# 11th

1, 2, 3 & 5 Marks

# COMPUTER APPLICATIONS

# 2024 to 2025

Name:.....

Class:.....Sec.....

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# 1. INTRODUCTION TO COMPUTERS

**1 Marks**

1. First generation computers used
   **a)Vacuum tubes** b) Transistors
   c) Integrated circuits d) Microprocessors
2. Name the volatile memory - ***Mar 2022***
   a) ROM b) PROM **c) RAM** d) EPROM
3. Identify the output device
   a) Keyboard b) Memory **c) Monitor** d) Mouse
4. Identify the input device
   a) Printer **b) Mouse** c) Plotter d) Projector
5. …… Output device is used for printing building plan.
   a) Thermal printer **b) Plotter** c) Dot matrix d) Inkjet printer
6. Which one of the following is used to in ATM machines
   **a) Touch Screen** b) Speaker c) Monitor d) Printer
7. When a system restarts which type of booting is used. -***Mar 2023***
   **a) Warm booting** b) Cold booting c) Touch boot d) Real boot
8. Expand POST
   a) Post on self Test b) Power on Software Test
   **c) Power on Self Test** d) Power on Self Text
9. Which one of the following is the main memory? -***Mar 2024***
   a) ROM **b) RAM** c) Flash drive d) Hard disk
10. Which generation of computer used IC's? –
    a) First b) Second **c) Third** d) Fourth

**2 Marks**

**1. What is a computer?**

Computer is an **electronic device** that processes the **input** according to the set of instructions provided to it and gives the desired **output** at a very fast rate.

**2. Distinguish between data and information. – Mar 2023**

| Data | Information |
|---|---|
| Data is defined as an **unprocessed** collection of raw facts, suitable for **communication, interpretation or processing.** | Information is a **collection of facts** from which **conclusions** may be drawn. |
| **Example:** 134, 16, 'Kavitha', 'C' are data | **Example:** Kavitha is 16 years old. |

**3. What are the components of a CPU?**

- Control Unit
- Arithmetic and Logic Unit
- Memory Unit

**4. What is the function of an ALU? – *Mar 2022***

- The **ALU** (**A**rithmetic and **L**ogic **U**nit) is a part of the **CPU**.
- The ALU performs arithmetic operations such as **addition, subtraction, multiplication, division** and **logical operations.**

**5. Write the functions of control unit. – Mar 2024**

- The **control unit** controls the flow of data between the **CPU, memory and I/O devices.**
- It also controls the **entire operation** of a computer.

**6. What is the function of memory?**

- The primary memory is used to **temporarily** store the programs and data.
  **Example:** RAM (Random Access Memory)
- The secondary memory is used to store the data **permanently**.
  **Example:** Hard Disk, DVD-ROM.

**7. Differentiate Input and Output unit.**

| Input Unit | Output Unit |
|---|---|
| An Input unit is used to **feed any form of data** to the computer, which can be stored in the memory unit for further processing. | An Output Unit is any **hardware** component that **conveys information** to users in an **understandable form** |
| **Example:** Keyboard, Mouse | **Example:** Monitor, Printer |

**8. Distinguish Primary and Secondary memory.**

| Primary Memory | Secondary Memory |
|---|---|
| The Primary Memory is **volatile**. The **content is lost** when the power supply is switched off. | The Secondary Memory is **non-volatile**. The **content is available** even after the power supply is switched off. |
| **Temporarily** store the programs and data. | Store the data **permanently.** |
| **Example:** RAM | **Example:** Hard disk, DVD-ROM. |

**3 Marks**

**1. What are the characteristics of a computer?**

Computers have revolutionized our lives with their **speed, accuracy, storage, reliability, versatility**, and **diligence performing a job**, it is truly remarkable.

**2. Write the applications of computer.**

Computers are seen **everywhere around us**, in all spheres of life, in the field of **education, research, travel and tourism, weather forecasting social networking, e-commerce etc**.

**3. What is an input device? Give two examples -*Mar 2023***

- An input device is a **hardware or peripheral device** used to **send data** to a computer.
- It is used to **feed any form of data** to the computers for **processing, display, storage** and **transmission.**
- **Example:** Keyboard, Mouse

**4. Name any three output devices.**

- **Monitor** : To **display the information**. Like **TV**
- **Plotter** : It is used to produce **graphical output on papers**.
- **Printers** : It is used to **print the information on papers**.

**5. Write short note on impact printer**

- Impact printers print with **striking of hammers or pins** on ribbon.
- These printers can print on **multi-part** by using **mechanical pressure**.
- **Example:** Dot Matrix Printers, Line Matrix Printers.

