



# RASS-JB Public School Datia

Holiday Homework  
Session 2022-23  
Class-IX

Subject Name	Homework
<b>Biology</b>	<ol style="list-style-type: none"><li>1) What are cell organelles? Name them. Why are they present in Eukaryotes?</li><li>2) Write the functions of SER and RER respectively.</li><li>3) What is membrane biogenesis?</li><li>4) Write the functions of Golgi apparatus.</li><li>5) Name the types of plastids. Where are they found in plant cell?</li><li>6) Why is mitochondria called the power house of the cell?</li><li>7) Name the cell organelle which detoxifies many poisons and drugs.</li><li>8) Name the cell organelle which is involved in the formation of Lysosomes.</li><li>10) Why is the Lysosomes called as suicidal bags, demolition Squads, scavenger of the cell?</li><li>11) Write the 3 functions of vacuoles.</li><li>12) What is osmoregulation? How is it done in unicellular Organisms?</li><li>13) Why is cell called as fundamental, structural, and Functional unit of life?</li><li>14) How do lysosomes help in fertilization of the human sperm with ova?</li><li>15) What is the difference between cisternae and cristae?</li><li>16) How does Amoeba obtain its food? Name the process.</li><li>17) Why Doctors advice gargles with salt solution during throat infections?</li><li>18) Where are proteins synthesized inside the cell? How is it done in the cell?</li><li>19) Name the fluid present in vacuoles. Also write its function.</li><li>20) Draw a plant cell and animal cell. (coloured and labeled)</li></ol> <p>Make a Biology project on any one of the following topic.</p> <ol style="list-style-type: none"><li>1) Collect information about any two communicable diseases and present the information in a folder with Illustration, pictures and photographs, What are communicable diseases? Sign and symptoms and Cure And prevention</li><li>2) Make a project report on Biofuels, including: 4 What are biofuels? 4 How</li></ol>

	are they made? 4 Pros and Cons of biofuels.
<b>English</b>	<p><b>Reading Skills</b> : Two Unseen passages : Write/ paste the passages in note book and solve the passage questions.</p> <p>1. World Environment Day is celebrated on 5th June every year. Taking ideas from the given points and the unit on Environment along with your own ideas, write a speech in about 150 words to be delivered in the morning assembly on “How The Environment Can Be Made Pollution- Free”.</p> <p>Switch off the vehicle's s ignition at signals. Maintain your vehicle properly.  Use public transport, rather than personal vehicles. Use car pool  Do not litter around public places  Segregate garbage into bio-degradable and non-bio - degradable  Throw the garbage into the bins only. Restrict the use of plastic bags  Use electronic goods longer  Help grow trees in the neighborhood</p> <p>2. Write an article on “Books Are Man’s Best Friend”.</p> <p><b>Grammar</b></p> <p>Q1. Rearrange the following words/phrases into meaningful sentences.</p> <p>a) Paralytic attack/is/prolonged/main cause/high/of/ blood pressure/the  b) Tongue, lip, and the vocal cords/people affected/can communicate/ either with limbs/with a paralytic stroke  c) To answer/some can/their eyes/even blink  d) Nervous system/to the voluntary/due to extensive damages/is impossible/ but in/a few even a small gesture</p> <p>Q2. Read the following instructions for making 'Maggi Noodles' and complete the passage:</p> <p>Boil two 500 ml of water in a container.  Add noodles and taste maker.  Add finely chopped vegetables after steaming them separately.  Cook only for two minutes.  Serve hot.</p> <p>Firstly, 500 ml of water (a)in a container. After that noodlesand taste makers (b). Then finely chopped vegetables(c)_____after steaming them separately. The mixed stuff for(d) _____ only two minutes. It is then served hot.</p>
<b>Math</b>	<p>solve 20-20 questions of each chapter other than NCERT and RD sharma book.</p> <p>(1) 10 MCQS real number from rd sharma book  (2) 10 MCQS Polynomial from rd Sharma book</p> <p style="text-align: center;"><b>REAL NUMBER</b></p>

