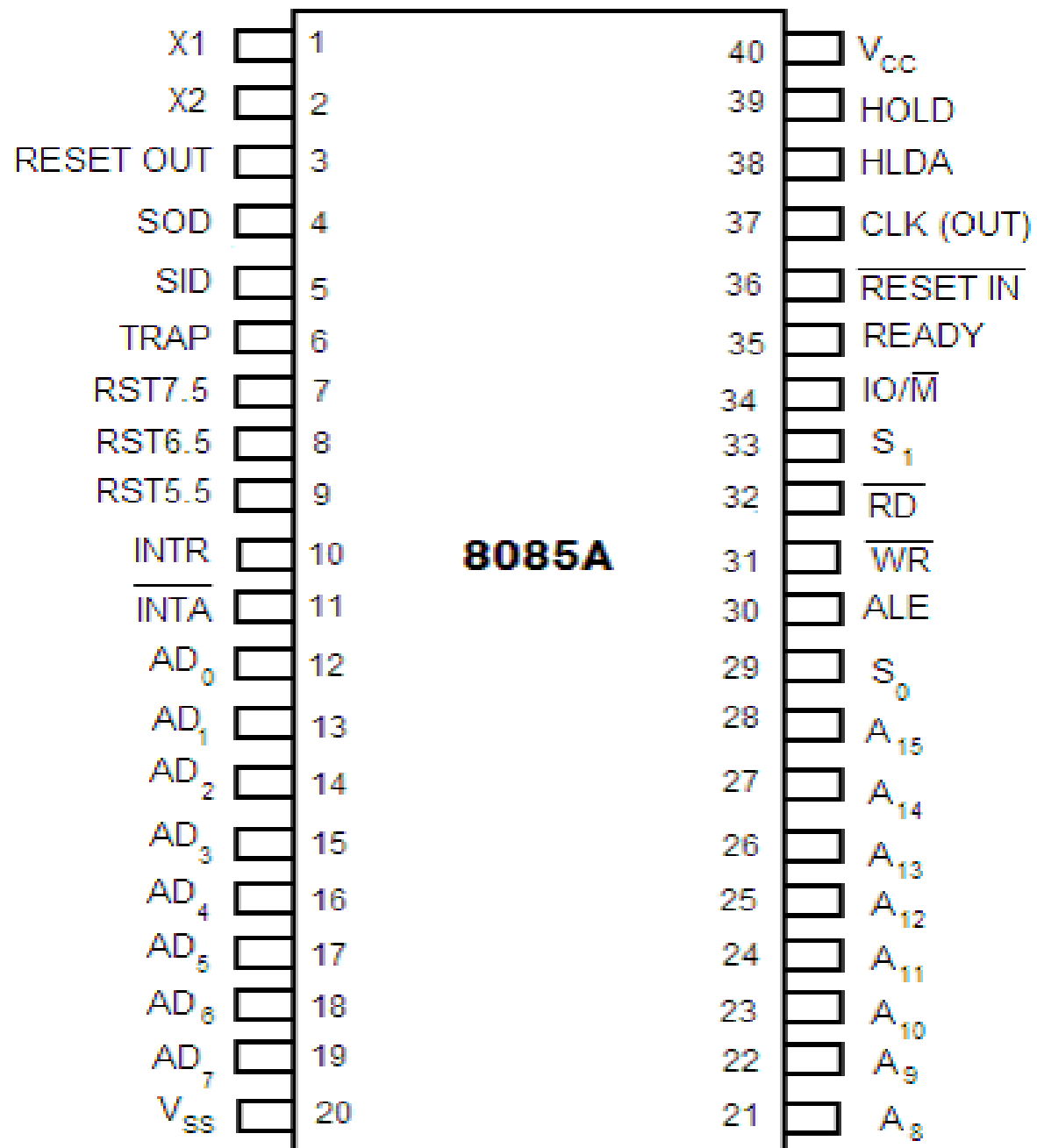# PIN CONFIGURATION OF INTEL 8085 µP

Dr. A. ABBAS MANTHIRI
Assistant Professor of Physics
Jamal Mohamed College(Autonomous)
Tiruchirappalli - 20