**6. Write the characteristics of sixth generation.**

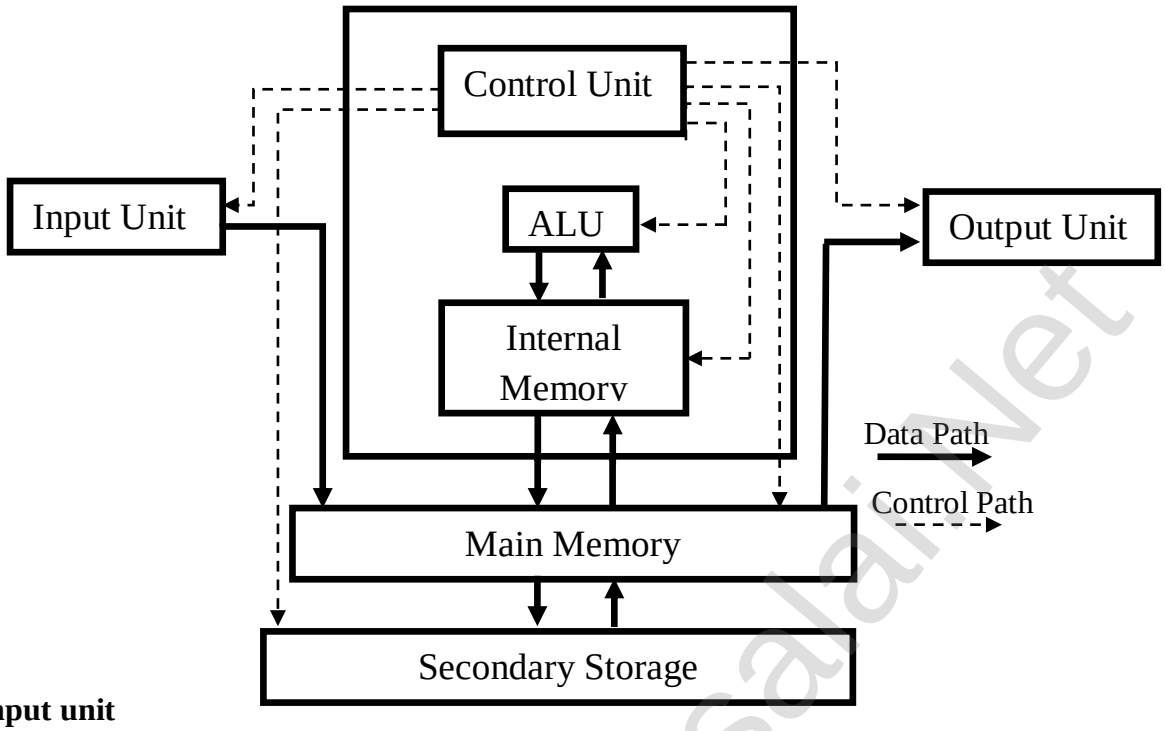
- Sixth Generation computers, the era of **intelligent computers**, based on **Artificial Neural Networks**.
- The **explosive growth** of Wide Area Networking.
- **N**atural **L**anguage **P**rocessing is a component of **Artificial Intelligence**.
- It provides the ability to develop the **computer program** to understand **human language.**

**7. Write the significant features of monitor.**

- Monitor is the most commonly used output device to **display the information.** Picture elements called Pixels.
- **CRT** (**C**athode **R**ay **T**ube), **LCD** (**L**iquid **C**rystal **D**isplay) and **LED** (**L**ight **E**mitting **D**iodes).The Monitor works with the **VGA** (**V**ideo **G**raphics **A**rray) card.

**5 Marks**

**1. Explain the basic components of a computer with a neat diagram. – *Mar 2023***




**Input unit**

- An Input unit is used to **feed any form of data** to the computer, which can be stored in the memory unit for further processing.
  **Example:** Keyboard, Mouse.

**Central Processing Unit**

- CPU is the major components which **interprets and executes** software instructions.

**Control unit**

- Controls the flow of data between the **CPU, Memory** and **I/O devices.**

**ALU (Arithmetic and Logic Unit)**

- The ALU is a part of the CPU. The ALU performs arithmetic operations such as **addition, subtraction, multiplication, division** and **logical operations.**

**Memory Unit**

- The Primary Memory is **volatile.** The **content is lost** when the power supply is switched off. **Temporarily** store the programs and data.
  **Example:** RAM (Random Access Memory)
- The Secondary Memory is **non-volatile**. The **content is available** even after the power supply is switched off. Store the data **Permanently.**
  **Example:** Hard disk, DVD-ROM.

**Output unit**

An Output Unit is any **hardware component** that conveys information to **users in an understandable form**.

**Example:** Monitor, Printer.

**2. Discuss the various generations of computers. -** ***Mar 2020, Mar 2022***

| | | |
|---|---|---|
| **First Generation** | **1940 – 1956**<br>Vacuum tubes | ○ Big in size<br>○ Consumed more power<br>○ Malfunction due to over heat<br>○ Machine Language was used. |
| **Second Generation** | **1956 – 1964**<br>Transistors | ○ Smaller compared to First Generation<br>○ Generated Less Heat<br>○ Consumed less power compared to first generation<br>○ Punched chards were used<br>○ Machine language as well as Assembly language was used. |
| **Third Generation** | **1964 – 1971**<br>Integrated Circuits | ○ Computers were smaller, faster and more reliable<br>○ Consumed less power<br>○ High Level Languages were used |
| **Fourth Generation** | **1971-1980**<br>Microprocessor<br>**VLSI** – **V**ery **L**arge **S**cale Integrated circuits | ○ Smaller and Faster<br>○ Microcomputer series such as IBM and APPLE were developed<br>○ Portable Computers were introduced. |
| **Fifth Generation** | **1980 – till date**<br>**ULSI** – **U**ltra **L**arge **S**cale **I**ntegration | ○ Parallel Processing<br>○ Super conductors<br>○ Computers size was drastically reduced<br>○ Introduction of Artificial Intelligence |
| **Sixth Generation** | **In future** | ○ Parallel and Distributed computing<br>○ Computers have become smarter, faster and smaller<br>○ Development of robotics<br>○ Natural language processing |

**3. Explain the following**

**a) Inkjet Printer b) Multimedia projector c) Bar code / QR code Reader -*Mar 2024***

**Inkjet Printer**

- Inkjet Printers are color cartridges **Magenta, Yellow** and **Cyan** inks.
- A **black** cartridge is also used for **monochrome output**.
- The speed of inkjet printers generally range from **1-20 Page Per Minute**.

**Multimedia projector**

- It is used to produce **computer output on a big screen**.
- These are used to **display presentations** in **meeting halls** or in **classrooms.**

**Bar code**

- A Bar code is a **pattern printed in lines of different thickness**.
- The system gives fast and error free entry of information into the computer.

**QR code Reader**

- The QR code is the two dimension bar code which can be **read by a camera** and processed to interpret the image.

