Q11.What is Secondary Memory? Explain their types.

Ans:- Secondary memory is computer memory that is non-volatile, persistent, and not immediately accessible by a computer or processor. It allows users to store data and information that can be retrieved, transmitted, and used by apps and services quickly and easily. Secondary storage is another name for secondary memory.

Types of Secondary Memory:- There are two types of secondary memory

- Fixed storage:- A fixed storage device in secondary memory is an internal media device used to store data in a computer system. Fixed storage is sometimes known as hard drives or fixed disc drives. In most cases, the computer system's data is saved in the fixed storage device that's incorporated into a given system. Fixed storage does not preclude their removal from the computer system; with the assistance of an expert or engineer, you may remove the fixed storage device for repairs, upgrades, or maintenance, among other things. Fixed storage have also types:-
    1. Hard disk drives (HDD)
    2. SSD (solid-state disk)
    3. Internal flash memory (rare)
- Removable storage:- Removable storage refers to an external media device that is mainly used to store data on a computer system in secondary memory. Disk drives or external drives are common names for removable storage. It's a removable storage device that can be inserted or withdrawn from the computer as needed. Removable Storage have also different types
    1. Optical discs (such as DVDs, CDs, Blu-ray discs, etc.)
    2. Floppy disks
    3. Memory cards
    4. Disk packs
    5. Magnetic tapes
    6. Paper storage (such as punched cards, punched tapes, etc.)

Examples of Secondary Memory:- **Floppy Disk, Compact Disc(CD), Hard Disk, SD Card etc.**

Q12.Difference Between Static and Dynamic ram?

SRAM	**DRAM**
It stores information as long as the power is supplied	It stores information as long as the power is supplied or a few milliseconds when power is switched off.
Transistors are used to store information in SRAM	Capacitors are used to store data in DRAM.

Capacitors are not used hence no refreshing is required.	To store information for a longer time, contents of the capacitor need to be refreshed periodically.
SRAM is faster compared to DRAM	DRAM provides slow access speeds.
It does not have a refreshing unit.	It has a refreshing unit.
These are expensive.	These are cheaper.

Q13.Difference between Ram and ROM?

The definition of RAM is Random Access Memory	Definition of ROM is Read-only Memory
Random Access Memory (RAM) is expensive when compared to ROM	ROM is cheaper when compared to RAM.
The speed of Random Access Memory (RAM) is higher when compared to ROM	The speed of Read-only Memory (ROM) is slower when compared to RAM.
Random Access Memory (RAM) has a higher capacity when compared to ROM	ROM has a lower capacity compared to RAM
Data in RAM can be modified, erased, or read.	Data in ROM can only be read, it cannot be modified or erased.
The data stored in RAM is used by the Central Processing Unit (CPU) to process current instructions	The data stored in ROM is used to bootstrap the computer.

Q14.What is cache memory? How does it is differ from primary memory?

Ans:-Cache Memory is also known as on-chip memory. It is used to decrease the access time within the system. It lies between the processor and the main memory. The recent instructions fetched from the main memory a number of time are stored in the cache. So, the processor does not need to request main memory for such instructions rather it accesses those instructions from cache memory. In this way, the access time is decreased and performance increases.

Primary Memory, also known as “Main Memory”. All the instructions are stored in it. It consists of a number of storage cells, each storing 1 bit. Each location has a unique address. Data is usually accessed in a group of n-bit groups. It is temporary storage.

Q15.Explain 5 different secondary storage devices?

Ans:- 1. **Magnetic disks:** A magnetic disk is a storage device that uses a magnetization process to write, rewrite and access data. It is covered with a magnetic coating and stores data in the form of tracks, spots, and sectors. Hard disks, zip disks, and floppy disks are common examples of magnetic disks.

2. **Optical Disk:** An optical disk is any computer disk that uses optical storage techniques and technology to read and write data. It is a computer storage disk that stores data digitally and uses laser beams to read and write data.