(3) **1.) Can we write 0 in the form of p/q?**

- a. Yes
- b. No
- c. Cannot be explained
- d. None of the above

Answer: a

**2.) The three rational numbers between 3 and 4 are:**

- a.  $5/2$ ,  $6/2$ ,  $7/2$
- b.  $13/4$ ,  $14/4$ ,  $15/4$
- c.  $12/7$ ,  $13/7$ ,  $14/7$
- d.  $11/4$ ,  $12/4$ ,  $13/4$

Answer: b

**3.) In between any two numbers, there are:**

- a. Only one rational number
- b. Two rational numbers
- c. Infinite rational numbers
- d. No rational number

Answer: c

**4.) Every rational number is:**

- a. Whole number
- b. Natural number
- c. Integer
- d. Real number

Answer: d

**5.)  $\sqrt{9}$  is \_\_\_\_\_ number.**

- a. A rational
- b. An irrational
- c. Neither rational nor irrational
- d. None of the above

Answer: a

Explanation:  $\sqrt{9} = 3$

Hence,  $\sqrt{9}$  is a rational number.

**6.) Which of the following is an irrational number?**

a.  $\sqrt{16}$

b.  $\sqrt{(12/3)}$

c.  $\sqrt{12}$

d.  $\sqrt{100}$

Answer: c

Explanation:  $\sqrt{12}$  cannot be simplified to a rational number.

**7.)  $3\sqrt{6} + 4\sqrt{6}$  is equal to:**

a.  $6\sqrt{6}$

b.  $7\sqrt{6}$

c.  $4\sqrt{12}$

d.  $7\sqrt{12}$

Answer: b

Explanation:  $3\sqrt{6} + 4\sqrt{6} = (3 + 4)\sqrt{6} = 7\sqrt{6}$

**8.)  $\sqrt{6} \times \sqrt{27}$  is equal to:**

a.  $9\sqrt{2}$

b.  $3\sqrt{3}$

c.  $2\sqrt{2}$

d.  $9\sqrt{3}$

Answer: a

Explanation:  $\sqrt{6} \times \sqrt{27} = \sqrt{(6 \times 27)} = \sqrt{(2 \times 3 \times 3 \times 3 \times 3 \times 3)} = (3 \times 3)\sqrt{2} = 9\sqrt{2}$

**9.) Which of the following is equal to  $x^3$ ?**

a.  $x^6 - x^3$

b.  $x^6 \cdot x^3$

c.  $x^6/x^3$

d.  $(x^6)^3$

Answer: c

Explanation:  $x^6/x^3 = x^{6-3} = x^3$

**10.) Which of the following is an irrational number?**

- a.  $\sqrt{23}$
- b.  $\sqrt{225}$
- c. 0.3796
- d. 7.478478

**Answer:** a

Explanation:  $\sqrt{23} = 4.79583152331\dots$

Since the decimal expansion of the number is non-terminating non-recurring. Hence, it is an irrational number.

### POLYNOMIAL

**1)  $x^2-2x+1$  is a polynomial in:**

- a. One Variable
- b. Two Variables
- c. Three variable
- d. None of the above

**Answer:** a

Explanation:  $x^2-2x+1$  can be written as  $x^2-2x^1+1x^0$ . Hence, we can see that x is the only variable having powers as whole numbers: 2,1 and 0.

**2) The coefficient of  $x^2$  in  $3x^3+2x^2-x+1$  is:**

- a. 1
- b. 2
- c. 3
- d. -1

**Answer:** b

Explanation: The coefficient of  $x^2$  in equation  $3x^3+2x^2-x+1$  is the multiple of  $x^2$ .

**3) A binomial of degree 20 in the following is:**

- a.  $20x + 1$
- b.  $x/20 + 1$
- c.  $x^{20} + 1$
- d.  $x^2+20$

**Answer: c**

Explanation: A polynomial having two terms and the highest degree 20 is called a binomial of degree 20.

**4) The degree of  $4x^3 - 12x^2 + 3x + 9$  is**

- a. 0
- b. 1
- c. 2
- d. 3

**Answer: d**

Explanation: The degree is the highest power of a variable in an equation.