# 2. NUMBER SYSTEMS

**1Marks**

1. Which refers to the number of bits processed by a computer's CPU? – ***Mar 2020***
   a) Byte b) Nibble **c) Word length** d) Bit
2. How many bytes does 1 KiloByte contain?
   a) 1000 b) 8 c)4 **d) 1024**
3. Expansion for ASCII
   a) American School Code for Information Interchange
   **b) American Standard Code for Information Interchange**
   c) All Standard Code for Information Interchange
   d) American Society Code for Information Interchange
4. 2 ^ 50 is referred as
   a) Kilo b) Tera **c) Peta** d) Zetta
5. How many characters can be handled in Binary Coded Decimal System?
   **a) 64** b) 255 c) 256 d) 128
6. For $1101_2$ the equivalent Hexadecimal equivalent is? –
   a) F b) E **c) D** d) B
7. What is the 1's complement of 00100110? – ***Mar 2023***
   a) 00100110 **b) 11011001** c) 11010001 d) 00101001
8. Which amongst this is not an Octal number?
   a) 645 b) 234 **c) 876** d) 123

**1 Marks:** For $1101_2$ the Hexadecimal equivalent is: Ans.: **D** – ***Mar 2022***

**1Marks:** What is the ASCII value for blank space? : Ans: **32** - ***Mar 2024***

**2Marks**

**1. What is data?**

- The term data comes from the word **datum**, which means a **raw fact.**
- The data is a fact about **people, places, or some objects**.

**2. Write the 1's complement procedure.**

**Step 1:** Convert given **Decimal number into Binary**

**Step 2:** Check if the binary number contains **8 bits**,

If less add **0** at the **Left most bit**, to make it as **8 bits**

**Step 3: Invert** all bits Change **1 as 0** and **0 as 1**

**3. Convert $(46)_{10}$ into Binary number – *Mar 2024***

| | | | | |
|---|---|---|---|---|
| 2 | 46 | | | |
| 2 | 23 | - | 0 | LSB |
| 2 | 11 | - | 1 | |
| 2 | 5 | - | 1 | |
| 2 | 2 | - | 1 | |
| MSB | 1 | | 0 | |

**OR**

| 32 | 16 | 8 | 4 | 2 | 1 |
|---|---|---|---|---|---|
| 1 | 0 | 1 | 1 | 1 | 0 |
| MSB | | | | | LSB |

**Ans: $(46)_{10} = (101110)_2$**

**4. We cannot find 1's complement for $(28)_{10}$. State reason.**

- We cannot find 1's complement for $(28)_{10}$. Because it is a **positive number**.
- 1's complement **apply only with negative number**.

**5. List the encoding systems for characters in memory.**

- **BCD – B**inary **C**oded **D**ecimal
- **EBCDIC** – **E**xtended **B**inary **C**oded **D**ecimal **I**nterchange **C**ode
- **ASCII** – **A**merican **S**tandard **C**ode for **I**nformation **I**nterchange
- **Unicode**
- **ISCII** – **I**ndian **S**tandard **C**ode for **I**nformation **I**nterchange

## 3Marks

**1. What is radix of a number system? Give example – *Mar 2022***

- Each number system is uniquely identified by its **base value or radix**.
- Radix or base is the **count of number of digits** in each number system.

**Example: $(1234)_{10}$ $(1010)_2$ $(567)_8$ $(1AF)_{16}$**

**2. Write note on binary number system.**

- Two digits in the **Binary Number** System, namely **0 and 1.**
- The Binary System are represented to the **base 2**. Positional multipliers are the **powers of 2**.
- Left most bit is called the **MSB** and the largest positional weight.
- Right most bit is called the **LSB** and the smallest positional weight.

**3. Convert $(150)_{10}$ into Binary, the convert that Binary number to Octal**

**Decimal number to Binary**

**$(150)_{10}$ = ( )$_2$**

| | | | |
|---|---|---|---|
| 2 | 150 | | |
| 2 | 75 | - 0 | LSB |
| 2 | 37 | - 1 | |
| 2 | 18 | - 1 | |
| 2 | 9 | - 0 | |
| 2 | 4 | - 1 | |
| 2 | 2 | - 0 | |
| MSB | 1 | - 0 | |

**OR**

| 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |
|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 |
| MSB | | | | | | | LSB |

**Ans: $(150)_{10} = (10010110)_2$**

**Binary number to Octal**

**$(10010110)_2$ = ( )$_8$**

| 4 | 2 | 1 |
|---|---|---|
| 1 | 1 | 0 |
| | 6 | |

| 010 | 010 | 110 |
|---|---|---|
| 2 | 2 | 6 |

**Ans: $(10010110)_2 = (226)_8$**

**4. Write short note on ISCII**

- **ISCII** means **I**ndian **S**tandard **C**ode for **I**nformation **I**nterchange. It is the system of handling character of Indian local languages.
- This as a 8-bit coding system. It can handle **256 ($2^8$)** Characters.
- The year 1986 – 88 and recognized by **B**ureau of **I**ndian **S**tandards **(BIS)**

**2&3Marks Public Examination Questions**

1. What is the decimal equivalent sequence for $(547)_8$ octal sequence? – ***Mar 2020 -3M Cly***
2. Convert $65_{(10)}$ into Binary number – ***Mar 2022 -2M Cly***
3. What is meant by "Signed Magnitude"? – ***Mar 2023 – 2M Cly***
4. Add: a) $(-20)_{10} + (25)_{10}$ b) $(22)_{10} + (15)_{10}$ – **Mar 2024 – 3M Cly**

**5. Add a) $-22_{10} + 15_{10}$ b) $20_{10} + 25_{10}$**

**a) $-22_{10} + 15_{10}$**

**$(-22)_{10} = (\ )_2$**

| Weight | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |
|---|---|---|---|---|---|---|---|---|
| +22 | | | | 1 | 0 | 1 | 1 | 0 |
| 8-bit format | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 |
| Carry | | | | | | | 1 | |
| 1's Complement | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 |
| Add 1 bit | | | | | | | | 1 |
| -22 2's Complement | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 |