3. **Memory card:** A memory card or memory cartridge is an electronic data storage device used for storing digital information, typically using flash memory. These are commonly used in portable electronic devices, such as digital cameras, mobile phones, laptop computers, and tablets

4. **CD Drive:** CD stands for Compact Disk. CDs are circular disks that use optical rays, usually lasers, to read and write data. They are very cheap as you can get 700 MB of storage space for less than a dollar. CDs are inserted in CD drives built into the CPU cabinet. They are portable as you can eject the drive, remove the CD and carry it with you

5.**DVD Drive:** DVD stands for digital video display. DVD is an optical device that can store 15 times the data held by CDs. They are usually used to store rich multimedia files that need high storage capacity. DVDs also come in three varieties - read-only, recordable, and rewritable

Q16. What is a web box? Define.

Ans:- An earlier computer specialized for Web browsing, email, and other Internet services. Also called an "information appliance" or "Web appliance," such devices cost much less than desktop computers and were designed for ease of use. Today's Internet appliances are Chromebooks, although smartphones and tablets run a huge number of Internet-based apps as well.

Q17.Explain the layers of memory hierarchy.

The memory in a computer can be divided into five hierarchies based on speed as well as use. The processor can move from one level to another based on its requirements. The five hierarchies in the memory are registers, cache, main memory, magnetic discs, and magnetic tapes. The first three hierarchies are volatile memories which means when there is no power, and then automatically they lose their stored data. Whereas the last two hierarchies are not volatile which means they store the data permanently.

Q18.What is virtual memory?

Virtual memory is a feature of an operating system that uses hardware and software to compensate for shortages of physical memory. It transfers pages of data from random access memory (RAM) to disk storage.

Q19. What is pipelining?

Pipelining defines the temporal overlapping of processing. Pipelines are emptiness greater than assembly lines in computing that can be used either for instruction processing or, in a more general method, for executing any complex operations. It can be used efficiently only for a sequence of the same task, much similar to assembly lines.

Q20. What is software? Explain their types.

In a computer system, the software is basically a set of instructions or commands that tells a computer what to do. Or in other words, the software is a computer program that provides a set of instructions to execute a user's commands and tell the computer what to do. For example like MS-Word, MS-Excel, PowerPoint, etc. The chart below describes the types of software:

Types of system software:

It has two subtypes which are:

1. **Operating System:** It is the main program of a computer system. When the computer system ON it is the first software that loads into the computer's memory. Basically, it manages all the resources such as memory, CPU, printer, hard disk, etc., and provides an interface to the user, which helps the user to interact with the computer system. It also provides various services to other computer software. Examples of operating systems are Linux, Apple macOS, Microsoft Windows, etc.
2. **Language Processor:** As we know that system software converts the human-readable language into a machine language and vice versa. So, the conversion is done by the language processor. It converts programs written in high-level programming languages like Java, C, C++, Python, etc(known as source code), into sets of instructions that are easily readable by machines(known as object code or machine code).

3. **Device Driver:** A device driver is a program or software that controls a device and helps that device to perform its functions. Every device like a printer, mouse, modem, etc. needs a driver to connect with the computer system eternally. So, when you connect a new device to your computer system, first you need to install the driver of that device so that your operating system knows how to control or manage that device.

Q21. Describe flyanns classification.

M.J. Flynn proposed a classification for the organization of a computer system by the number of instructions and data items that are manipulated simultaneously.

The sequence of instructions read from memory constitutes an **instruction stream**.

The operations performed on the data in the processor constitute a **data stream**.

Flynn's classification divides computers into four major groups that are:

1. Single instruction stream, single data stream (SISD)
2. Single instruction stream, multiple data stream (SIMD)
3. Multiple instruction stream, single data stream (MISD)
4. Multiple instruction stream, multiple data stream (MIMD)

Q22. What is a number system? Explain their types.

Ans:- The technique to represent and work with numbers is called the number system. The decimal number system is the most common number system. Other popular number systems include binary number systems, octal number system, hexadecimal number system, etc.

Types of Number Systems

There are various types of number systems in mathematics. The four most common number system types are

1. Decimal number system (Base- 10)
2. Binary number system (Base- 2)
3. Octal number system (Base-8)
4. Hexadecimal number system (Base- 16)

1.Decimal Number System (Base 10 Number System)

The decimal number system has a base of 10 because it uses ten digits from 0 to 9. In the decimal number system, the positions successive to the left of the decimal point represent units, tens, hundreds, thousands and so on. This system is expressed in decimal numbers. Every position shows a particular power of the base (10).

