EE2354 MICROPROCESSORS AND MICRO CONTROLLER **L T P C**

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UNIT I-8085 and 8086 PROCESSOR **9**

Hardware Architecture pintouts - Signals – Memory interfacing – I/O ports and data transfer concepts– Timing Diagram – Interrupt structure.

UNIT II -PROGRAMMING OF 8085 PROCESSOR **9**

Instruction format and addressing modes – Assembly language format – Data transfer, data manipulation & control instructions – Programming: Loop structure with counting & Indexing – Look up table - Subroutine instructions - stack.

UNIT III -PERIPHERAL INTERFACING **9**

Study of Architecture and programming of ICs: 8255 PPI, 8259 PIC, 8251 USART, 8279 Key board display controller and 8253 Timer/ Counter – Interfacing with 8085 - A/D and D/A converter interfacing.

UNIT IV-8051 MICRO CONTROLLER **9**

Functional block diagram - Instruction format and addressing modes – Timing Diagram Interrupt structure – Timer –I/O ports – Serial communication.

UNIT V-MICRO CONTROLLER PROGRAMMING & APPLICATIONS **9**

Data Transfer, Manipulation, Control & I/O instructions – Simple programming exercises key board and display interface – Closed loop control of servo motor- stepper motor control – Washing Machine Control. **L = 45 T = 15 TOTAL : 60 PERIODS**

TEXT BOOKS

1. "Microprocessor and Microcontrollers", Krishna Kant Eastern Company Edition, Prentice – Hall of India, New Delhi , 2007.

2. Muhammad Ali Mazidi & Janice Gilli Mazidi, R.D.Kinely 'The 8051 Micro Controller and Embedded Systems', PHI Pearson Education, 5th Indian reprint, 2003.

REFERENCES

1. R.S. Gaonkar, 'Microprocessor Architecture Programming and Application', Wiley Eastern Ltd., New Delhi.

2. The 8088 & 8086 Microprocessors, Walter A Tribal & Avtar Singh, Pearson, 2007, Fourth Edition.

SUBJECT DESCRIPTION AND OBJECTIVES

DESCRIPTION

The Intel 8085 ("eighty-eighty-five") is an 8-bit microprocessor introduced by Intel in 1977. It was binary compatible with the more-famous Intel 8080 but required less supporting hardware, thus allowing simpler and less expensive microcomputer systems to be built. The "5" in the model number came from the fact that the 8085 requires only a +5-volt (V) power supply rather than the +5 V, −5 V and +12 V supplies the 8080 needed. Both processors were sometimes used in computers running the CP/M operating system. The Intel 8085 required at least an external ROM and RAM and an 8 bit address latch (both latches combined in the Intel 8755 2Kx8 EPROM / 2x8 I/O, Intel 8155 256-byte RAM and 22 I/O and 14 bit programmable Timer/Counter) so cannot technically be called a microcontroller.

The 8085 has extensions to support new interrupts, with three maskable interrupts (RST 7.5, RST 6.5 and RST 5.5), one non-maskable interrupt (TRAP), and one externally serviced interrupt (INTR). The RST n.5 interrupts refer to actual pins on the processor, a feature which permitted simple systems to avoid the cost of a separate interrupt controller.Like the 8080, the 8085 can accommodate slower memories through externally generated wait states (pin 35, READY), and has provisions for Direct Memory Access (DMA) using HOLD and HLDA signals (pins 39 and 38). An improvement over the 8080 was that the 8085 can itself drive a piezoelectric crystal directly connected to it, and a built in clock generator generates the internal high amplitude two-phase clock signals at half the crystal frequency (a 6.14 MHz crystal would yield a 3.07 MHz clock, for instance).

In 1981, Intel Corporation introduced an 8-bit microcontroller called the 8051. This microcontroller had 128 bytes of RAM, 4K bytes of on-chip ROM, two timers, one serial port, and four ports (each 8-bits wide) all on a single chip. At the time it was also referred to as a "system on a chip." The 8051 is an 8-bit processor, meaning that the CPU can work on only 8 bits of data at a time. Data larger than 8 bits has to be broken into 8-bit pieces to be processed by the CPU

OBJECTIVES

i. To study the Architecture of 8085 & 8086, 8051

ii. To study the addressing modes & instruction set of 8085 & 8051.

iii. To introduce the need & use of Interrupt structure 8085 & 8051.

iv. To develop skill in simple program writing for 8051 & 8085 and applications

v. To introduce commonly used peripheral / interfacing IC.

MICRO LESSON PLAN

HOURS	LECTURE TOPICS	READINGS
UNIT I-8085 and 8086 PROCESSOR		
1.	Hardware Architecture pintouts	T1
2.	Signals	T1
3.	Memory interfacing	T1
4.	I/O ports	T1
5.	data transfer concepts	T1
6.	data transfer concepts	T1
7.	Timing Diagram	T1
8.	Timing Diagram (AV class)	T1
9.	Interrupt structure	T1
10.	Tutorial	T1
11.	Tutorial	T1
12.	Tutorial	T1
UNIT II -PROGRAMMING OF 8085 PROCESSOR		
13.	Instruction format	T1
14.	addressing modes	T1
15.	Assembly language format	T1
16.	Data transfer instructions	T1
17.	Data manipulation instructions	T1
18.	control instructions (AV class)	T1
19.	Programming: Loop structure with counting & Indexing	T1
20.	Look up table	T1
21.	Subroutine instructions and stack	T1
22.	Tutorial	T1
23.	Tutorial	T1
24.	Tutorial	T1
UNIT III -PERIPHERAL INTERFACING		
25.	Study of Architecture and programming of ICs: 8255 PPI	T1
26.	8259 PIC	T1
27.	8251USART	T1
28,29	8279 Key board display controller	T1
30	8253 Timer/ Counter	T1
31	Interfacing with 8085	T1
32	A/D converter interfacing. (AV class)	T1
33	D/A converter interfacing.	T1
34	Tutorial	T1
35	Tutorial	T1
36	Tutorial	T1
UNIT IV-8051 MICRO CONTROLLER		
37	Functional block diagram	T2
38	Instruction format	T2
39	addressing modes	T2

40,41	Timing Diagram	T2
42	Interrupt structure	T2
43	Timer	T2
44	I/O ports	T2
45	Serial communication (AV class)	T2
46	Tutorial	T2
47	Tutorial	T2
48	Tutorial	T2
UNIT V-MICRO CONTROLLER PROGRAMMING & APPLICATIONS		
49	Data Transfer instructions,	T2
50	Manipulation instructions,	T2
51	Control instructions	T2
52	I/O instructions	T2
53	Simple programming exercises	T2
54	key board and display interface (AV class)	T2
55	Closed loop control of servo motor	T2
56	stepper motor control	T2
57	Washing Machine Control	T2
58	Tutorial	T2
59	Tutorial	T2
60	Tutorial	T2

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