

Syllabus :-

Edon

UNIT: 1

8085 - Introduction to Microprocessors,

8085 - Architecture, Pin Configuration,

Pin diagram, Instruction set, Addressing modes, Interrupts, Assembly Language programming, Timing diagrams.

UNIT: 2 :-

8086 - 8086 Architecture, Pin diagram, & Configuration, Instruction set, Register

Organisation, Memory Segmentation, Interrupts, Assembly language programming, Timing diagrams.

UNIT: 3 :-

Interfacing: I/O Interfacing, 8255 PPI, Various modes of operation & Interfacing with the 8086, Interfacing keyboard, display, Stepper motor interfacing, D to A & A to D convertor interfacing.

UNIT: 4:-

Microcontrollers:- 8085 microcontroller

Architecture, I/O path, memory organization, Addressing modes, Instruction Set of 8051, Simple programs, Timers & counters,

Interrupts & Serial communication.

UNIT 5:-

AVR-RISC controller Introduction, Architecture, register file, ALU, memory access, Instruction execution, I/O & memory, EEPROM Timers, USART, (DMA) Interrupt,

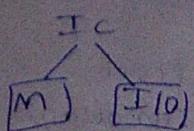
Structure of timer.

UNIT - I

Friday,

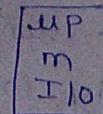
Dt :- 29-06-2018.

Processor
CPU



controller

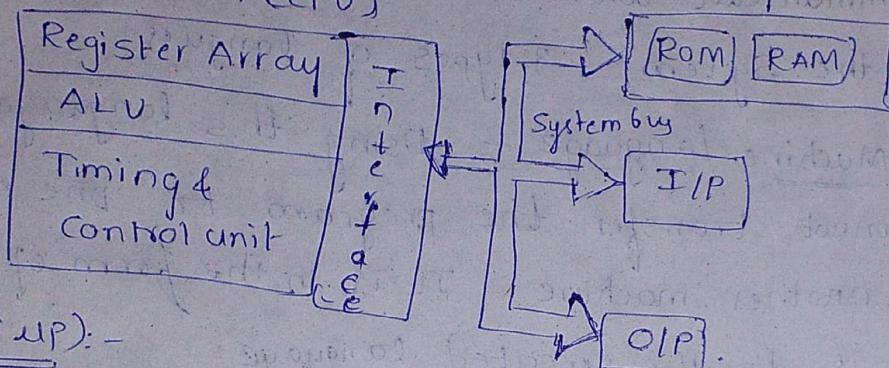
It is fabricated with IC



Microprocessors :- CPU of micro computer is known as microprocessors

Block diagram of computer

microprocessor (CPU)



CPU (up) :-

→ Register array :- Array of registers

Control unit :-

↳ stores the temporary data.

System bus :- Bus :- Bunch of connecting wires then the information can be transferred in electric signals.

Control Signals :- RD, WR, I/O & O/P.

Computer terminology :-

Bit → 1 bit (0,1) Byte → Group of 8 bits

Nibble - 4 bit Address: location of memory

access time :- avg of time read from / write into the memory for fixed amount of data.

word :- Group of bytes.

Hardware :- Physical Components.

Software :- Program to perform a particular task

Instruction → [opcode | operand].

Language :- 3 machine language. } low level
Assembly language. } languages.
High level language.

⇒ Each microcomputer having its own instruction set based on CPU. A Computer needs language to communicate with internal & external parts.

of the System. 3 types of languages.

① Machine language :- Using this language we cannot transfer the program to one machine to another machine. It is in the form of 0 & 1. It is directly executed language.

② Assembly language :- This language is in the form of mnemonics.
Firstly this language is converted into Assembly machine language with the Assembler.
This is not transfer to the another machine.

High level Language :- Ex:- C, C++, Java, Python etc.

Here instructions are transfer from one system to another system.

Monday,
07-21-18.

8085 - microprocessor:-

→ 4004 - 4 bit micro processor - 1971 → INTEL company. It is performed Simple Arithmetic

→ 4 logical operations.

→ 8008 - 1972 - INTEL → 8 bit

→ 8080 - 1973 → INTEL → Here N-MOS technology is used

→ 8085 - microprocessor - 1976 → INTEL → 8 bit up - fabricated with on a single IC.

- It uses +5V power supply.