Ex- The decimal number 1457 consists of the digit 7 in the units position, 5 in the tens place, 4 in the hundreds position, and 1 in the thousands place whose value can be written as:

$(1\times10_3) + (4\times10_2) + (5\times10_1) + (7\times10_0)$

(1×1000) + (4×100) + (5×10) + (7×1)

1000 + 400 + 50 + 7

1457

2.Binary Number System (Base 2 Number System)

The base 2 number system is also known as the Binary number system wherein, only two binary digits exist, i.e., 0 and 1. Specifically, the usual base-2 is a radix of 2. The figures described under this system are known as binary numbers which are a combination of 0 and 1. For example, 110101 is a binary number.

We can convert any system into binary and vice versa.

3.Octal Number System (Base 8 Number System)

In the octal number system, the base is 8 and it uses numbers from 0 to 7 to represent numbers. Octal numbers are commonly used in computer applications. Converting an octal number to decimal is the same as decimal conversion and is explained below using an example.

Example: Convert 215_8 into decimal.

Solution:

$215_8 = 2 \times 8^2 + 1 \times 8^1 + 5 \times 8^0$

$= 2 \times 64 + 1 \times 8 + 5 \times 1$

$= 128 + 8 + 5$

$= 141_{10}$

4. Hexadecimal Number System (Base 16 Number System)

In the hexadecimal system, numbers are written or represented with base 16. In the hexadecimal system, the numbers are first represented just like in the decimal system, i.e. from 0 to 9. Then, the numbers are represented using the alphabet from A to F

Q23. What is 1’s and 2’s compliment?

1’s complement of a binary number is another binary number obtained by toggling all bits in it, i.e., transforming the 0 bit to 1 and the 1 bit to 0. In the 1’s complement format, the positive numbers remain unchanged. The negative numbers are obtained by taking the 1’s complement of positive counterparts.

for example, +9 will be represented as 00001001 in eight-bit notation and -9 will be represented as 11110110, which is the 1’s complement of 00001001.

Ex:- 1's complement of "0111" is "1000"

1's complement of "1100" is "0011"

2's complement of a binary number is 1, added to the 1's complement of the binary number. In the 2's complement representation of binary numbers, the MSB represents the sign with a '0' used for a plus sign and a '1' used for a minus sign. the remaining bits are used for representing magnitude. positive magnitudes are represented in the same way as in the case of sign-bit or 1's complement representation. Negative magnitudes are represented by the 2's complement of their positive counterparts.

Q24. Convert these no's to 2's: 110011, 10101, 1000000, 101110110

Q25. Convert these no's to binary, octal and hexadecimal nos: 16,52,68,27,55

Q26. Write notes on floating point, grey code, ASCII code, and EBCDIC code

Floating Point:- A floating point number, is a positive or negative whole number with a decimal point. Ex:- 5.5, 7.20, etc.

Grey code:- Gray Code is the minimum-change code category of coding in which, the two consecutive values changes by only a single bit. More specifically we can say, it is a binary number system where while moving from one step to the next, only a single bit shows variation.

This coding technique was invented by **Frank Gray**, thus it is named so.

ASCII Code:- ASCII Stands for American Standard Code for Information Interchange (pronounced 'as-key'). This is a standard set of characters understood by all computers, consisting mostly of letters and numbers plus a few basic symbols such as $ and %. Which employs the 128 possible 7-bit integers to encode the 52 uppercase and lowercase letters and 10 numeric digits of the Roman alphabet, plus punctuation characters and some other symbols. The fact that almost everyone agrees on ASCII

makes it relatively easy to exchange information between different programs, different operating systems, and even different computers.

EBCDIC CODE:- EBCDIC, in full extended binary-coded decimal interchange code, data-encoding system, developed by IBM and used mostly on its computers, that uses a unique eight-bit binary code for each number and alphabetic character as well as punctuation marks and accented letters and nonalphabetic characters.

Q27. What is boolean algebra? Explain their rules

Boolean algebra is the category of algebra in which the variable's values are the truth values, **true and false,** ordinarily denoted 1 and 0 respectively. It is used to analyze and simplify digital circuits or digital gates. It is also called **Binary Algebra** or **logical Algebra**.

Laws of Boolean Algebra

There are six types of Boolean algebra laws. They are:

- Commutative law
- Associative law
- Distributive law
- AND law
- OR law
- Inversion law

Those six laws are explained in detail here.