**5)  $x^2 - x$  is \_\_\_\_\_ polynomial.**

- a. Linear
- b. Quadratic
- c. Cubic
- d. None of the above

**Answer: b**

Explanation: A polynomial of degree two is known as a quadratic polynomial.

**6)  $x - x^3$  is a \_\_\_\_\_ polynomial.**

- a. Linear
- b. Quadratic
- c. Cubic
- d. None of the above

**Answer: c**

Explanation: A polynomial of degree three is known as a cubic polynomial.

**7)  $1 + 3x$  is a \_\_\_\_\_ polynomial.**

- a. Linear
- b. Quadratic
- c. Cubic
- d. None of the above

**Answer: a**

Explanation: A polynomial of degree one is known as a linear polynomial.

**8) The value of  $f(x) = 5x - 4x^2 + 3$  when  $x = -1$ , is:**

- a. 3
- b. -12
- c. -6
- d. 6

**Answer: c**

Explanation: When  $x = -1$

$$f(x) = 5x - 4x^2 + 3$$

$$f(-1) = 5(-1) - 4(-1)^2 + 3$$

$$= -5 - 4 + 3$$

$$= -6$$

**9) The value of  $p(t) = 2 + t + 2t^2 - t^3$  when  $t = 0$  is**

- a. 2
- b. 1
- c. 4
- d. 0

**Answer: a**

Explanation:  $p(0) = 2 + 0 + 2(0)^2 - (0)^3 = 2$

**10) The zero of the polynomial  $f(x) = 2x + 7$  is**

- a.  $2/7$
- b.  $-2/7$
- c.  $7/2$
- d.  $-7/2$

**Answer: d**

Explanation:  $f(x) = 2x + 7$

$$\Rightarrow 2x + 7 = 0$$

$$\Rightarrow 2x = -7$$

$$\Rightarrow x = -7/2$$

$\therefore x = -7/2$  is a zero polynomial of the polynomial  $f(x)$ .

**11) What is the degree of the polynomial  $\sqrt{3}$ ?**

- a. 0
- b. 1
- c.  $1/2$
- d. 2

Answer: c

Explanation: The polynomial  $\sqrt{3}$  can also be written as  $3^{1/2}$ .

Hence, the degree of the polynomial  $\sqrt{3}$  is  $1/2$ .

**12) The degree of the constant polynomial is**

- a. 0
- b. 1
- c. 2
- d. 3

Answer: 0

Explanation: The degree of the constant polynomial is 0. For example, 3 is a constant polynomial that is equal to  $3x^0$ , and its degree is 0.

**13) One of the linear factors of  $3x^2+8x+5$  is**

- a.  $(x+1)$
- b.  $(x-2)$
- c.  $(x+2)$
- d.  $(x-4)$

Answer: a

Explanation:  $3x^2+8x+5 = 3x^2 + 3x+5x+5$

$$3x^2+8x+5 = 3x(x+1)+5(x+1)$$

$$3x^2+8x+5 = (3x+5)(x+1)$$

Therefore,  $(x+1)$  is one of the factors of  $3x^2+8x+5$ .

**14) The coefficient of x in  $7x^2+6x-2$  is**

- a. 2
- b. 6
- c. -2



d. 7

Answer: b

Explanation: The coefficient of x in  $7x^2+6x-2$  is 6. Because the number multiplied by x is 6.

**15) Which of the following is an example of the quadratic polynomial?**

a.  $7x+3$

b.  $2x^2+x-1$

c.  $x+3x^3-9$

d. None of the above

Answer: b

Explanation:  $2x^2+x-1$  is a quadratic polynomial because the highest degree of the polynomial is 2.

**16) Find the value of  $7^2-5^2$ .**

a. 22

b. 23

c. 24

d. 25

Answer: c

Explanation:  $7^2-5^2 = 49 - 25 = 24$ .

**17) If  $x^2+kx+6 = (x+2)(x+3)$  for all k, find the value of k.**

a. -1

b. 1

c. 3

d. 5

Answer: d

Explanation:  $x^2+kx+6 = (x+2)(x+3)$

$$x^2+kx+6 = x^2+3x+2x+6$$

$$x^2+kx+6 = x^2+5x+6$$

Hence, the value of k is 5.

