#### SUBJECT: MICROPROCESSOR ARCHITECTURE AND PROGRAMMING TOPIC : FUNCTIONAL BLOCK DIAGRAM OF 8085 NAME OF TEACHER: SIMNA V J ACADEMIC YEAR: 2020-2021

#### TOPIC : FUNCTIONAL BLOCK DIAGRAM 8085

# Functional block diagram of 8085

The architecture consists of following functional blocks

1. Registers

- 2. Arithmetic and logic unit
- 3. Instruction decoder and machine cycle encoder
- 4. Address buffer

- 5. Address/data buffer
- 6. Incrementer/decrementer address latch
- 7. Interrupt control
- 8. Serial I/o control
- 9. Timing and control circuitry

#### Functional Block Diagram of 8085 Microprocessor



Fig: Functional Block Diagram of 8085 Microprocessor

# 1. Registers

Registers are classified as

General purpose registers(GPR)

Special purpose registers
 Accumalator
 Flag registers
 Instruction register

16 bit registers

 Program counter(PC)
 Stack pointer(SP)

 Temporary register

 Temporary data registers
 W and Z registers

# General purpose registers

- It has six 8 bit GPR which is also called scratchpad registers because user can store data in them
- These registers are labeled as B,C,D,E,H and
- They can be used individually to store 8 bit data and in pairs like BC, DE and HL to store 16 bit data

### Special purpose registers

#### Accumalator

Intermediate arithmetic and logic calculations are stored here

#### Instruction register

it hold the instruction code of instruction which is being decode and executed

#### Flag register

- It contain five individual flip flops that serve as status flags
- Sign flag: in a given byte, I f D7 is one then sign flag is set and number viewed as negtive, if zero then positive

- Zero flag: zero flag is set to 1, if ALU result in zero operation and reset to zero if it is nonzero
- Auxilliary carry flag: it is set when a carry is generated
- Parity flag: after ALU operation, if the result has even number of 1s then flag is set. if it is odd then reset

## 16 bit register

#### Program counter

It is a 16 bit register and hold address of next instruction to be executed

#### Stack pointer

It hold the address of top element in a stack

## Temporary registers

- Temporary data registers
- ALU has 2 inputs. one input supplied by accumalator and other from temporary data register. but programmer can't access this register
- W and Z Register

 These are 2 types of temporary registers which hold 8 bit data

## 2. ALU

It includes accumalator ,temporary
 register, arithmetic and logic circuit and 5
 status flags

### 3. Instruction decoder

 It decodes the information present in instruction register

# 4. Address buffer

 This is 8 bit unidirectional buffer used to transfer high order buffer

### 5.Address/data buffer

 This is 8 bit bidirectional buffer. it is used to drive multiplexed address/data bus.ie, low order address bus (A7-Ao) and data bus (D7-Do)

# 6.Incrementer/decrementer address latch

 This is 16 bit register used to increment ot decrement the contents of program counter or stack pointer

## 7.Interrupt control

It control interrupt during a process

# 8.serial I/O control

 It control serial data communication by using SID and SOD

## 9.Timing and control unit

It provides timing and control signals to microprocessor to perform operations