Commutative Law

Any binary operation which satisfies the following expression is referred to as a commutative operation. Commutative law states that changing the sequence of the variables does not have any effect on the output of a logic circuit.

- A. B = B. A

- A + B = B + A

Associative Law

It states that the order in which the logic operations are performed is irrelevant as their effect is the same.

- (A. B). C = A . (B . C)
- (A + B) + C = A + (B + C)

Distributive Law

Distributive law states the following conditions:

- A. (B + C) = (A. B) + (A. C)
- A + (B. C) = (A + B) . (A + C)

AND Law

These laws use the AND operation. Therefore they are called AND laws.

- A .0 = 0
- A . 1 = A
- A. A = A
- $A.\bar{A}=0$
-

OR Law

These laws use the OR operation. Therefore they are called OR laws.

- A + 0 = A
- A + 1 = 1
- A + A = A
- $A+\bar{A}=1$
-

Inversion Law

In Boolean algebra, the inversion law states that the double inversion of variable results in the original variable itself.

A- = A

Q28. Explain canonical expressions.

Ans:- Laws of Boolean Algebra

There are six types of Boolean algebra laws. They are:

- **Commutative law**
- **Associative law**
- **Distributive law**
- **AND law**
- **OR law**
- **Inversion law**

Those six laws are explained in detail here.

Commutative Law

Any binary operation which satisfies the following expression is referred to as a commutative operation. Commutative law states that changing the sequence of the variables does not have any effect on the output of a logic circuit.

- **A. B = B. A**
- **A + B = B + A**

Associative Law

It states that the order in which the logic operations are performed is irrelevant as their effect is the same.

- **(A. B). C = A . (B . C)**
- **(A + B) + C = A + (B + C)**

Distributive Law

Distributive law states the following conditions:

- **A. (B + C) = (A. B) + (A. C)**
- **A + (B. C) = (A + B) . (A + C)**

AND Law

These laws use the AND operation. Therefore they are called AND laws.

- **A .0 = 0**
- **A . 1 = A**
- **A. A = A**
- **$A.A^{-}=0$**

OR Law

These laws use the OR operation. Therefore they are called OR laws.

- **A + 0 = A**
- **A + 1 = 1**
- **A + A = A**
- **$A+A^{-}=1$**
-

Inversion Law

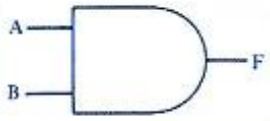
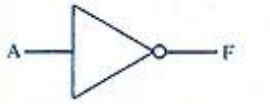
In Boolean algebra, the inversion law states that double inversion of variable results in the original variable itself.

Q28. Explain canonical expressions.

Canonical Form – In Boolean algebra, the Boolean function can be expressed as Canonical Disjunctive Normal Form known as minterm and some are expressed as Canonical Conjunctive Normal Form known as maxterm.

Q29. Define logic gates with their truth table.

Logic gates are the basic building blocks of any digital system. It is an electronic circuit having one or more than one inputs and only one output. The relationship between the input and the output is based on a certain logic. Based on this, logic gates are named as AND gate, OR gate, NOT gate, etc.

Name	Graphic Symbol	Algebraic Function	Truth Table
AND		$F = A \cdot B$ or $F = AB$	A B | F 0 0 | 0 0 1 | 0 1 0 | 0 1 1 | 1
OR		$F = A + B$	A B | F 0 0 | 0 0 1 | 1 1 0 | 1 1 1 | 1
NOT		$F = \overline{A}$ or $F = A'$	A | F 0 | 1 1 | 0
NAND		$F = (\overline{AB})$	A B | F 0 0 | 1 0 1 | 1 1 0 | 1 1 1 | 0
NOR		$F = (\overline{A + B})$	A B | F 0 0 | 1 0 1 | 0 1 0 | 0 1 1 | 0