**18) What is the zero of the polynomial  $p(x)=cx+d$ ?**

a. -c

b. -d

c. -d/c

d. d/c

Answer: c

Explanation: The zero of the polynomial  $p(x) = cx + d$  is  $-d/c$ .

$$cx + d = 0$$

$$cx = -d$$

$$x = -d/c.$$

**19) The zero of the polynomial  $p(x) = -5x + 5$  is**

a. 0

b. -5

c. -1

d. 1

Answer: d

Explanation:  $p(x) = -5x + 5$

$$-5x + 5 = 0$$

$$-5x = -5$$

$$x = -5/-5 = 1$$

**20) which of the following is a constant polynomial?**

a.  $4x + 1$

b. 3

c.  $2x^2$

d.  $6x + 3$

Answer: b

Explanation: 3 is a constant polynomial, as  $3 = 3x^0$ . Whereas  $4x + 1$  and  $6x + 3$  are linear polynomial and  $2x^2$  is a quadratic polynomial.

<p><b>Physics</b></p>	<p><b>PREPARE A POWERPOINT PRESENTATION / PROJECT ON ANY 2 OF THE FOLLOWING TOPICS</b></p> <ol style="list-style-type: none"> <li>1 FORCE</li> <li>2 LAW OF MOTION</li> <li>3 GRAPHICAL REPRESENTATION OF A MOTION</li> <li>4 STATES OF MATTER</li> <li>5 WATER CYCLE</li> </ol> <p><b>6 SOLID AND LIQUID STATE</b></p> <p><b>PREPARE A MODEL/ VIDEO LECTURE ON ANY ONE OF THE FOLLOWING TOPICS</b></p> <ol style="list-style-type: none"> <li>1 RUTHERFORD MODEL</li> <li>2 STRUCTURE OF ATOM</li> <li>3 DISTANCE AND DISPLACEMENT</li> </ol> <p><b>MAKE A CHART ON ANY ONE OF THE FOLLOWING TOPICS</b></p> <p><b>SCALAR AND VECTOR QUANTITIES ATOM MOLECULE NEWTONS 2<sup>ND</sup> LAW OF MOTION</b></p>
<p><b>SST</b></p>	<p>Geography</p> <ol style="list-style-type: none"> <li>1. Prepare "My own Atlas" on the following topics:       <ol style="list-style-type: none"> <li>(i) PHYSICAL MAP 1           <ol style="list-style-type: none"> <li>(a) Tropic of Cancer (Also locate the states on tropic of cancer)</li> <li>(b) Standard Meridian</li> <li>(c) Latitudinal extent and Longitudinal extent</li> <li>(d) Southernmost point of India</li> <li>(e) Northernmost point of India</li> <li>(f) Easternmost point</li> <li>(g) Westernmost point</li> </ol> </li> <li>(ii) PHYSICAL MAP 2           <ol style="list-style-type: none"> <li>(a) Neighbouring Countries</li> <li>(b) Islands</li> </ol> </li> <li>(iii) POLITICAL MAP 1           <ol style="list-style-type: none"> <li>(a) States with capitals</li> <li>(b) Union Territories</li> </ol> </li> <li>v) POLITICAL MAP 2           <ol style="list-style-type: none"> <li>(a) States sharing international boundaries</li> </ol> </li> </ol> </li> <li>2. Locate and label the following on the physical map of France from the chapter „The French Revolution“ from History: Bordeaux, Nantes, Paris, Alsace, Normandy, Marseilles, Switzerland</li> <li>3. Prepare picture book on different types of natural vegetation found in India, detailing its features , types of trees found, wild life and regions. (use only one or two photos for one type forests.</li> </ol>

	<p>4. Prepare a list of safety measures adopted by your school to manage disaster. Also suggest some ways to handle disasters of any kind.</p>
<p><b>Hindi</b></p>	<p>गद्यखण्ड –  1. दो बैलों की कथा ।  काव्यखण्ड –  1. कबीर की सखियाँ व सवद  2. वाख  उपरोक्त पाठों को अच्छी तरह से पढ़ना तथा शब्दार्थ व प्रश्नोत्तर याद करना है ।  व्याकरण –  1. अपनी मर्जी से कोई भी दो औपचारिक पत्र तथा दो अनौपचारिक पत्र समझें व लिखें ।  2. निम्न दो विषयों पर लगभग 200–250 शब्दों में निबंध लिखो ।  (अ) पर्यावरण प्रदूषण  (ब) परिश्रम सफलता की कुंजी है ।</p>

