

Laboratory Manual for

Microprocessor Laboratory

Useful for following subjects

5S-EE-04 Microprocessors and Interfacing

8S-EE-02 Advanced Microprocessors and Peripherals

7S-IN-01 Microprocessor & Microcontroller Based Design

6S-CS-04 Microprocessor and Interfacing



DEPARTMENT OF ELECTRICAL ENGINEERING,
GOVERNMENT COLLEGE OF ENGINEERING,
CHANDRAPUR

MICROPROCESSOR LAB MANUAL

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SCOPE OF THE SUBJECT

Rastra Sant Tukadoji Maharaj Nagpur University, Nagpur offers this subject at 6th semester of 8 semester degree course of Bachelor of Electrical Engineering. This subject is related to the Microprocessor in general and Intel 8085 microprocessor in particular. today it is era of user friendly, automatic, microprocessor controlled electronic gadgets which we could find everywhere. After learning this subject and doing the practical it is expected that student will have

The basic idea of Microprocessor and a programming devices

Students will learn to write the programmes for 8085 and peripherals based systems

It will help to understand the logic and the working of Electronic gadgets based on Microprocessors and Microcontrollers

it will help to maintain the pace with every second changing technology and changing world

RATIONALE

Microprocessors are being excessively used in the field of Electrical, Electronics , Instrumentation Engineering gadgets and Engineering. The students are studying the subject are supposed to learn the architecture of a typical microprocessor and also get general information about microprocessor based control systems. The course in addition, will provide relevant knowledge of microprocessor based circuits being used in industrial process applications. The subject will deal in detail the configurations and instructional pair configuration systems and working of various peripheral interface chips. The course will cover 8085 in detail with sufficient exposure to the industrial applications. The course will also deal with the architecture, instruction sets and introduction to peripheral Integrated Circuits like 8253, 8279, 8251 etc..

Guidelines for Practical Journal writing

Students are suggested to perform the maximum practical. The tentative list is as follows. The instructions for writing journal are also available at <http://icse.20m.com/htwj.htm>

General instructions

- Write journal with only one ink, at the beginning choose and use the same through out
- Use same quality pages through out
- Write journal legibly
- Draw diagrams/figure neat and clean.
- The sequence of the experiments may be as per experimentation in laboratory.
- Do not sketch extra/additional margins
- Do not Copy from some one else and do not give your journal for copying purpose

Common on both pages

- Date (on top corner)
- Experiment No
- Name/Aim of the experiment
- Date of performance

Left side (with pencil)

- Apparatus/Components required
- Design (Algorithm)
- Circuit diagram if any
- Observations (if nay)
- Result

Right Side (with pen)

- Theory
- Procedure
- Program in a given formatted table
- Result
- Conclusion
- Discussion (if any)
- Five very short questions with answers

5S-EE-04 MICROPROCESSORS AND INTERFACING

Paper: 80 Marks

Lectures per week: 4 Hrs

College Assessment: 20 Marks

Tutorial per week : 1 Hr

- Unit-1:- VLSI circuit concept, Approach to integrated system design using microprocessors, Bus concepts, Address Data and control, Organization of a computer with MPU Bits/ Bytes/ Words/ Long words then ranges accuracy and precision Memory organization Linear/absolute decoding.
- Unit-2:- Introduction to Intel's 8085 A Architecture description software instructions, Address modes-Advantages, Tuning diagram assess, Assemblers and Disassemblers- (By Hand coding).
- Unit-3:- Flag structure, concept of PSW stacks and subroutines- simple and Nested PUSH, POP instructions and Call /Return instructions , Stack manipulation , simple programmes.
- Unit-4:- Interrupt- concept and structures in 8085A, Interrupt service routines, Advanced instructions and programming of 8085A.
- Unit-5:- Methods of data transfer- Serial, parallel, synchronous, asynchronous, IN/OUT instructions, Timing diagrams, Simple hardware interface to 8085 of standard Latches/Buffers /Keys/ display devices as I/O ports. Handshaking concepts Architecture and interface of 8255 and 8253 to 8085.
- Unit-6:-Hardware considerations- bus contention ,Slow memory interfacing, complete signal description of 8085. Multiplexed key board/display interface and assembler directives. General awareness about microcomputer system related products.

Books:

1. Programming and Interfacing 8085A by Gaonkar, (Wiley Eastern)
2. Programming of 8085 by D.V. Hall (Tata McGraw Hill)
3. Goody: Intel Microprocessors (Tata McGraw Hill)
4. Pal: Microprocessor Principles and Applications (Tata McGraw Hill)
5. Gilmore: Microprocessor Principles and Applications (Tata McGraw Hill)

8SEM-EE-02 ELE-II ADVANCED MICROPROCESSORS AND PERIPHERALS

- Unit 1: Introduction to 16 bit microprocessors 8086/8088 , CPU architecture, Memory organization and interfacing. Addressing modes, Instruction Set, examples Pseudo opcodes with ASM-86.
- Unit 2: Interfacing of peripherals 8255 and 8253 with 8086 Architecture, Operation and interfacing of 8251, 8257 with 8085 and 8086/8088.
- Unit 3: Architecture operation and interfacing of 8259, with 8279 with 8085 and 8086/8088.
- Unit 4: Multiprocessor system bus, 8087 coprocessor with architecture and Instruction set, organization of PC XT/AT mother board.
- Unit 5: Introduction to 80286, 386 , 486 architecture, concepts of cache, Associated / Virtual memory, DOS structure.
- Unit 6: Architecture of 8097 microcontroller, its important features, interface with parallel and serial I/O (Instruction set not included).

Books:

1. Programming and Interfacing 8085A by Gaonkar, (Wiley Eastern)
2. Goody: Intel Microprocessors (Tata McGraw Hill)
3. The Intel Microprocessors: 8086/8088, 80186/80188, 80286, 80386, 80486 - Pentium and Pentium Processor - Architecture, Programming and Interfacing (Prentice Hall International Editions) by: Barry B. Brey