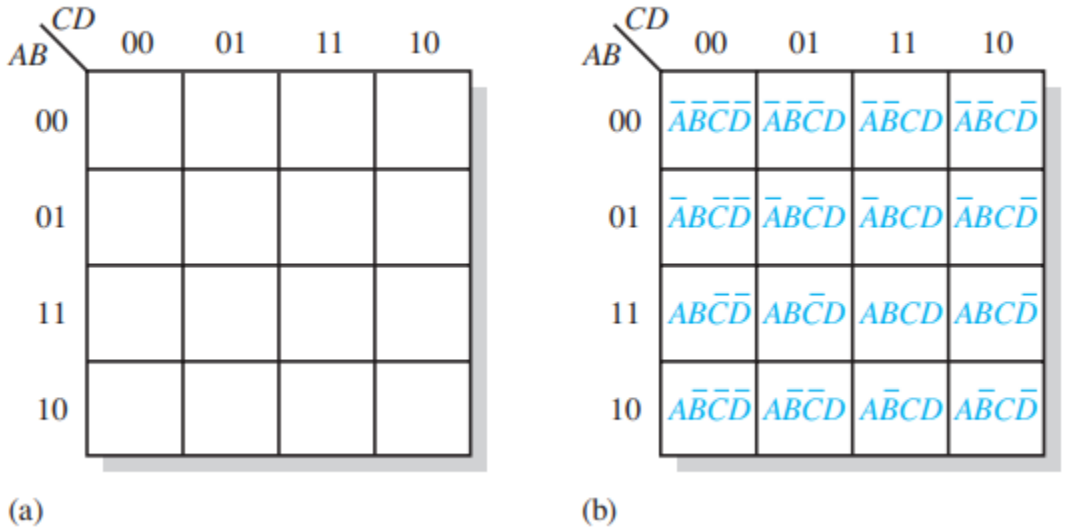
Q30.What is k map explain with 4 variables?

- A Karnaugh map is similar to a truth table because it presents all of the possible values of input variables and the resulting output for each value.
- Instead of being organized into columns and rows like a truth table, the Karnaugh map is an array of cells in which each cell represents a binary value of the input variables.
- The cells are arranged in a way so that simplification of a given expression is simply a matter of properly grouping the cells.

- Karnaugh maps can be used for expressions with two, three, four, and five variables, but we will discuss only 3-variable and 4-variable situations to illustrate the principles.
- The number of cells in a Karnaugh map, as well as the number of rows in a truth table, is equal to the total number of possible input variable combinations.

The 4-Variable Karnaugh Map:

- The 4-variable Karnaugh map is an array of sixteen cells, as shown in Figure(a).
- Binary values of A and B are along the left side and the values of C and D are across the top.
- The value of a given cell is the binary values of A and B at the left in the same row combined with the binary values of C and D at the top in the same column.



(a) (b)

Q31.Difference between the full adder and half adder, multiplexer, and demultiplexer, serial and parallel adder, coder, and decoder

Ans:-

S.No.	Parameters	Half Adder	Full Adder

1	**Description**	Half adder is a combinational logic circuit that adds two 1-bit digits. The half-adder produces a sum of two inputs.	A full adder is a combinational logic circuit that performs an addition operation on three one-bit binary numbers. The full adder produces a sum of the three inputs and carries value.
2	**Previous carry**	The previous carry is not used.	The previous carry is used.
3	**Inputs**	In Half adder, there are two input bits(A, B).	In full adder, there are three input bits (A, B, C -in).
4	**Outputs**	The generated output is of two bits-Sum and Carries from the input of 2 bits.	The generated output is of two bits- Sum and Carry from the input of 3 bits.
5	**Used as**	A half adder circuit cannot be used in the same way as a full adder circuit.	A full adder circuit can be used in place of a half adder circuit.
6	**Feature**	It is simple and easy to implement	The design of a full adder is not as simple as a half adder.
7	**Logic gates**	It consists of one EX-OR gate and one AND gate.	It consists of two EX-OR, two AND gates, and one OR gate.
8	**Applications**	It is used in Calculators, computers, digital measuring devices, etc.	It is used in Multiple bit addition, digital processors, etc.

The difference between multiplexer and demultiplexer

Multiplexer	**Demultiplexer**
Multiplexer processes the digital information from various sources into a single source.	Demultiplexer receives digital information from a single source and converts it into several sources
It is known as Data Selector	It is known as a data distributor

A multiplexer is a digital switch	Demultiplexer is a digital circuit
It follows a combinational logic type	It also follows a combinational logic type
It has n data input	It has single data input
It has a single data output	It has n data outputs

Difference between the serial adder and parallel adder:-

S.NO	Parameters	Serial Adder	Parallel Adder
1.	Addition Manner	It is used to add two binary numbers in serial form.	It is used to add two binary numbers in parallel form.
2.	**Type of Registers**	A serial adder uses shift registers.	A parallel adder uses registers with parallel loads.
3.	**Requirement**	It requires a single full adder.	It requires multiple full adders.
4.	**Usage of**	A carry flip-flop is used in the serial adder.	Ripple carry adder is used in the parallel adder.
5	**Circuit type**	A serial adder is a sequential circuit.	A parallel adder is a combinational circuit.

