

MICROPROCESSORS AND MICROCONTROLLERS LAB

The students are required to develop the necessary Algorithm, Flowchart and Assembly Language Program Source Code for executing the following functions using MASM/TASM software and to verify the results with necessary Hardware Kits.

PART-I: MICROPROCESSOR 8086

Introduction to MASM/TASM.

Arithmetic operation- Multi byte Addition and Subtraction, Multiplication and Division- Signed and unsigned Arithmetic operation, ASCII- Arithmetic operation.

Logic operations-Shift and rotate-
Converting packed BCD to unpacked BCD, BCD to ASCII conversion.

By using string operation and Instruction prefix: Move Block, Reverse string, Sorting, Inserting, Deleting, Length of the string, String comparison.

DOS/BIOS programming : Reading keyboard (Buffered with and without echo) - Display characters, Strings.

PART-II: INTERFACING WITH MICROPROCESSOR

8259 – Interrupt Controller-Generate an interrupt using 8259 timer.

8279 – Keyboard Display- Write a program to display a string of characters.

8255 – PPI-Write ALP to generate sinusoidal wave using PPI.

8251 – USART-Write a program in ALP to establish Communication between two processors.

PART-III: MICROCONTROLLER 8051

Reading and Writing on a parallel port.

Timer in different modes.

Serial communication implementation.

PART-IV: INTERFACING WITH MICROCONTROLLER

Write C programs to interface 8051 chip to Interfacing modules to Develop single chip solutions.

Simple Calculator using 6 digit seven segment display and Hex Keyboard interface to 8051.

Alphanumeric LCD panel and Hex keypad input interface to 8051.

External ADC and Temperature control interface to 8051.

Generate different waveforms Sine, Square, Triangular, and Ramp etc. using DAC interface to 8051; change the frequency and Amplitude.

EQUIPMENT REQUIRED FOR LABORATORY

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| 1. MASM/TASM software Kits | 2. 8086 Microprocessor |
| 1. 8051 Micro Controller kits | |
| 2. Interfaces/peripheral subsystems | |
| i) 8259 PIC | |
| ii) 8279-KB/Display | |
| iii) 8255 PPI | |
| iv) 8251 USART | |
| 5. A/D and D/AC Interface | |