0 + 0 = 0

0 + 1 = 1

1 + 0 = 1

1 + 1 = 10

10 + 1 = 11

Or

1 + 1 + 1 = 11

**$(-22)_{10} = (\ 11101010\ )_2$**

**$(15)_{10} = (\ )_2$**

| Weight | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |
|---|---|---|---|---|---|---|---|---|
| +15 | | | | | 1 | 1 | 1 | 1 |
| 8-bit format | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |

**$(15)_{10} = (\ 00001111\ )_2$**

**$-22_{10} + 15_{10} = (\ )_2$**

| Carry | | | | 1 | 1 | 1 | | |
|---|---|---|---|---|---|---|---|---|
| -22 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 |
| 15 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| -7 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |

**Ans: $-22_{10} + 15_{10} = (\ 11111001\ )_2$**

**b) $20_{10} + 25_{10}$**

**$(20)_{10} = (\ )_2$**

| Weight | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |
|---|---|---|---|---|---|---|---|---|
| +20 | | | | 1 | 0 | 1 | 0 | 0 |
| 8-bit format | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 |

**$(20)_{10} = (\ 00010100\ )_2$**

**$(25)_{10}$ = ( $)_2$**

| Weight | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |
|---|---|---|---|---|---|---|---|---|
| +25 | | | | 1 | 1 | 0 | 0 | 1 |
| 8-bit format | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |

**$(25)_{10}$ = ( 00011001 )$_2$**

**$20_{10} + 25_{10}$ = ( $)_2$**

| Carry | | | 1 | | | | | |
|---|---|---|---|---|---|---|---|---|
| 20 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 |
| 25 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 45 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |

**Ans: $20_{10} + 25_{10}$ = ( 00101101 )$_2$**

**5 Marks**

**1. a) Write the procedure to convert fractional Decimal to Binary**
**b) Convert $(98.46)_{10}$ to Binary - Mar 2020, Mar 2023**

**a) The procedure to convert fractional Decimal to Binary**

**Step 1:** Multiply the **decimal fraction** by **2** and **note** the integer part.
The integer part is **either 0 or 1.**
**Step 2: Discard** the **integer part** of the **previous product**.
**Multiply** the fractional part of the **previous** product by **2**.
**Repeat Step 1** until the **same fraction repeats** or **terminates(0).**
**Step 3:** The **resulting integer part** forms a sequence **0s and 1s** that become the **binary** equivalent of **decimal fraction**.
**Step 4:** The **final answer** is to be written from **first integer part** obtained till the **last integer part** obtained.

**b) Convert $(98.46)_{10}$ to Binary**

**i) Integer part**

**$(98)_{10}$ = ( $)_2$**

| | | | | |
|---|---|---|---|---|
| 2 | 98 | | | |
| 2 | 49 | - | 0 | LSB |
| 2 | 24 | - | 1 | |
| 2 | 12 | - | 0 | |
| 2 | 6 | - | 0 | |
| 2 | 3 | - | 0 | |
| MSB | 1 | - | 1 | |

**$(0.46)_{10}$ =( $)_2$**

**0.46 x 2 = 0.92 = 0**

**0.92 x 2 = 1.84 = 1**

**0.84 x 2 = 1.68 = 1**

**0.68 x 2 = 1.36 = 1**

**0.36 x 2 = 0.72 = 0**

**0.72 x 2 = 1.44 = 1**

**0.44 x 2 = 0.88 = 0**

**Ans: $(98.46)_{10}$ = ( 1100010 .0111010…)$_2$**

**2. Find 1's Complement and 2's Complement for the following Decimal number**

**a) -98** **b) -135**

**$(-98)_{10} = (\ )_2$**

| Weight | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |
|---|---|---|---|---|---|---|---|---|
| +98 | | 1 | 1 | 0 | 0 | 0 | 1 | 0 |
| 8-bit format | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 |
| Carry | | | | | | | 1 | |
| 1's Complement | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 |
| Add 1 bit | | | | | | | | 1 |
| -98 2's Complement | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 |

0 + 0 = 0

0 + 1 = 1

1 + 0 = 1

1 + 1 = 10

10 + 1 = 11

Or

1 + 1 + 1 = 11

**$(-98)_{10} = (\ 10011110\ )_2$**

**$(-135)_{10} = (\ )_2$**

| Weight | 256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |
|---|---|---|---|---|---|---|---|---|---|
| +135 | | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 8-bit format | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| Carry | | | | | | | | | |
| 1's Complement | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 |
| Add 1 bit | | | | | | | | | 1 |
| -98 2's Complement | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |

**$(-135)_{10} = (\ 101111001\ )_2$**

**3. a) Add $1101010_2 + 101101_2$** - *Mar 2023*

**b) Subtract $1101011_2 – 111010_2$**

**a) Add $1101010_2 + 101101_2$**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Carry** | **1** | | **1** | | | | |
| | **1** | **1** | **0** | **1** | **0** | **1** | **0** |
| | | **1** | **0** | **1** | **1** | **0** | **1** |
| **1** | **0** | **0** | **1** | **0** | **1** | **1** | **1** |

**$1101010_2 + 101101_2 = 10010111_2$**

0 + 0 = 0

0 + 1 = 1

1 + 0 = 1

1 + 1 = 10

10 + 1 = 11

Or

1 + 1 + 1 = 11

**b) Subtract $1101011_2 – 111010_2$**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Borrow** | **0** | **10** | **10** | | | | |
| | ~~**1**~~ | ~~**1**~~ | ~~**0**~~ | **1** | **0** | **1** | **1** |
| | | **1** | **1** | **1** | **0** | **1** | **0** |
| | **0** | **1** | **1** | **0** | **0** | **0** | **1** |

**$1101011_2 – 111010_2 = 0110001_2$**

0 - 0 = 0

0 - 1 = 1 (borrow)