Difference between encoder and Decoder is

ENCODER	DECODER
The combinational circuits that modify the binary data into N output lines are known as Encoders	The combinational circuits that convert the binary data into 2N output lines are called Decoders.

In this the output lines are n.	In this, the output lines are 2n.
The implemented signal is considered as actual signal input.	It receives coded binary data as its input.
It is utilized in videos, E-mail, and more.	It is mostly utilized in memory chips, microprocessors, and more.
When it comes to the communication mode, the encoder is situated at the transmitting end	Here, the decoder is situated at the receiving side

Q32. Write notes on SRflip flop, RS flip-flop, nand gate, D flip-flop, JK FF, and MSFF

SRflip flop:- SR flip-flop is a gated set-reset flip-flop. The S and R inputs control the state of the flip-flop when the clock pulse goes from LOW to HIGH. The flip-flop will not change until the clock pulse is on a rising edge. When both S and R are simultaneously HIGH, it is uncertain whether the outputs will be HIGH or LOW.

RS flip flop:- The RS Flip Flop is considered one of the most basic sequential logic circuits. The Flip Flop is a one-bit memory bi-stable device.

NAND Gate:- A NAND Gate is a logic gate that is the opposite of an AND logic gate. It is a combination of AND and NOT gates and is a commonly used logic gate. It is considered a "universal" gate in Boolean algebra as it is capable of producing all other logic gates.

JK FF:- A J-K flip-flop is nothing more than an S-R flip-flop with an added layer of feedback. This feedback selectively enables one of the two set/reset inputs so that they cannot both carry an active signal to the multivibrator circuit, thus eliminating the invalid condition.

MS FF:- In this configuration master and slave are having inverted cock which ensures that only one will act in high clock advice versa. The output which toggles due to J=K=1 during the high of the clock remains at the output of the master but could not proceed to the output of the slave as it is disabled by the clock. So it remains as it is as long as the clock is high. During the low of clock, master is disabled and output of it just followed by slave during low clock and remain as it is till the

the clock is low. So we observe during one clock only one toggling occurs and the output becomes predictable.

The difference between JK FF with MS JK is it's simplicity bit problem of race conditions whereas with little extra hardware MS JK is full-proof FF

Q33. What are registers? Explain their types.

Ans:- Computer registers are high-speed memory storing units. It is an element of the computer processor. It can carry any type of information including a bit sequence or single data.

TYPES OF REGISTER:-

- AC (accumulator)
- MAR Register
- MDR
- MBR

ACCUMULATOR:- The accumulator is another type of central processing unit register that is widely used for storing the logic or intermediate results. The accumulator register has a very important role as if it is not there then all the intermediate results need to be stored in the main memory that can increase the overhead on the memory. It is because then unnecessary read and writes operations will be increased. The accumulator register can easily store the intermediate results. The accessing speed of the accumulator register is much faster compared to the main memory. In many modern systems, there are various types of accumulators that can be used to store the intermediate results. However, more the use of accumulators more complex will be the design.

MAR Register:- The full form of MAR is the memory address register. The memory address register issued to fetch the instructions and data from the memory and helps to execute the instructions. The central processing unit widely used the memory address register to read any type

of data or store any type of data in this type of register. The memory address register stores the address so that data can be easily fetched from the register. The memory address register is mainly used for reading and writing operation of data from memory. At the time of reading operation, the address is fetched from register to access the data, and then this data is fed into other types of registers known as memory data register (MDR). In the writing operation, the data is fetched from the memory data register and stored at the address located by the memory address register. The memory address register always stores the address of the next location where data related operation will be executed.