**Q1: Explain any component of Computer with a neat diagram on a chart paper.**

**Q2: Write notes (given below) in your notebook.**

**What is Computer?**

A computer is a programmable electronic device that accepts raw data as input and processes it with a set of instructions (a program) to produce the result as output. It renders output just after performing mathematical and logical operations and can save the output for future use. It can process numerical as well as non-numerical calculations. The term "computer" is derived from the Latin word "computare" which means to calculate.

It is believed that the Analytical Engine was the first computer which was invented by Charles Babbage in 1837. It used punch cards as read-only memory. Charles Babbage is also known as the father of the computer.

The basic parts without which a computer cannot work are as follows:

- Processor: It executes instructions from software and hardware.
- Memory: It is the primary memory for data transfer between the CPU and storage.
- Motherboard: It is the part that connects all other parts or components of a computer.
- Storage Device: It permanently stores the data, e.g., hard drive.
- Input Device: It allows you to communicate with the computer or to input data, e.g., a keyboard.
- Output Device: It enables you to see the output, e.g., monitor.

Computers are divided into different types based on different criteria. Based on the size, a computer can be divided into five types:

1. Micro Computer
2. Mini Computer
3. Mainframe Computer
4. Super Computer
5. Workstations

### **Types of Computer**

We can categorize computer in two ways: on the basis of data handling capabilities and size.

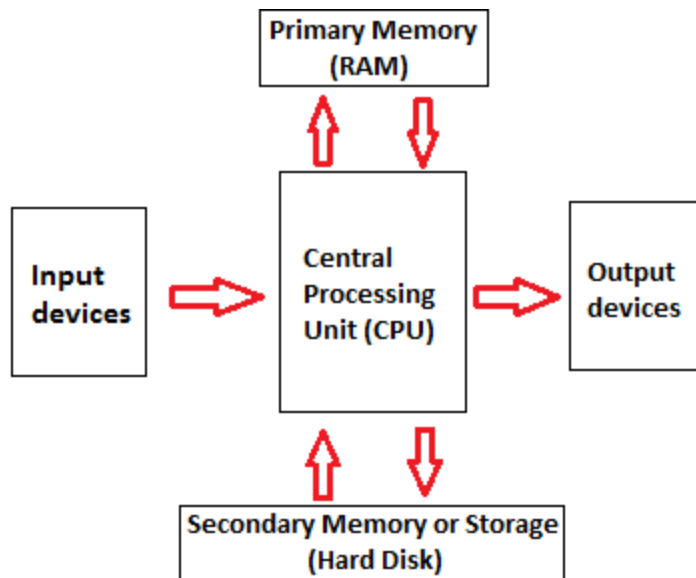
On the basis of data handling capabilities, the computer is of three types:

- Analogue Computer
- Digital Computer
- Hybrid Computer

### **Computer Components**

There are 5 main computer components that are given below:

- Input Devices
- CPU
- Output Devices
- Primary Memory
- Secondary Memory



The operations of computer components are given below:

- 1) **Inputting:** It is the process of entering raw data, instructions and information into the computer. It is performed with the help of input devices.
- 2) **Storing:** The computer has primary memory and secondary storage to store data and instructions. It stores the data before sending it to CPU for processing and also stores the processed data before displaying it as output.
- 3) **Processing:** It is the process of converting the raw data into useful information. This process is performed by the CPU of the computer. It takes the raw data from storage, processes it and then sends back the processed data to storage.
- 4) **Outputting:** It is the process of presenting the processed data through output devices like monitor, printer and speakers.
- 5) **Controlling:** This operation is performed by the control unit that is part of CPU. The control unit ensures that all basic operations are executed in a right manner and sequence.

**Hardware :** Hardware, which is abbreviated as HW, refers to all physical components of a computer system, including the devices connected to it. You cannot create a computer or use software without using hardware. The screen on which you are reading this information is also a hardware.

