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SECTION : A

SUBJECT : INTRODUCTION TO ICT

INSTRUCTOR : ATIF ISHTIAQ

EXAMINATION : MIDTERM EXAM

Q1 **CHARACTERISTICS OF COMPUTER:-**

The characteristics of computers that have made them so powerful and universally useful are the following:

- **AUTOMATIC :-**

Given a job, computer can work on it automatically without human interventions.

- **SPEED :-**

Computer can perform data processing jobs very fast, usually measured in microseconds (10^{-6}), nanoseconds (10^{-9}) and picoseconds (10^{-12}). Therefore the speed of computers is fast.

ACCURACY:

Accuracy of a computer is consistently high and the degree of accuracy depends upon its design. Computer errors caused due to incorrect input data or unreliable programs are often referred to as Garbage-in-Garbage-Out. (GIGO).

DILIGENCE:

Computer is free from monotony, tiredness and lack of concentration. It can continously work for hours without creating any error and without grumbling.

VERSATILITY:

Computer is capable of performing almost any task, if the task can be reduced to a finite series of logical steps.

POWER OF REMEMBERING:

Computer can store and recall any amount of information because of its secondary storage capability.

NO I.Q :

A computer does only what it is programmed to do so. It cannot take its own decision in this regard.

Q3) WRITE NOTES ON THE FOLLOWING:

a) MACHINE LEARNING:

DEFINITION:

Machine learning is a sub-area of artificial intelligence, whereby the term refers to the ability of IT systems to independently find solutions to problems by recognizing patterns in databases.

APPLICATIONS:

The system can perform the following tasks by machine learning:

- Finding, extracting and summarizing relevent data.

- Making predictions based on the analysis.
- Calculating probability for specific results
- Adapting to certain developments autonomously
- Optimizing processes based on recognized patterns

ADVANTAGES:

Machine learning undoubtedly helps people to work more creatively and efficiently. Basically we can delegate quite complex or monotonous task to the computer through machine learning starting with scanning, saving to organizing and editing images.

b) CENTRAL PROCESSING UNIT:

DEFINITION:

The central processing unit is a piece of hardware that carries out the instructions of a computer programe. It performs the basic authentical, logical and input output operations of a computer system. The CPU is sometimes also referred to as the central processor unit or processor for short.

COMPONENTS OF CPU:

The central processing unit have the following components.

- **ALU:**

The first component is the arithmatic logic unit which performs simple arithmatic and logical operations.

- **CU:**

Second is the control unit which manages the various components of the computer. The control unit calls upon the ALU to perform the necessary calculations.

CACHE:

Third is the cache which serves as high-speed memory where instruction can be copied to and retrieved.

LOCATION OF CPU:

CPUs are located on the motherboard. Motherboards have a socket for this which is specific for a certain type of processor.

A CPU gets hot and therefore needs its own cooling system in the form of a heat sink.

CONCLUSION:

The CPU works as a part of a broader, more diverse ecosystem that includes Random Access memory and other parts of computer.

c) NON-POSITIONAL NUMBER SYSTEM:

DEFINITION:

A non-positional number system uses a limited number of symbols in which each symbol has a value. However, the position a number occupies in the number normally bears no relation to its value - the value of each symbol is fixed.

In non-positional number system each symbol represents a number with its own place value. Each symbol represents the same value regardless of the position.

EXAMPLE:

The roman number system is a good example of non-positional number system.

This number system has a set of symbols

$$S = \{I, V, X, L, C, D, M\}$$

Symbol	I	V	X	L	C	D	M
Value	1	5	10	50	100	500	1000

Q3) SOLVE THE FOLLOWING:

a) Convert (110101010) into $(\ )_{10}$.

SOLUTION:

$$\Rightarrow (1\times 2^8) + (1\times 2^7) + (1\times 2^6) \times (1\times 2^5) + (1\times 2^4) + (1\times 2^3) + (1\times 2^2) + (1\times 2^1) + (1\times 2^0)$$

$$\Rightarrow 256 + 128 + 0 + 32 + 0 + 8 + 0 + 2 + 0$$

$$= 426$$

$$\boxed{426}$$ Ans

(3)

b) **SOLUTION:**

$$
\begin{array}{r}
10001010 \\
\times\ 10101101 \\
\hline
10001010 \\
00000000\times \\
10001010\times\times \\
10001010\times\times\times \\
00000000\times\times\times\times \\
10001010\times\times\times\times\times \\
00000000\times\times\times\times\times\times \\
+\ 10001010\times\times\times\times\times\times\times \\
\hline
1011101010000010
\end{array}
$$

$$\boxed{1011101010000010}$$ Ans.