MDR:- The full form of MDR register is a memory data register. The memory data register is used to store the data that will be stored or will be fetched from the computer memory I.e. Random-access Memory (RAM). The main use of the memory data register is to act as a buffer as it can store anything that can be copied from the computer memory and can be used by the processor for further operations. The memory data register stores the data before the data is transferred to the decoder. There are two types of registering in the memory data register. When the data is fetched from the memory and copied to the MDR the information is stored in one single direction and the data is written by other CPU registers that store data in computer memory. The other use of the memory data register is to store the data and information that can be shifted to other memory components of the system or vice versa.

MBR- The full form of MBR is the memory buffer register. The memory buffer register is used to store information and data that can be read or written in the computer memory. The main function of the memory buffer register is to store various types of computer instructions and data that can be transferred between computer memory. The memory buffer register is the main memory-related register for the processor present in the processing unit as this register is capable to perform memory-related operations very fast.

Q34. What is counter ? How it is differ from registers.

Ans:- *Counters* and *registers* belong to the category of MSI sequential logic circuits. They have similar architecture, as both counters and registers comprise a cascaded arrangement of more than one flip-flop with or without combinational logic devices. Both constitute very important

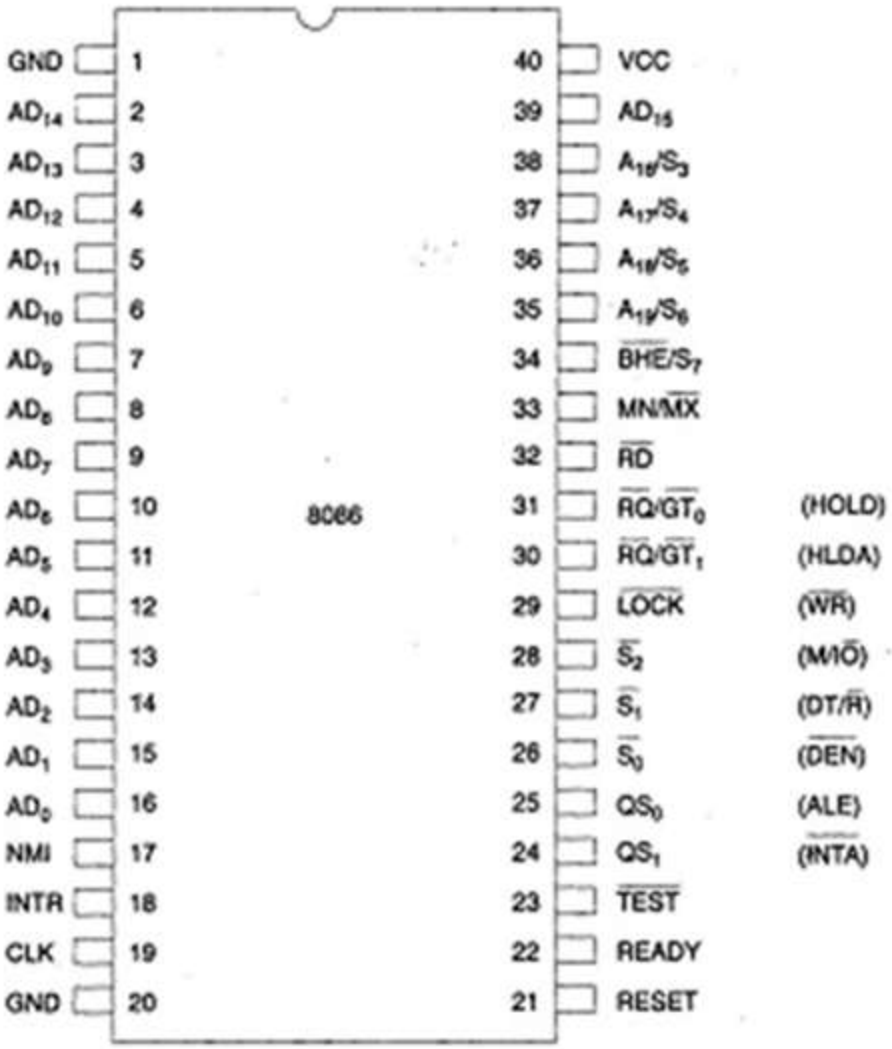
building blocks of sequential logic, and different types of counter and register available in integrated circuit (IC) form are used in a wide range of digital systems. While counters are mainly used in counting applications, where they either measure the time interval between two unknown time instants or measure the frequency of a given signal, registers are primarily used for the temporary storage of data present at the output of a digital circuit before they are fed to another digital circuit.

