BVM ENGINEERING COLLEGE [AN AUTONOMOUS INSTITUTION]

2EC16: MICROPROCESSOR AND INTERFACING LABORATORY
CREDITS - 2 (LTP:0,0,1)

Course Objective:
To provide the basic knowledge of programming in assembly language, particularly with 8-bit processor, interfacing with 8-bit peripherals.

Teaching and Assessment Scheme:

Teaching Scheme (Hours per week)			Credits	Assessment Scheme				Total Marks
				Theory		Practical		
L	T	P	C	ESE	CE	ESE	CE	100
0	0	2	1	00	00	40	60	

Experiment List:

1. **Introduction to Microprocessor and Trainer Kit.**
   - Write an assembly level program to add Two 8-bit hex and BCD numbers.
   - Write an assembly level program to subtract one 8-bit number from the other.
2. **Programs based on Data Transfer, Arithmetic and logical instructions.**
   - Write an assembly level program to add Two 16-bit hex number and 4-digit BCD numbers.
   - Write an assembly level program to Ex-or the two 8-bit numbers without using logical instruction (XOR).
3. **Programs based on Arithmetic, logical and Branching instructions.**
   - Write an assembly level program to add an array of Hex numbers and BCD numbers.
   - Write an assembly level program to separate the hex numbers, which are greater than 20H and Less than 50H, from the given array.
4. **Programs based on Sorting of an Array.**
   - Write an assembly level program to find the maximum and minimum numbers from the given array.
   - Write an assembly level program to sort a given array in ascending and descending order.
5. **Programs based on Array Manipulation.**
   - Write an assembly level program to add corresponding elements of two arrays and store the result in third array.
   - Write an assembly level program to insert a particular number in an sorted array to the proper position.
6. **Programs to Generate specific Time Delay.**
   - Write a subroutine to generate a delay of specific amount of time.
   - Write an assembly level program to generate digital clock using the Display fields of the trainer kit.
7. **Programs based on data conversion.**
   - Write an assembly level program to convert given hex data in to equivalent BCD and given BCD in to equivalent Hex.

8. **Programs based on Interrupts.**
   - Write an assembly level program to count the number of times the interrupt is generated by the user and display the count on the data field of the display unit of the trainer kit.
9. **Programs based on multiplication and division of numbers.**
   - Write an assembly level program to multiply two 8 bit numbers using ADD-SHIFT method.
   - Write an assembly level program to divide an 8-bit number from the given 8-bit number using ADD-SHIFT method.
10. **Interfacing with 8085 microprocessor.**
    - Interfacing with 8255.
    - Interfacing of ADC with 8085.
    - Interfacing of DAC with 8085.

List of References:

1. Ramesh S. Gaonkar, "*Microprocessor Architecture, Programming, and Applications with the 8085"*, Pub: Penram International.
2. N.K.Srihnath, *"8085 Microprocessor: Programming And Interfacing"* PHI
3. V.Carl Hamacher, Zvonko G. Varanesic and Safat G. Zaky, "*Computer Organization*", VI edition, McGraw-Hill Inc, 2012.

Course Outcomes (COs):

By learning this course students will be able to …

1. Understand the concepts of microprocessors architecture their principles and practices.
2. Write efficient programs in assembly language of the 8085 family of microprocessors.
3. Interface microprocessor with memory modules and I/O modules.
4. Apply the concept of the logic design for developing Control unit.
5. Interface stepper motor with 8085 microprocessor using 8255, rotate it counterclockwise.
6. Design a digital system to monitor room temperature using ADC connected with 8255.