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**Course: Computer Skills/ Applications**

**Program: BS(DT/RAD/MIC)**

**Semester: 4th**

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**Due Date: 21 August, 2020**

**Q1. (a) In your opinion what are the 3 most important characteristics of computers, Explain each characteristic**.

**Answer: -**

**1. Speed: -**

As we know computer can work very fast. It takes only few seconds for calculations that we take hours to complete. You will be surprised to know that computer can perform millions (1,000,000) of instructions and even more per second. Therefore, we determine the speed of computer in terms of microsecond (10-6 part of a second) or nanosecond (10 to the power -9 part of a second). From this you can imagine how fast your computer performs work.

**2. Accuracy: -**

The degree of accuracy of computer is very high and every calculation is performed with the same accuracy. The accuracy level is 7.

determined on the basis of design of computer. The errors in computer are due to human and inaccurate data.

**3. Versatility: -**

 It means the capacity to perform completely different type of work. You may use your computer to prepare payroll slips. Next moment you may use it for inventory management or to prepare electric bills.

**(b) Write key characteristics of fourth generation of computers?**

**Answer: -**

Characteristics of fourth generation of computers

1) The fourth generation computers have microprocessor-based systems. It uses VLSI (Very Large Scale Integrated) circuits.

2) They are the cheapest among all the computer generation.

3) The speed, accuracy and reliability of the computers were improved in fourth generation computers.

4) Many high-level languages were developed in the fourth generation such as COBOL, FORTRAN, BASIC, PASCAL and C language.

5) A Further refinement of input/output devices was developed.

6) Networking between the systems was developed in fourth generation computer.

**Q2. (a)Discuss the importance of Arithmetic logic unit and Control unit of a computer system?**

**Answer: - Importance of Arithmetic Logic Unit: -**

An arithmetic logic unit (ALU) is a digital circuit used to perform arithmetic and logic operations. It represents the fundamental building block of the central processing unit(CPU) of a computer. Modern CPUs contain very powerful and complex ALUs. In addition to ALUs, modern CPUs contain a control unit (CU)

**Importance of Control unit of computer System: -**

The control unit (CU) is a component of a computer's central processing unit(CPU) that directs the operation of the processor. It tells the computer’s memory, arithmetic and logic unit and input and output devices how to respond to the instructions that have been sent to the processor.

**(b)Write a detailed note on importance of RAM (Random Access Memory)?**

**Answer: -**

**RAM:** - RAM (Random Access Memory) is the hardware in a computing device where the operating system (OS), application programs and data in current use are kept so they can be quickly reached by the device's processor. When the computer is rebooted, the OS and other files are reloaded into RAM, usually from an HDD or SSD.

**Importance of RAM**

Computer random access memory(RAM) is one of the most important components in determining your system's performance. RAM gives applications a place to store and access data on a short-term basis. It stores the information your computer is actively using so that it can be accessed quickly.

**Q3. Write a detailed note on Basic Organization of a computer System along with the functions of each part.**

**Answer: -**

**Basic Organization of a Computer System**

Any computer can perform the four basic operations of Input, Processing, Output, and Storage (IPOS). These operations constitute the IPOS cycle. The internal design or structure of a computer may differ from one system to another though the basic operations remain the same. Figure 1.1 provides a block diagram of a computer. The figure displays all the functional units of a computer which carry out the basic computer operations. The lines in the figure indicate the flow of instructions and data, while the Control Unit and the Arithmetic/Logical Unit together direct the flow of control in the central processing unit.

**Input Unit**

Data and instructions are entered into the computer through the input unit to get processed into information. Input devices like the keyboard, the mouse, or the microphone are used to enter the data. The data is entered in various forms depending on the type of input devices. For instance, a keyboard can be used to input characters, numbers, and certain symbols; a mouse is a device that has an on-screen pointer that enables the users to select items and choose options; a microphone can be used if the user wishes to enter instructions by making a voice entry. Regardless of the ways in which the input devices receive the inputs, the input interfaces convert them into binary codes, i.e., 0s and 1s, as the primary memory of the computer is designed to accept data only in this format. Several advancements can be seen in input devices with devices like cordless keyboards, optical mouse, laser mouse, cordless mouse, etc., being introduced in the market.

**Central Processing Unit**

The actual processing of the data is carried out in the Central Processing Unit (CPU), which is the brain of computer. The CPU stores the data and instructions in the primary memory of the computer, called the Random Access Memory (RAM) and processes them from this location. The Arithmetic Logic Unit (ALU) and the Control Unit (CU) are the two subcomponents of the CPU. The ALU carries out the arithmetic and logical operations while the CU retrieves the information from the storage unit and interprets this information. The CPU also consists of circuitry devices calle cache and registers. 

**Arithmetic logic unit**

The data and instructions stored in the RAM are transferred to the ALU for processing. The ALU performs the logical and the arithmetic operations on the data and the results are temporarily stored in the RAM. After the processing, the final results are stored in the secondary memory, i.e., the storage unit, and are released through an output device.

**Control unit**

The CU obtains the program instructions stored in the primary memory of the computer, interprets them, and issues signals that result in their execution. It helps in maintaining order and directs the operations of the entire system. It selects, interprets, and ensures the proper execution of the program instructions.

**Processors**

Some computers use more than one processor for processing in order to reduce the load on a single processor.

**Output Unit**

The output unit passes on the final results of computation to the users through the output devices like the monitor, printer, etc. A monitor displays the final results of the processed data on the screen while a printer can be used for obtaining the output in a printed format. These output devices link the computer with the users. The output interfaces convert the binary code produced by the computer into the human-readable form.

**Storage Unit**

Before the actual processing takes place, the data and instructions that enter the computer system have to be stored internally. Also, the final results generated by the computer after processing has to be stored before being sent to the output unit. The storage unit of a computer system is designed to store the data generated at various stages of processing. Storage media like hard disks, floppy disks, etc., aid in storing the data in various forms. The hard disk is an integral part of the computer system. It is also referred to as hard drive, disk drive, or hard disk drive. The hard disk provides a large amount of storage space for the programs and data. Computers these days feature a hard disk that has several gigabytes of storage capacity. The floppy disk drives, CD-ROM/CD-RW drives, DVD drives, and USB ports enable the user to store and exchange data with others using storage media like floppy disks, compact discs (CDs), digital video discs (DVDs), and pen drives.