Q35. Explain 8086 architecture ?

Ans:- 8086 Microprocessor is an enhanced version of 8085Microprocessor that was designed by Intel in 1976. It is a 16-bit Microprocessor having 20 address lines and16 data lines that provides up to 1MB storage. It consists of powerful instruction set, which provides operations like multiplication and division easily

Q36. Explain pin diagram of 8086?

Ans:- 8086 was the first 16-bit microprocessor available in 40-pin DIP (Dual Inline Package) chip. Let us now discuss in detail the pin configuration of a 8086 Microprocessor.



Q37. What are macros in assembly language ?

Ans:- Macros are used to make programs written in assembly code modular and concise. Macros are very similar to *procedures* but follow a different syntax and accept parameters. Macros are very similar to *functions* that are available in most high-level programming languages.

Q38. What is assembly language ?

An assembly language is a type of low-level programming language that is intended to communicate directly with a computer's hardware. Unlike machine language, which consists of binary and hexadecimal characters, assembly languages are designed to be readable by humans.

Q39. Explain TASM ANS MASM ?

TASM:- Turbo Assembler is an computer Assembler which is a software for the program development which runs on the 16 or 32 bit MS window or MS DOS.It was developed by the Borland.

MASM:- MASM: Microsoft Macro Assembler The Microsoft Macro Assembler (MASM) is an assembler for the x86 family of microprocessors, originally produced Microsoft MS-DOS operating system. It supported a wide variety of macro facilities and structured programming idioms, including high-level constructions for looping, procedure calls and alternation (therefore, MASM is an example of a high-level assembler).

Q40. What is BIT operation in assembly ?

Ans:- A bitwise OR is a binary operation that takes two bit patterns of equal length and performs the logical inclusive OR operation on each pair of corresponding bits. The result in each position is 0 if both bits are 0, while otherwise the result is 1. For example: 0101 (decimal 5) OR 0011 (decimal 3) = 0111 (decimal 7)

बिहार सरकार

Government of Bihar

फॉर्म / **Form-IV**

जिला / **District :** गोपालगंज, अनुमंडल / **Sub-Division :** गोपालगंज, अंचल / **Circle :** बरौली

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प्रमाण-पत्र संख्या **: BCCCO/2022/8162254** दिनांक **: 29/09/2022**

प्रमाणित किया जाता है कि सुश्री अंजनी कुमारी **(Anjani Kumari)**, पिता **(Father)** संजय प्रसाद **(Sanjay Prasad)**, माता **(Mother)** निर्मला देवी **(Nirmala Devi)**,ग्राम / मोहल्ला **-** भीखमपुर, डाकघर **-** दंगसी, थाना **-** सिधवलिया, प्रखंड **-** बरौली, अनुमंडल **-** गोपालगंज, जिला **-** गोपालगंज, राज्य **-** बिहार के कुर्मी समुदाय के सदस्य हैं, जो बिहार पदों एवं सेवाओं की रिक्तियों में आरक्षण (अनुसूचित जातियों, अनुसूचित जनजातियों एवं अन्य पिछड़े वर्गों के लिए) अधिनियम, **1991** समय-समय पर यथासंशोधित अधिनियम के अंतर्गत बिहार राज्य की पिछड़ा वर्ग **(अनुसूची -2)** में अनुक्रमांक **35** पर अंकित हैं। अत**:** सुश्री अंजनी कुमारी **(Anjani Kumari)**, पिता **(Father)** संजय प्रसाद **(Sanjay Prasad)**, पिछड़ा वर्ग (अनुसूची **-2)** के हैं।

सुश्री अंजनी कुमारी **(Anjani Kumari)** एवं उनका परिवार वर्तमान में ग्राम / मोहल्ला **-** भीखमपुर, डाकघर **-** दंगसी, थाना **-** सिधवलिया , प्रखंड **-** बरौली , अनुमंडल **-** गोपालगंज, जिला **-** गोपालगंज, राज्य **- BIHAR** में निवास करता हैं।

स्थान **:** बरौली
दिनांक **: 29/09/2022**

(हस्ताक्षर राजस्व अधिकारी / **Signature Revenue Officer)**

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वैधता: कोई समय सीमा नहीं।
नोट: यह दस्तावेज **DigiLocker** पर भी उपलब्ध है।