1 - 0 = 1

1 - 1 = 0

10 - 1 = 1

**5 Marks – Public Examination Question**

**1.**Convert the following Decimal numbers to its equivalent Binary, Octal and Hexadecimal.-**Mar 2022** i)255 ii) 126

2. i) Convert$(58.46)_{10}$ to Binary – ***Mar 2024***

ii) Find 1's Complement and 2's Complement for the following Decimal Numbers. 1) -24 2) -65

# 3. COMPUTER ORGANIZTION

## 1 Marks

1. Which of the following is said to be the brain of a computer?

a) Input devices b) Output devices

c) Memory device **d) Microprocessor**

2. Which of the following is not the part of a microprocessor unit?

a) ALU b) Control unit

**c) Cache memory** d) register

3. How many bits constitute a word?

a) 8 b) 16

c) 32 **d) determined by the processor used.**

4. Which of the following device identifies the location when address is placed in the memory address register?

a) Locator b) encoder

**c) decoder** d) multiplexer

5. Which of the following is a CISC processor? – **Mar 2020**

a) Intel P6 b) AMD K6

**c) Pentium III** d) Pentium IV

6. Which is the fastest memory?

a) Hard disk b) Main memory

**c) Cache memory** d) Blue-Ray disc

7. How many memory locations are identified by a processor with 8 bit address bus at a time?

a) 28 b) 1024

**c) 256** d) 8000

8. What is the capacity of 12cm diameter DVD with single sided and single layer?

**a) 4.7 GB** b) 5.5 GB

c) 7.8 GB d) 2.2 GB

9. What is the smallest size of data represented in a CD? -**Mar 2023**

a) blocks b) sectors

**c) pits** d) tracks

10. Display devices are connected to the computer through.

a) USB port b) Ps/2 port

c) SCSI port **d) VGA connector**

11. Which of the following is a RISC Processor? – **Mar 2024**

a) Pentium III **b) Pentium IV** c) Intel 386 d) Pentium II

## 2 Marks

**1. What are the parameters which influence the characteristics of a microprocessor?**

- Clock Speed
- Instruction set
- Word size

**2. What is an instruction?**

A command which is **given to a computer to perform an operation** on data is called an **instruction**.

**3. What is a program counter? -Mar 2023**

- The **P**rogram **C**ounter **(PC)** is a **special register** in the CPU which always keeps the address of the next instruction to be executed.
- The **A**rithmetic and **L**ogic **U**nit of CPU places the address of the memory to be fetched into the **M**emory **A**ddress **R**egister

**4. What is HDMI?**

- **H**igh-**D**efinition **M**ultimedia **I**nterface is an **audio/video** interface
- which transfers the **uncompressed** video and audio data from a **video controller,**
- To a compatible computer **M**onitor, **LCD** projector, **D**igital **T**elevision etc.

**5. Which source is used to erase the content of a EPROM?**

- Ultraviolet rays is used to erase the content of a EPROM

3 Marks

**1. Differentiate Computer Organization from Computer Architecture.**

| Computer Organization | Computer Architecture |
|---|---|
| Computer organization deals with the hardware components of a computer system such as Input / Output devices, CPU, Storage Devices and Primary Memory. | Computer Architecture also deals with how they are interconnected to implement an architectural specification. |
| It deals with the hardware components that are transparent to the programmer. | It deals with the engineering considerations involved in designing a computer. |

**2. Classify the microprocessor based on the size of the data. – Mar23**

Depending on the data width, microprocessors can process instructions.

- 8-bit microprocessor
- 16-bit microprocessor
- 32-bit microprocessor
- 64-bit microprocessor

**3. Write down the classifications of microprocessors based on the instruction set. – Mar 2024**

- The size of the instruction set is important considerations while categorizing microprocessors.
- Reduced Instruction Set Computers (RISC)
  **Example:** Pentium IV, Inter P6, AMD K6 and K7
- Complex Instruction Set Computers (CISC)
  **Example:** Intel 386 & 486, Pentium, Pentium II and III.

**4. Differentiate PROM and EPROM**

| PROM | EPROM |
|---|---|
| Programmable read only memory is a non-volatile memory | Erasable Programmable Read Only Memory is a special type of memory. |
| PROMs retain their contents even when the computer is turned off. | EPROM retains its contents until it is exposed to ultraviolet light. |
| PROM can be written only once and cannot be erased. | Ultraviolet rays is used to erase the content of a EPROM |

**5. Write down the interfaces and ports available in a computer.**

**Serial Port:** To connect the external devices, found in old computers.

**Parallel Port:** To connect the printers, found in old computers.

**USB Ports:** To connect external devices like cameras, scanners etc.

**VGA Connector:** To connect a monitor or LCD Projector.

**Audio Plugs:** To connect sound speakers, microphone etc.

**PS/2 Port:** To connect mouse and keyboard to PC.

**SCSI Port:** To connect the hard disk drives and network connectors.

**6. Differentiate CD and DVD**

| CD | DVD |
|---|---|
| CD stands for Compact Disk | DVD stands for Digital Versatile Disc. |
| CD data is represented as tiny indentations known as “pits” | DVD-ROM can be visually determined nothing the number of data sides of the disc. |
| Capacity: CD-ROM is 700 MB | Capacity: DVD is 4.7GB |
| Single –layered sides are usually silver-coloured | Double-layered sides are usually gold-coloured. |

**7. How will you differentiate a flash memory and an EEPROM?**

| Flash Memory | EEPROM |
|---|---|
| Flash memory is an electronic (solid-state) non-volatile computer storage. | Electrically Erasable Programmable Read Only Memory is a special type of PROM |
| Flash memory offers fast access times. | EEPROM is slower in performance. |
| It can be erased by exposing it to an electrical charge. | It can be electrically erased and reprogrammed. |

5 Marks

**1. How the read and write operations are performed by a processor? Explain.**

- The CPU has a Memory Data Register(MDR) and a Memory Address Register (MAR).
- The Memory Data Register (MDR) Keeps the data which is transferred between the Memory and the CPU.
- The Program Counter (PC) is a special register in the CPU which always keeps the address of the next instruction to be executed.
- A bus is a collection of wires used for communication between the internal components of a computer.
- The word in the RAM has the same size (no. of bits) as the Memory Data Register (MDR).
- If the processor is an 8-bit processor like Intel 8085, its MDR and the word in the RAM both have 8 bits.
- The read operation transfers the data (bits) from word to Memory Data Register.
- The write operation transfers the data(bits) from Memory Data Register to word.

