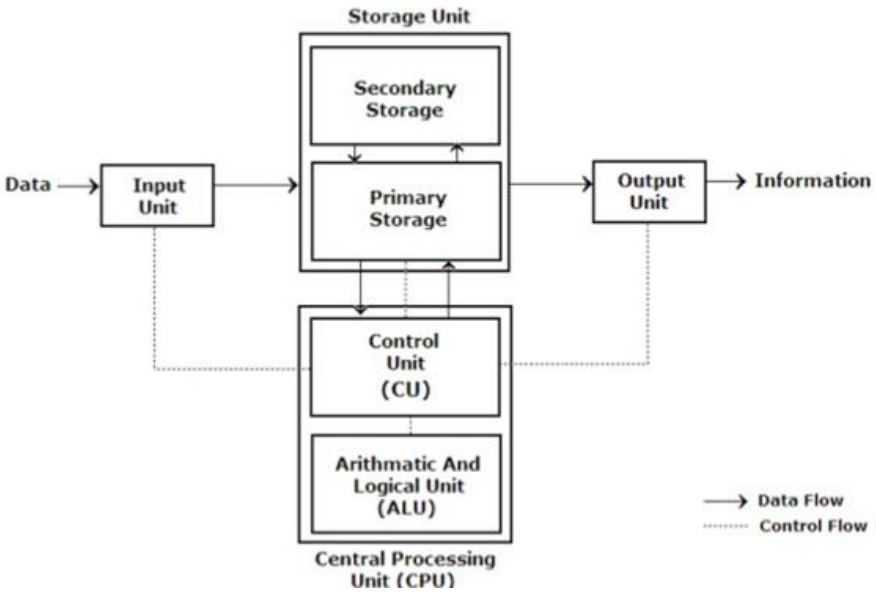
1) Input unit: This is used to feed data & information into the computer. The keyboard and mouse of a computer is the commonly used input device

2) CPU: The CPU stands for central processing unit.. The data and instructions feed by the user are

processed in this unit. The CPU consists three major units i.e., control unit, arithmetic logic unit and registers.

3) Memory Unit: It is used to store the data & instructions fed by the user. The computer memory is measured in terms of bytes & words

4) Output Unit: It is used to print & display the results which are stored in the main memory unit. Monitor is the commonly used output device



3. **Briefly explain the history of the computer**

Abacus is a first tool used for calculation which gave the motivation to develop a machine to perform calculations. This device allows the users to make computations using a system of sliding beads arranged on a rack.

Napier's bones: It was invented by John Napier as a aid to do multiplication. A set of bones consisted of nine rods one for each digit 1 through 9 and constant rod for digit 0

William Oughtred in 1625invented a slide rule based on Napier's ideas about logarithms to do multiplication quickly and easily.

Pascaline is the first mechanical adding machine invented by Blaise Pascal in 1642. This device used to perform arithmetic calculations.

In 1694, a German mathematician and philosopher, Gottfried Wilhem Von Leibniz, improved the Pascaline by creating a machine that could also multiply. It is worked by a system of gears and dials.

An English Mathematician professor, Charles Babbage designed a machine to perform differential equations which is called Difference Engine. It is very large in size and powered by steam. It could perform calculations and print the results automatically.

He worked on difference engine for 10 years and developed the first general purpose computer which he called the Analytical Engine. Babbage's analytical engine has a great significance in the history of computers because it had in its design all the fundamental concepts of the model digital computers.

In early 19^{th} century a French man Joseph Marie Jacquard invented a loom that used punched cards. These cards are used to transmit information to and from computers. The **punched card** considered as **first read only memory.**

Herman Hollerith, an American inventor also applied the Jacquard loom concept to computing. Hollerith's method used cards to store data and information, which he fed into a machine that compiled the results automatically. He started a company called Tabulating Machine Company in 1896 and later in 1924 it become IBM

4. **Explain the classification of the computer based on configuration**

We classify the computers in to different type based on

1) Size & capabilities :- Micro , Mini , Mainframe , Super
2) Construction and working principle :- Analog , Digital , Hybrid
3) Usage : special Purpose , general Purpose
4) Number of microprocessors :- Sequential , Parallel

A. On the basis of working principle

a) Analog Computer

An analog computer is a form of computer that uses *continuous* physical phenomena such as electrical, mechanical, or hydraulic quantities to model the problem being solved.

b) Digital Computer

A computer that performs calculations and logical operations with quantities represented as digits, usually in the binary number system (0 and 1).They gives the result accurate and faster

c) Hybrid Computer (Analog + Digital)

A combination of computers those are capable of inputting and outputting in both digital and analog

B. On the basis of Size

a) Super Computer

The fastest type of computer, introduced in 1980. Supercomputers are very expensive and are employed for specialized applications that require immense amounts of mathematical calculations. These computers are large in size

b) Mainframe Computer

A very large and expensive computer capable of supporting hundreds, or even thousands, of Users simultaneously. This computer is introduced in 1975, mainframes are more powerful than supercomputers because they support more simultaneous programs. But supercomputers can execute a single program faster than a mainframe.

c) Mini Computer

A midsized computer introduced in 1960. In size and power, minicomputers lie between *workstations* and *mainframes*.

d) Micro Computer

This is also called as personnel computer, is introduced in 1970. It contain one processor. It can be categorized as

i. **Desktop Computer:** a personal or microcomputer sufficient to fit on a desk, or table

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iii. **Palmtop Computer/Digital Diary /Notebook /PDAs:** a hand-sized computer. Palmtops have no keyboard but the screen serves both as an input and output device.

5. **Explain the generation of computer in detail**

Generation means step in advancement. We have total five generation

First generation of computer : The important features are,

1) **Vacuum tubes** were used for internal operations.

2) Magnetic drums were used for memory.

3) Punched cards were used for input and output.

The Characteristic features of second generation computers are,

1) **Transistors** were used for internal operations.

2) Magnetic core was used as main memory.

3) Magnetic tapes and disks were used for secondary memory.

The important features of third generation computers are,

1) **Integrated circuits** were used for internal operations.

2) Minicomputers were introduced.

3) Development was seen in software.

The important characteristic features of fourth generation computers are,

1) More circuits on chips LSI, VLSI.

2) **Introduction of microprocessors**.

3) Personal computers and microcomputers which were affordable was available to the common man

Fifth Generation (present and beyond)
These computers works based on artificial intelligence. This generation still in development stage
Characteristics
1. Development of storage technology
2. Advancement in network technology
3.Computers are more intelligent