III Year-II Semester		L	T	P	C
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MICROPROCESSOR & MICROCONTROLLER LAB(RT32046)

Prerequisite Course:

Need basic idea of Microprocessor & Microcontroller subject

Course Description and Objectives:

- 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.

Course Outcomes:

Upon completion of the course, the student will be able to achieve the following outcomes.

COs	Course Outcomes	POs
1	Comprehend the fundamentals in programming for microprocessor 8086	**3**
2	Know the skill to write, interfacing programs with 8251, 8255, 8259,and 8279	**3**
3	Comprehend the fundamentals in programming for microcontroller 8051	**3**
4	Know the skill to write, programs with I/O ports, Timers modes and Serial port	**3**

SYLLABUS

Part – I: Microprocessor 8086

1. Introduction to MASM/TASM.
2. Arithmetic operation – Multi-Byte Addition and Subtraction, Multiplication and Division – Signed and Unsigned Arithmetic operation, ASCII – Arithmetic operation.
3. Logic operations – Shift and Rotate – Converting Packed BCD to Unpacked BCD, BCD to ASCII Conversion.
4. By using string operation and Instruction prefix: Move Block, Reverse String, Sorting, Inserting, Deleting, Length of the string, String Comparison.
5. DOS/BIOS Programming: Reading keyboard (Buffered with and without echo) – Display characters, Strings.

Part – II: Interfacing with Microprocessor

1. 8259 – Interrupt Controller – Generate an interrupt using 8259.
2. 8279 – Keyboard Display – Write a program to display a string of characters.
3. 8255 – PPI – Write ALP to generate sinusoidal wave using PPI.
4. 8251 – USART – Write a program in ALP to establish Communication between two processors.

Part – III: Microcontroller 8051

1. Reading and Writing on a parallel port.
2. Timer in different modes.
3. Serial communication implementation.

Part – IV: Interfacing with Microcontroller

Write C programs to interface 8051 chip to interfacing modules to develop single chip solutions.

1. Simple Calculator using 6 – digit seven segment display and Hex Keyboard interface to 8051.
2. Alphanumeric LCD panel and Hex Keypad input interface to 8051.
3. External ADC and Temperature Control interface to 8051.
4. Generate different waveforms Sine, Square, Triangular, and Ramp etc. using DAC interface o 8051: Change the frequency and amplitude.

Equipment required for Laboratories:

1. MASM/TASM software
2. 8086 Microprocessor Kits
3. 8051 Microcontroller Kits
4. Interfaces/Peripheral Subsystems
    i. 8259 PIC
    ii. 8273 – Keyboard/Display
    iii. 8255 PPI
    iv. 8251 USART
5. ADC and DAC Interface