**2. Explain the characteristics of a microprocessor. – Mar 2020**

- Clock speed
- Instruction set
- Word size

**Clock speed**

Every microprocessor has an internal clock that regulates the speed at which it executes instructions is called the clock speed. Clock speed is measured in MHz(Mega Hertz) or in GHz(Giga Hertz).

**Instruction Set**

A command which given to a computer to perform an operation on data is called as an instruction set.

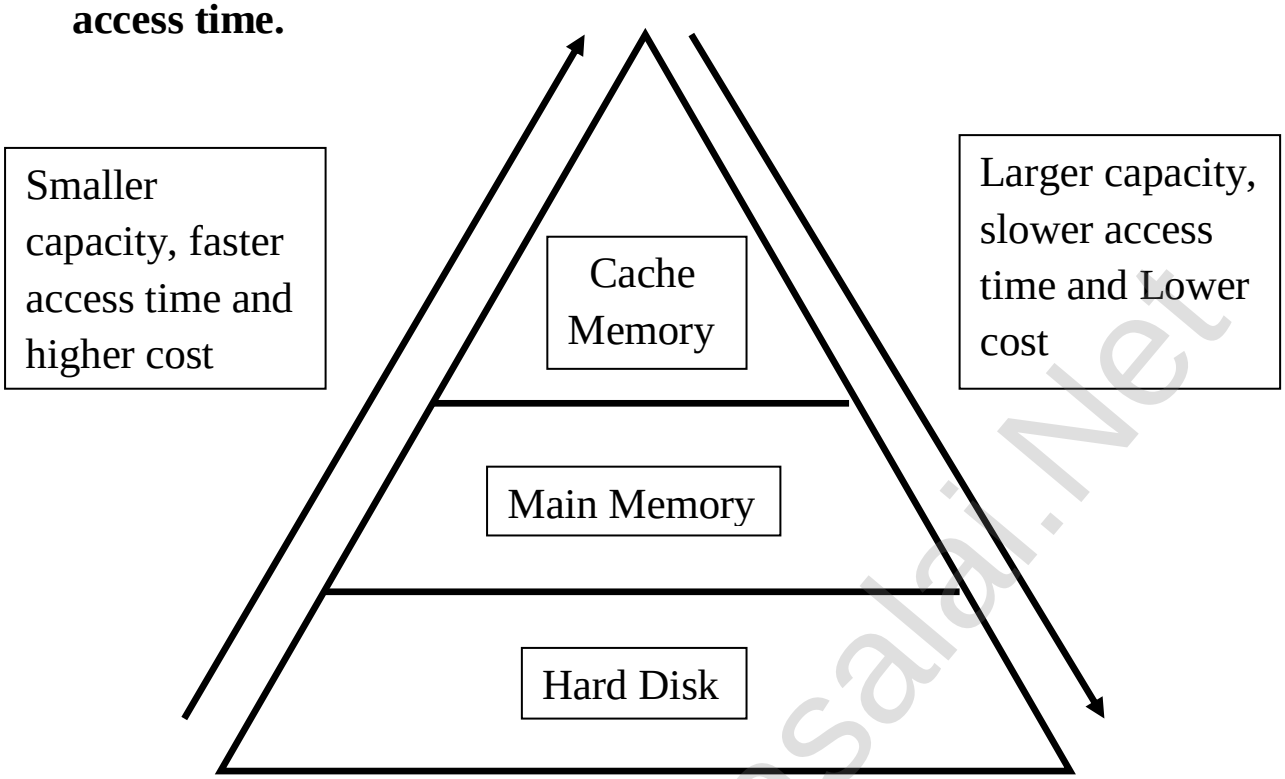
- Data transfer
- Arithmetic operations
- Logical operations
- Control flow
- Input/output

**Word Size**

The number of bits that can be processed by a processor in a single instruction is called its word size.

Word size determines the amount of RAM that can be accessed by a microprocessor.

**3. Arrange the memory devices in ascending order based on the access time.**



**4. Explain the types of ROM. – Mar 2022,Mar 2024**

- Read Only Memory
- Programmable Read Only Memory
- Erasable Programmable Read Only Memory
- Electrical Erasable Read Only Memory

**Read Only Memory (ROM)**

Read only memory refers to special memory in a computer with pre-recorded data at manufacturing time which cannot be modified.

**Programmable Read Only Memory (PROM)**

Programmable read only memory is a non-volatile memory.

PROMs retain their contents even when the computer is turned off.

PROM can be written only once and cannot be erased.

**Erasable Programmable Read Only Memory (EPROM)**

Erasable Programmable Read Only Memory is a special type of memory.

EPROM retains its contents until it is exposed to ultraviolet light.

Ultraviolet rays is used to erase the content of a EPROM

**Electrically Erasable Programmable Read Only Memory (EEPROM)**

Electrically Erasable Programmable Read Only Memory is a special type of PROM
EEPROM is slower in performance.
It can be electrically erased (electrical charge) and reprogrammed.