Commonly used hardware in your computer are described below:

The motherboard is generally a thin circuit board that holds together almost all parts of a computer except input and output devices. All crucial hardware like CPU, memory, hard drive,

and ports for input and output devices are located on the motherboard. It is the biggest circuit board in a computer chassis.

It allocates power to all hardware located on it and enables them to communicate with each other. It is meant to hold the computer's microprocessor chip and let other components connect to it. Each component that runs the computer or improves its performance is a part of the motherboard or connected to it through a slot or port.

Components of a Motherboard:

**CPU Slot:** It is provided to install the CPU. It is a link between a microprocessor and a motherboard. It facilitates the use of CPU and prevents the damage when it is installed or removed. Furthermore, it is provided with a lock to prevent CPU movement and a heat sink to dissipate the extra heat.

**RAM Slot:** It is a memory slot or socket provided in the motherboard to insert or install the RAM (Random Access Memory). There can be two or more memory slots in a computer.

**Expansion Slot:** It is also called the bus slot or expansion port. It is a connection or port on the motherboard, which provides an installation point to connect a hardware expansion card, for example, you can purchase a video expansion card and install it into the expansion slot and then can install a new video card in the computer. Some of the common expansion slots in a computer are AGP, AMR, CNR, PCI, etc.

**Capacitor:** It is made of two conductive plates, and a thin insulator sandwiched between them. These parts are wrapped in a plastic container.

**Inductor (Coil):** It is an electromagnetic coil made of a conducting wire wrapped around an iron core. It acts as an inductor or electromagnet to store magnetic energy.

**Northbridge:** It is an integrated circuit that allows communications between the CPU interface, AGP, and memory. Furthermore, it also allows the southbridge chip to communicate with the RAM, CPU, and graphics controller.

**USB Port:** It allows you to connect hardware devices like mouse, keyboard to your computer.

**PCI Slot:** It stands for Peripheral Component Interconnect slot. It allows you to connect the PCI devices like modems, network hardware, sound, and video cards.

**AGP Slot:** It stands for Accelerated Graphics Port. It provides the slot to connect graphics cards.

**Heat Sink:** It absorbs and disperses the heat generated in the computer processor.

**Power Connector:** It is designed to supply power to the motherboard.

**CMOS battery:** It stands for complementary metal-oxide-semiconductor. It is a memory that stores the BIOS settings such as time, date, and hardware settings.

Software : Software, which is abbreviated as SW or S/W, is a set of programs that enables the hardware to perform a specific task. All the programs that run the computer are software. The software can be of three types: system software, application software, and programming software.

### 1) System Software

The system software is the main software that runs the computer. When you turn on the computer, it activates the hardware and controls and coordinates their functioning. The application programs are also controlled by system software. An operating system is an example of system software.

### 2) Application Software:

Application software is a set of programs designed to perform a specific task. It does not control the working of a computer as it is designed for end-users. A computer can run without application software.

### 3) Programming Software:

It is a set or collection of tools that help developers in writing other software or programs. It assists them in creating, debugging, and maintaining software or programs or applications. We can say that these are facilitator software that helps translate programming language such as [Java](#), [C++](#), [Python](#), etc., into machine language code.

## **Register Memory**

Register memory is the smallest and fastest memory in a computer. It is not a part of the main memory and is located in the CPU in the form of registers, which are the smallest data holding elements. A register temporarily holds frequently used data, instructions, and memory address that are to be used by CPU. They hold instructions that are currently processed by the CPU. All data is required to pass through registers before it can be processed. So, they are used by CPU to process the data entered by the users.

Registers hold a small amount of data around 32 bits to 64 bits. The speed of a CPU depends on the number and size (no. of bits) of registers that are built into the CPU. Registers can be of



different types based on their uses. Some of the widely used Registers include Accumulator or AC, Data Register or DR, the Address Register or AR, Program Counter (PC), I/O Address Register, and more.