- Clock frequency 3 MHz

- It is having 8-bit data line (data bus)

- It has 16-bit address bus (lines). It is

always indicated the memory capacity of the processor. 2^{16} → 64 KB. A₁₅ - A₀

- Lower order address bus is multiplexed with its complete data bus. CALE

→ It has 3 functional blocks.

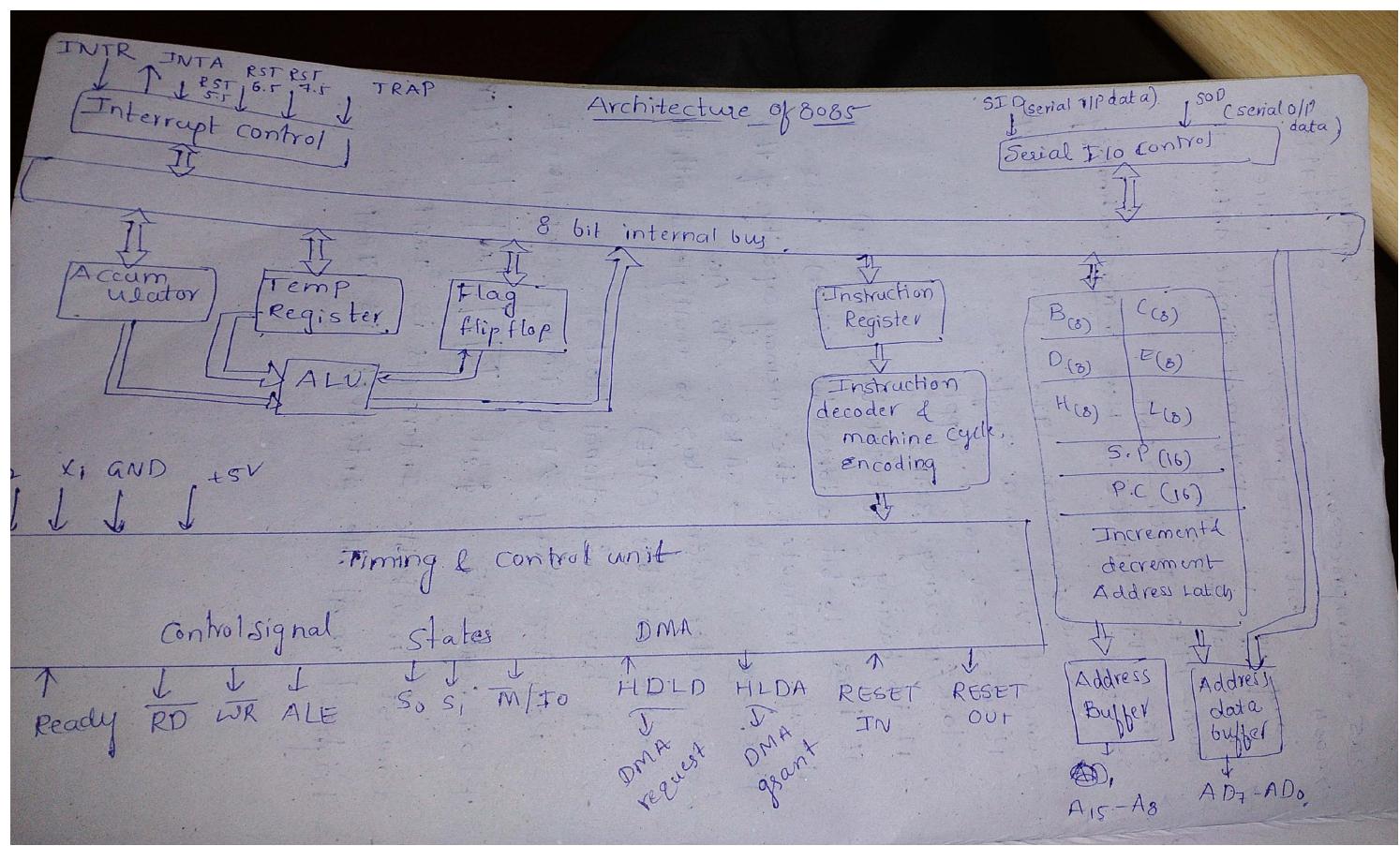
- Register array, ALU, timing & control unit

Flag registers:- 8 bit

S	Z	X	AU	X	P	X	CP
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- lowest markable Interrupt is INTR.

- highest markable Interrupt is TRAP.