# 4. THEORETICAL CONCEPTS OF OPERATING SYSTEM

## 1 Marks

1. Operating System is a
   a) Application Software b) Hardware
   **c) System Software** d) Component
2. Identify the usage of Operating Systems
   a) Easy interaction between the human and computer
   b) Controlling input & output Devices
   c) Managing use of main memory
   **d) All the above**
3. Which of the following is not a function of an Operating System? – **Mar 2023**
   a) Process Management b) Memory Management
   c) Security Management **d) Complier Environment**
4. Which of the following OS is a Commercially licensed Operating system?
   **a) Windows** b) UBUNTU c) FEDORA d) REDHAT
5. Which of the following Operating systems support Mobile Devices?
   a) Windows 7 b) Linux c) BOSS **d) iOS**
6. File Management manages - **Mar 2022**
   a) Files b) Folders c) Directory systems **d) All the above**
7. Interactive Operating System provides
   **a) Graphics User Interface(GUI)** b) Data Distribution
   c) Security Management d) Real Time Processing
8. An example for single task operating system is
   a) Linux b) Windows **c) MS-DOS** d) Unix
9. The File management system used by Linux is – **Mar 2024**
   **a) ext2** b) NTFS c) FAT d) NFTS
10. How many level of securities is provided by OS to the user?
    **a) 3** b) 2 c) 5 d) 4

**2 Marks**

**1. List out any two uses of Operating System?**

- To ensure that a computer can be used to extract what the user wants it do.
- Easy interaction between the users and computers.
- Controlling Input and Output Devices.

**2. What is multi-user Operating system? - Mar 2023**

- Multi-user Operating system is used in computers and laptops that allow same data and applications to be accessed by multiple users at the same time.
- The users can also communicate with each other.

**Example:** Windows, UNIX and Linux

**3. What is a GUI? - Mar 2023 (3M)**

- The GUI is a window based system with a pointing device to direct I/O, choose from menus, make selections and a keyboard to enter text.
- Its vibrant colours attract the user very easily.

**4. What are the security management features available in Operating System?**

- File access level
- System level
- Network level

**5. What is multi-processing?**

- Multi-processing is a one of the features of Operating System.
- It has two or more processors for a single running process.
- Processing takes place in parallel is known as parallel processing.

**6. What are the different Operating Systems used in computer? – Mar 2024**

Operating Systems used in personal computers and laptops are Windows, UNIX and Linux.

- Single User Operating Systems
- Multi-user Operating Systems
- Distributed Operating Systems

**3 Marks**

**1. What are the advantages and disadvantages of Time-sharing features?**

| Advantages | Disadvantages |
|---|---|
| It allows execution of multiple tasks or processes concurrently. | Problem of reliability. |
| Quick response. | Question of security and integrity of user programs and data. |
| Avoids duplication of software. | Problem of data communication. |
| Reduces CPU idle time. | Various processes after a time is elapsed. |

**2. List out the key features of Operating system – Mar 2022**

- User Interface
- File Management
- Memory Management
- Fault Tolerance
- Process Management
- Security Management

**3. Write a note on Multiprocessing**

- Multi-processing is a one of the features of Operating System.
- It has two or more processors for a single running process.
- Processing takes place in parallel is known as parallel processing.
- The execution takes place in parallel, this feature is used for high speed execution which increases the power of computing.

**5 Marks**

**1. Explain the concept of a Distributed Operating System along with its advantages. – Mar 2020, Mar 2022**

- The Distributed Operating System is used to access shared data and files that reside in any machine around the world.
- The user can handle the data from different locations. The users can access as if it is available on their own computer.

**Advantages of Distributed Operating System**

- A user at one location can make use of all the resources available at another location over the network.
- Many computer resources can be added easily in the network.
- Improves the interaction with the customers and clients.
- Reduces the load on the host computer.

**2. List out the points to be noted while creating a user interface for an Operating system. – Mar 2024**

- The user interface should enable the user to retain this expertise for a longer time.
- The user interface should also satisfy the customer based on their needs.
- The user interface should save user's precious time.
- The ultimate aim of any product is to satisfy the customer. The User Interface is also to satisfy the customer.
- The user interface should reduce number of errors committed by the user.

**3. Explain the process management algorithms in Operating System.**

Process management is function that includes creating and deleting processes and providing mechanisms for processes to communicate and synchronize with each other.

A system task, such as sending output to a printer or screen can also be called as a Process.

- FIFO (First In First Out)
- SJF (Shortest Job First)
- Round Robin
- Based On Priority

**FIFO (First In First Out) Scheduling**

- FIFO algorithm is based on queuing technique.
- The processes are executed in the order of the queue (row).

**Example:**

Student standing a queue can get their Grade sheet.

## SJF (Shortest Job First) Scheduling

- This algorithm works based on the size of the job being executed by the CPU.

**Example:**

Take Two jobs A and B
A= 6 kilo bytes B= 9 kilo bytes
First the job "A" will be assigned and then job "B" gets its turn.

## Round Robin Scheduling

- The Round Robin scheduling algorithm is designed especially for time sharing systems.
- Jobs are assigned and processor time in a circular method.

**Example:**

Take three jobs A, B, C. Fist the job A is assigned to CPU the job B and job C and then again A, B and C and so on.

## Based on Priority

- The give job is assigned based on a Priority.
- The job which has higher priority is more important than other jobs.

**Example:**

Take two jobs A and B. Let the priority of A be 5 and priority B be 7.

Job B is assigned to the processor before job A.

# 5. WORKING WITH WINDOWS OPERATING SYSTEM

## 1 Marks

1. From the options given below, choose the operations managed by the operating system.

a) Memory b) Processes

c) Disks and I/O devices **d) All of the above**

2. Which is the default folder for many Windows Applications to save your file? – **Mar 2020**

**a) My Document** b) My Pictures

c) Documents and Settings d) My Computer

3. Under which of the following OS, the option Shift + delete will permanently deletes a file or folder?

**a) Windows 7** b) MS-DOS

c) Linux d) Android OS

4. What is the meaning of "Hibernate" in Windows XP/ Windows 7?

a) Restart the Computer in safe mode.

b) Restart the Computer in hibernate mode.

c) Shutdown the Computer terminating all the running applications

**d) Shutdown the Computer without closing the running applications**

5. The shortcut key used to rename a file in windows – **Mar 2023**

**a) F2** b) F4 c) F5 d) F6

**2 Marks**

**1. What is known as Multitasking?**

Multiple applications can execute simultaneously in Windows, and this is known as "Multitasking".