Types and Functions of Computer Registers:

- **Data Register:** It is a 16-bit register, which is used to store operands (variables) to be operated by the processor. It temporarily stores data, which is being transmitted to or received from a peripheral device.
- **Program Counter (PC):** It holds the address of the memory location of the next instruction, which is to be fetched after the current instruction is completed. So, it is used to maintain the path of execution of the different programs and thus executes the programs one by one, when the previous instruction gets completed.
- **Instructor Register:** It is a 16-bit register. It stores the instruction which is fetched from the main memory. So, it is used to hold instruction codes, which are to be executed. The Control Unit takes instruction from Instructor Register, then decodes and executes it.
- **Accumulator Register:** It is a 16-bit register, which is used to store the results produced by the system. For example, the results generated by CPU after the processing are stored in the AC register.
- **Address Register:** It is a 12-bit register that stores the address of a memory location where instructions or data is stored in the memory.
- **I/O Address Register:** Its job is to specify the address of a particular I/O device.
- **I/O Buffer Register:** Its job is to exchange the data between an I/O module and the CPU.

Cache Memory

Cache memory is a high-speed memory, which is small in size but faster than the main memory (RAM). The CPU can access it more quickly than the primary memory. So, it is used to synchronize with high-speed CPU and to improve its performance.

How does cache memory work with CPU?

When CPU needs the data, first of all, it looks inside the L1 cache. If it does not find anything in L1, it looks inside the L2 cache. If again, it does not find the data in L2 cache, it looks into the L3 cache. If data is found in the cache memory, then it is known as a **cache hit**. On the contrary, if data is not found inside the cache, it is called a **cache miss**.

If data is not available in any of the cache memories, it looks inside the Random Access Memory (RAM). If RAM also does not have the data, then it will get that data from the Hard Disk Drive.

So, when a computer is started for the first time, or an application is opened for the first time, data is not available in cache memory or in RAM. In this case, the CPU gets the data directly from the hard disk drive. Thereafter, when you start your computer or open an application, CPU can get that data from cache memory or RAM.

## Primary Memory

Primary Memory is of two types: RAM and ROM.

**RAM (Volatile Memory) :** It is a volatile memory. It means it does not store data or instructions permanently. When you switch on the computer the data and instructions from the hard disk are stored in RAM. CPU utilizes this data to perform the required tasks. As soon as you shut down the computer the RAM loses all the data.

**ROM (Non-volatile Memory) :** It is a non-volatile memory. It means it does not lose its data or programs that are written on it at the time of manufacture. So it is a permanent memory that contains all important data and instructions needed to perform important tasks like the boot process.

**Secondary Memory :** The secondary storage devices which are built into the computer or connected to the computer are known as a secondary memory of the computer. It is also known as external memory or auxiliary storage.

The secondary memory is accessed indirectly via input/output operations. It is non-volatile, so permanently stores the data even when the computer is turned off or until this data is overwritten or deleted. The CPU can't directly access the secondary memory. First, the secondary memory data is transferred to primary memory then the CPU can access it.

**Memory Units :** Memory units are used to measure and represent data. Some of the commonly used memory units are:

- 1) **Bit:** The computer memory units start from bit. A bit is the smallest memory unit to measure data stored in main memory and storage devices. A bit can have only one binary value out of 0 and 1.
- 2) **Byte:** It is the fundamental unit to measure data. It contains 8 bits or is equal to 8 bits. Thus a byte can represent  $2^8$  or 256 values.
- 3) **Kilobyte:** A kilobyte contains 1024 bytes.
- 4) **Megabyte:** A megabyte contains 1024 kilobytes.
- 5) **Gigabyte:** A gigabyte contains 1024 megabyte.
- 6) **Terabyte:** A terabyte contains 1024 gigabytes.

## Computer Network

A network set up by connecting two or more computers and other supporting hardware devices through communication channels is called a computer network. It enables computers to communicate with each other and to share commands, data, etc., including the hardware and software resources.

### Uses of Computer Network:

- It allows you to share resources such as printers, scanners, etc.
- You can share expensive software and database among network users.
- It facilitates communications from one computer to another computer.
- It allows the exchange of data and information among users through a network.

### Popular Computer Networks:

- Local Area Network (LAN)
- Metropolitan Area Network (MAN)
- Wide Area Network (WAN)