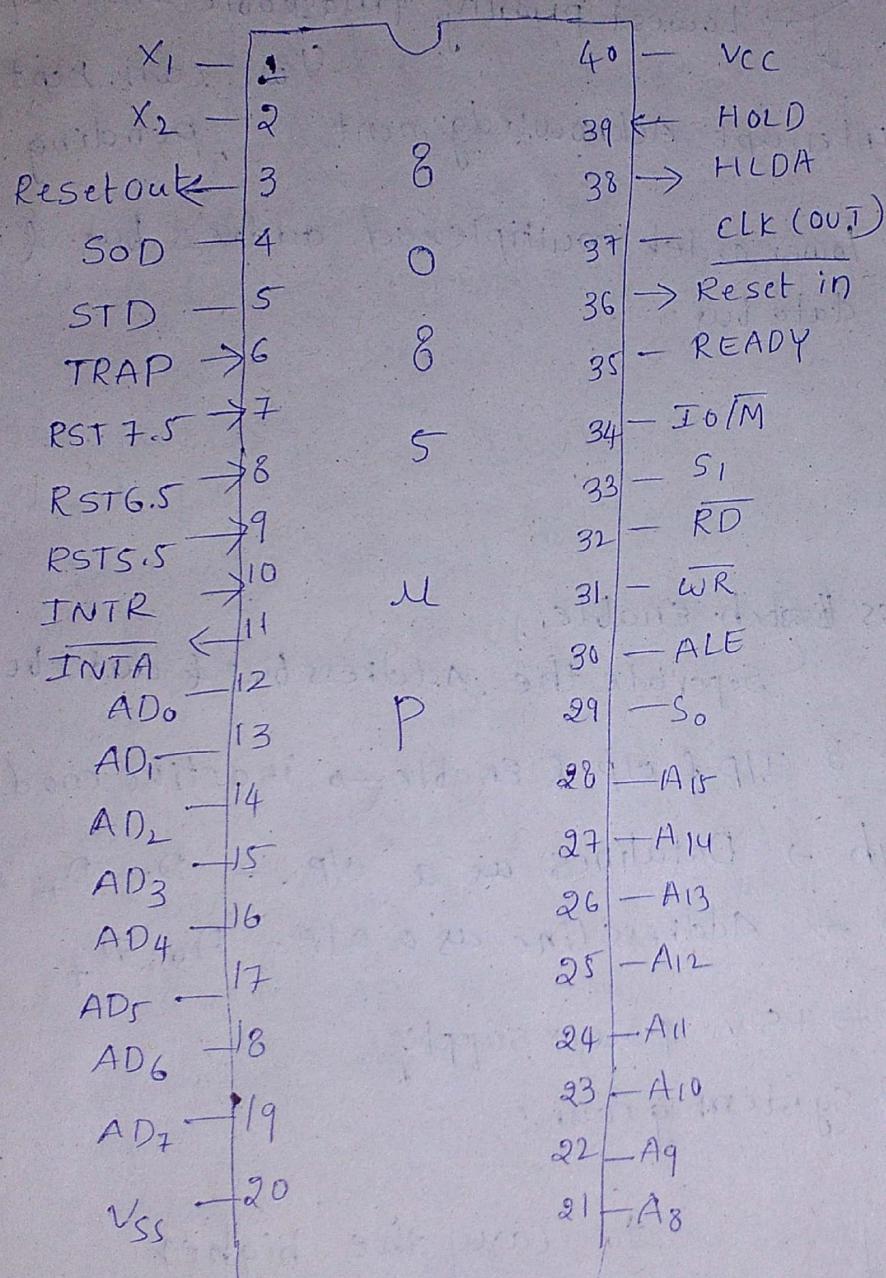


Status signal

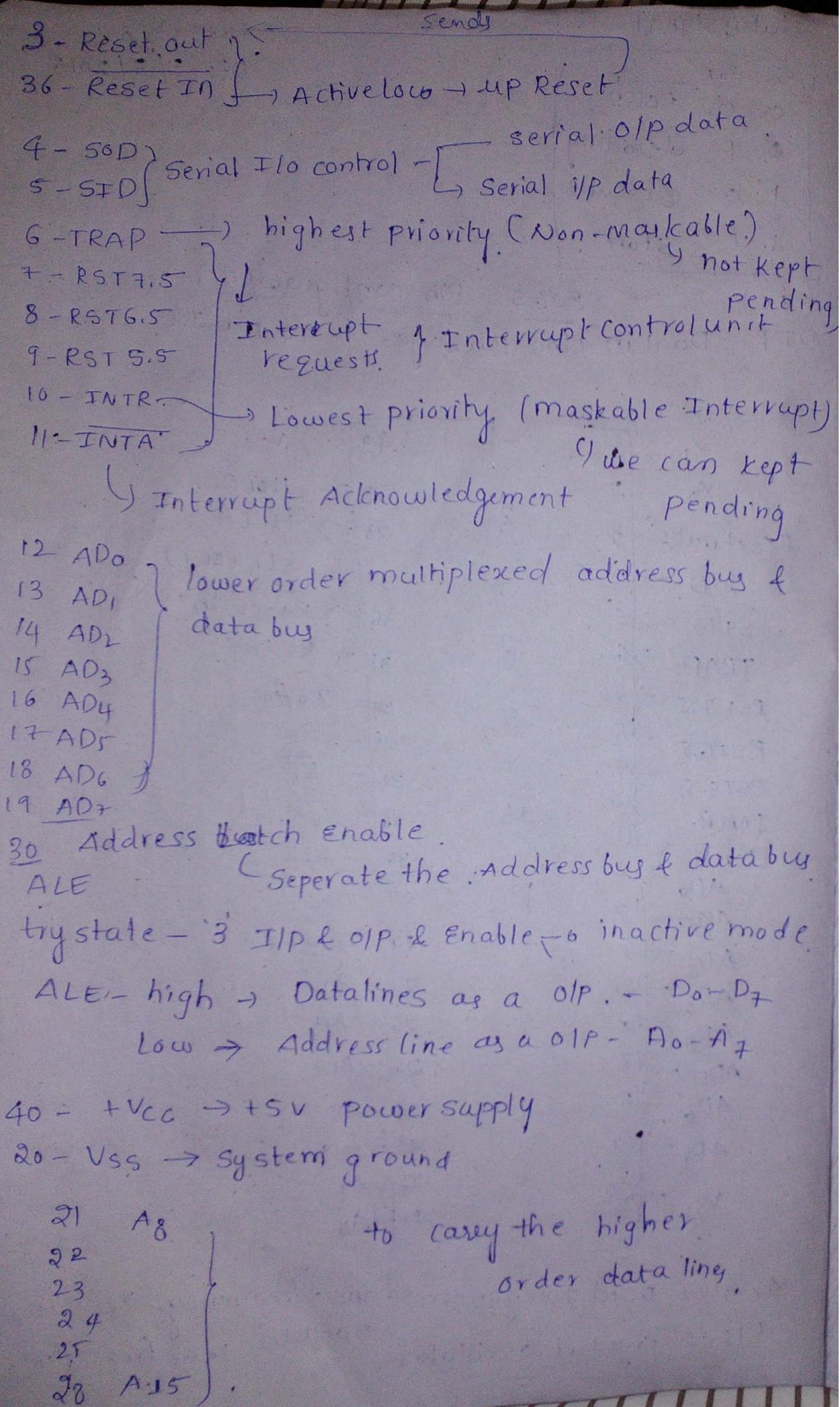
S ₀	S ₁	
0	0	Fetch
0	1	decoding
1	0	execute
1	1	Store

Tuesday,
Dt:- 3/7/2018

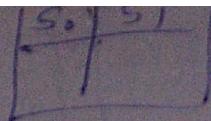
(IC) 8085 - Pin configuration
DIP - Dual in Line package. - 40 pin IC.



X₁, X₂ → used to generate the frequency min. freq.
500 KHz max freq 3MHz
(It is crystal oscillator.)



29 - S0 } status signals
30 - S1 }



31 - \overline{WR} } active low / control signals
32 - \overline{RD}

33 - I/O/M → status signals.

I/O/M	\overline{RD}	\overline{WR}	
0	0	1	memory read
0	1	0	memory write
1	0	1	I/O Read
1	1	0	I/O write

35 - Ready. → control signals.

37 - CLK(out) - It provide a CLK signal to the external device.

38 - HOLD } DMA signals

39 - HLDA } DMA signals

DMA - to transfer the data b/w memory & I/O devices without involvement of CPU.

System bus:- is having 3 types of bus.

Address bus, data bus, control bus.

1) Address bus:- AD₀ - AD₇ A₁₅ - A₀

unidirectional A₈ -

bus

2) Data bus:- D₇ - D₀ it is bidirectional.

communication b/w memory & I/O device.

3) Control bus:- Read & write operations

to control the operations within the CPU

