

CHAPTER - 1

FUNDAMENTALS OF COMPUTER

1. Define computer

A computer is an electronic device that accepts raw data as input, processes it according to instructions, and produces a result as output.

1.1. Data : Raw facts and figures.

1.2. Information: The processed data is known as information.

***1.3. Distinguish between data & information

Data	Information
Raw facts and figures	Processed data
Cannot be directly used	helps in taking decisions
Does not give precise and clear sense	Clear and meaningful

2. Data processing: The process of converting data into information

***2.1. Data Processing Steps

- Step 1: Capturing data (Collection of data)
- Step 2: Input Data
- Step 3: Storage of Data
- Step 4: Processing Data
- Step 5: Output of Information
- Step 6: Distribution of information

***3. Functional units of a computer

3.1 Input Unit :

- ❖ Receives data and instructions to the computer.
- ❖ Then it is converted into a language that the computer can understand.
- ❖ The converted data and instructions are fed to the computer for processing.

3.2 Central Processing Unit (CPU) :

All the important functions take place in the CPU, which is the brain of the computer. There are 3 parts: Arithmetic Logic Unit(ALU), Control Unit(CU) and Registers.

ALU : Performs mathematical operations, logical operations, and decision making.

CU : Coordinates and controls various units of the computer.

Registers : It is the temporary memory inside the CPU.

3.3 Storage unit :

Stores all data, instructions and results required for processing.

There are 2 types : primary memory & secondary memory.

3.4 Output unit :

The processed result is received in computer language (Machine Language).

It is then converted to human readable form.

The result (information) is given to the outside world.

***4.Characteristics of computers

Features / Properties: Speed, accuracy, Diligence; huge memory, Versatility.

Weaknesses: Lack of IQ, Lack of decision making power

5.Number System

A number system is a way of representing or expressing numbers.

**5.1.Different Number Systems

Number System	Base	Symbols used	Examples
Binary : Number system used in computers.	2	0, 1	(1101) ₂
Octal : Represents UTF8 numbers	8	0, 1, 2, 3, 4, 5, 6, 7	(236) ₈
Decimal : Number system that Easy to read and manipulate by humans.	10	0, 1, 2, 3, 4, 5, 6, 7, 8, 9	(5876) ₁₀
Hexadecimal: Used in microprocessor programming.	16	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F (A, B, C, D, E, F represents 10, 11, 12, 13, 14, 15 respectively)	(12 AF) ₁₆

***NB:**The number of symbols used in a number system is called base/radix.

Bit stands for : Binary digit

MSD - Most Significant Digit | LSD - Least Significant Digit

Write MSD, LSD of Number **5876** ? Answer : MSD-5 & LSD-6

6.Representation of Numbers in Memory

- i)Sign and magnitude representation
- ii) 1's complement representation
- iii)2's complement representation.

***7.Representation of Characters in Memory

7.1. ASCII (American Standard Code for Information interchange)	7 bit - 128 character & 8 bit - 256 character	Each letter is assigned a whole number.
7.2. ISCII (Indian Standard Code for Information Interchange)	8 bit - 256 character	Represents letters of Indian languages.
7.3. EBCDIC (r Extended Binary Coded Decimal Interchange Code)	8 bit - 256 character	
7.4. Unicode **Universal character representation standard	16 bit - 65536 character	All human languages in the world are represented (encoding)

Previous Repeated Questions (2018 - 2023)

1. Define computers.
2. Facts and figures are called
3. Processable raw objects and numbers are called.....
4. Write the difference between data and information?
5. Which of the following helps us make decisions?
(a) Data (b) Information (c) Knowledge
6. Write the steps used in data processing?
7. Arrange the following in the correct order?
Process , Output, Storage ,Distribution ,Data Capture, Input
8. The act of feeding data to a computer for processing is called.....
9. Name the four functional units of a computer?
10. Write the functions of input units in a computer?
11. Explain the importance of CPU in a computer?
12. The 3 components that perform the functions of CPU are ALU,CU and.....
(a) RAM (b) Registers (c) ROM
13. Write the role of the control unit in the computer.
14. Identify the unit that controls and coordinates the functioning of the various units of the computer.
(a) ALU (b) Control Unit (c) Input Unit (d) Output Unit.
15. Briefly explain the functional units of a computer.
16. Write the characteristics of computers?
17. "Computers are slaves and humans are masters. Do you agree with this? Write reasons based on the advantages and limitations of computers.
18. Computers are better than humans in data processing. Write any 3 characteristics of it.
19. What is a number system?
20. Name the number systems associated with computers.
21. Write a short note on the hexadecimal number system.
22. Number of symbols used in the hexadecimal number system is.....
23. Which of the following is an invalid number?
(i) (10011)₂ (ii) (279)₈ (iii) (1010)₁₀
24. Name any 2 number system and its base?
25. Other number systems apart from the normal number system we use
Yes. Explain any two numbers?
26. What are the various methods used to store numbers in memory?
27. What are the various methods used to store letters in memory?
28. Write any two methods of coding letters.
29. Briefly describe the importance of Unicode in representing characters in computers.
30. Coding that can somehow represent the letters of all human languages. Name the system?
31. Which character representation can encode the letters of all human languages?
(a) ASCII (b) ISCII (c) UNICODE
32. Which of the following coding systems is Using 16 bit representation?
33. The full form of EBCDIC is?
34. The full form of ASCII is?
35. Make note of any three codes used to represent character.
36. Compare ASCII and Unicode.