		8085A		
X1	1		40	V_{CC}
X2	2		39	HOLD
RESET OUT	3		38	HLDA
SOD	4		37	CLK (OUT)
SID	5		36	$\overline{\text{RESET IN}}$
TRAP	6		35	READY
RST7.5	7		34	$IO/\overline{M}$
RST6.5	8		33	S_1
RST5.5	9		32	$\overline{RD}$
INTR	10		31	$\overline{WR}$
$\overline{\text{INTA}}$	11		30	ALE
AD_0	12		29	S_0
AD_1	13		28	A_{15}
AD_2	14		27	A_{14}
AD_3	15		26	A_{13}
AD_4	16		25	A_{12}
AD_5	17		24	A_{11}
AD_6	18		23	A_{10}
AD_7	19		22	A_9
V_{SS}	20		21	A_8

- The 8085 is an 8-bit general purpose microprocessor that can address 64K Byte of memory

- It has 40 pins and uses +5V for power. It can run at a maximum frequency of 3 MHz

✓ **The pins on the chip can be grouped into 6 groups:**

- Address Bus

- Data Bus

- Control and Status Signals

- Power supply and frequency

- Externally Initiated Signals

- Serial I/O ports

8085 Pin description :

✓ **Higher Order Address pins- $A_{15} - A_8$**

The address bus has 8 signal lines A8 – A15 which are unidirectional

✓ **Lower Order Address/ Data Pins- AD_7-AD_0**

- These are time multiplexed pins and are de-multiplexed using the pin ALE

- So, the bits AD0 – AD7 are bi-directional and serve as A0 – A7 and D0 – D7 at the same time

- During the execution of the instruction, these lines carry the address bits during the early part, then during the late parts of the execution, they carry the 8 data bits

- In order to separate the address from the data, we can use a latch to save the value before the function of the bits changes

✓ Control Pins – RD, WR:

- These are active low. When it goes low, the selected memory or I/O device is Read and Write

✓ Status Pins – ALE, IO/M (active low), S_1, S_0 :

- ALE (Address Latch Enable)-Used to de-multiplex AD_7-AD_0

- IO/M – Used to select I/O or Memory operation

- S_1,S_0 – Denote the status of data on data bus

The various operations of Status Signals:

IO/M	S1	S2	OPERATIONS
-	0	0	HALT
1	0	1	IO WRITE
1	1	0	IO READ
0	0	1	MEMORY WRITE
0	1	0	MEMORY READ
1	1	1	IO FETCH
0	1	1	MEMORY FETCH

✓ **DMA (Direct Memory Access) pins – HOLD, HLDA:**

These pins are used when data transfer is to be performed directly between an external device and the main memory of the system

✓ **Interrupt Pins – TRAP, RST7.5, RST 6.5, RST 5.5, INTR, INTA:**

These are hardware interrupts used to initiate an interrupt service routine stored at predefined locations of the system memory

✓ **Serial I/O pins – SID (Serial Input Data), SOD (Serial Output Data):**

- These pins are used to interface 8085 with a serial device

✓ **Clock Pins- X_1, X_2, CLK(OUT):**

- X_1, X_2– These are clock input pins. A crystal is connected between these pins such that $f_{crystal}$= $2f_{8085}$ where $f_{crystal}$= crystal frequency & f_{8085} = operating frequency of 8085

- CLK(OUT) – This is an auxiliary clock output source

Reset Pins – Reset In (active low), Reset Out:

- **Reset In** is used to reset 8085. It resets the programme counter to zero

- whereas **Reset Out** can be used to indicates that the CPU is being reset

Power Supply Pins – +V_{CC}, V_{SS} :

- It is +5 volts supply pin and a ground pin