**2. What are called standard icons – Mar 2022**

Icons which are available on desktop by default while installing Windows OS are called standard icons.

**3. Differentiate Files and Folders.**

| Files | Folders |
|---|---|
| A file consists of a collection of data. | A folder stores files and folders. It is also called a directory. |
| Each file has its own extension. | A folder does not have any extension |
| Folder and sub folder cannot be created in a file | Folder and sub folder can be created in a folder. |

**4. Differentiate Save and Save As option.**

| Save | Save As |
|---|---|
| "Save" command is used to save a document by only one name | "Save As" command can save a file by two or more than two names. |
| **Shortcut Key:** Ctrl + S | **Shortcut Key:** Ctrl + Shift+ S |

**5. How will you Rename a File? – Mar 2023**

Rename files or folders can be done in number of ways such as using the File menu, left mouse button or right mouse button.

- Select the File
- Click File → Rename
- Type in the new name.
- To finalise the renaming operation

**3 Marks**

**1. What are the functions of Windows Operating system.– Mar 2022**

- Access applications on the computer.
- Load any new program on the computer.
- Manage hardware.
- File management activities.
- Change computer settings.

**2. Write a note on Recycle bin.**

- Recycle bin is a special folder to keep the files or folders deleted by the user.
- The user cannot access the files or folders available in the Recycle bin without restoring it.
- Restore option is used to restore the file or folder from the Recycle bin.
- To delete all files in the Recycle bin, select Empty the Recycle bin.

**3. Write a note on the elements of a window.**

- **Title Bar** – Display the name of the application and the name of the document.
- **Menu Bar** – Menus in the menu bar can be accessed by pressing Alt key.
- **The Workspace** – Enter or type the text of your document.
- **Scroll bars** – Scroll the workspace horizontally or vertically.
- **Corners and borders** – To drag and resize the windows.

**4. Write the two ways to create a new folder. – Mar 2024**

**Method I**

Step 1: Open Computer Icon.
Step 2: Open any drive where you want to create a new folder.
Step 3: Click on **File → New → Folder.**
Step 4: A new folder is created with the default name "New folder".
Step 5: Type in the folder name and press Enter key.

**Method II**

Step 1: In the Desktop, **Right click → New → Folder**
Step 2: A Folder appears with the default name "New folder" and it will be highlighted.
Step 3: Type the name you want and press Enter Key.
Step 4: The name of the folder will change.

**5. Differentiate copy and move- Mar 2023**

| Copy | Move |
|---|---|
| Copy option is used to copy a file or folder, and paste in a specified location. | Cut option is used to move a selected file or folder from one place to another. |
| Edit → Copy or<br>Ctrl + C or<br>Right click→Copy | Edit → Cut or<br>Ctrl + X or<br>Right click → Cut |

**5 Marks**

**3. Write the procedure to create shortcut in Windows OS.**

- Shortcuts to you most often used folders and files may be created and placed on the Desktop to help automate your work.
- Select the file or folder that you wish to have as a shortcut on the Desktop.
- Right click on the file or folder.
- Select **Send to** from the shortcut menu, then select Desktop(create shortcut) from the sub-menu.
- A shortcut for the file or folder will now appear on your desktop and you can open it from the desktop in the same ways an any other icon.

**1. Explain the versions of Windows Operating System. – Mar 2023**

| Versions | Year | Specific features |
|---|---|---|
| Windows 1.x | 1985 | Introduction of GUI in 16 bit processor<br>Mouse was introduced. |
| Windows 2.x | 1987 | Minimize or Maximize windows.<br>Control panel feature was introduced. |
| Windows 3.x | 1992 | Introduced the concept of multitasking.<br>Supported 256 colours . |
| Windows 95 | 1995 | Introduced start button, taskbar, Windows Explorer and Start menu.<br>Introduced 32 multiprocessor. |
| Windows 98 | 1998 | Web browser (Internet Explorer) with the OS.<br>Plug and play feature was introduced. |
| Windows NT | | Designed to act as servers in network. |
| Windows Me | 2000 | Introduced automated system diagnostics and recovery tools. |
| Windows 2000 | 2000 | Served as an Operating System for business desktop and laptop systems. |
| Windows XP | 2001 | Introduced 64-bit processor.<br>Improved Windows appearance with themes and offered a stable version. |
| Windows Vista | 2006 | Updated the look and feel of Windows. |
| Windows 7 | 2009 | Booting time was improved, User interface like Aero Peek, pinning programs to taskbar, handwriting recognition etc. and Internet Explorer 8. |
| Windows 8 | 2012 | Start button was removed.<br>multi-core processing, solid state drives, touch screens and other alternate input methods. |
| Windows 10 | 2015 | Start Button was added again.<br>Multiple desktop.<br>Central Notification Center for App notification and quick actions.<br>Cortana voice activated personal assistant. |

**2. Explain the different ways of finding a file or Folder. – Mar 2024**

**To find a file or folder:**

- Click the Start button, the search box appears at the bottom of the start menu.
- Type the name of the file or the folder you want to search.
- The files or the folders with the specified names will appear, if you click that file, it will directly open that file or folder.
- It will display the list of files or folders starting with the specified name.
- There is another option called "See more results" which appears above the search box.
- If you click it, it will lead you to a Search Results dialog box where you can click and open that file or the folder.

**Searching Files or folders using Computer icon**

- Click Computer Icon from desktop or from Start menu.
- The computer disk drive screen will appear and at the top right corner of that screen, there is a search box option.
- Type the name of the file or the folder you want to search.
- It will display the list of files or folders starting with the specified name.
- Just click and open that file or the folder.

**1 Marks**

1. Which is displayed at the top part of the window? – **Mar 2022**
   **Ans.: Title bar**
2. Which menu contains the Numbering option? – **Mar 2024**
   **Ans.: Format**

**3Marks**

**1**. Compare – Cut, Paste and Copy, Paste – **Mar 2023**