Name of the laboratory: Computer Organization

Upon completion of this course, the student will be able to:

CO1: Implement Logic gates using NAND and NOR gates
CO2: Design a Full adder using gates
CO3: Design and implement the 4:1 MUX, 8:1 MUX using gates /ICs.
CO4: Design and Implement a 3 to 8 decoder using gates
CO5: Design a 4 bit comparator using gates/IC
CO6: Design and Implement a 4 bit shift register using Flip flops
CO7: Design and Implement a Decade counter

List of experiments:

Exercises in Digital Logic Design:
1. Implement Logic gates using NAND and NOR gates
2. Design a Full adder using gates
3. Design and implement the 4:1 MUX, 8:1 MUX using gates /ICs.
4. Design and Implement a 3 to 8 decoder using gates
5. Design a 4 bit comparator using gates/IC
6. Design and Implement a 4 bit shift register using Flip flops
7. Design and Implement a Decade counter

Exercises in Micro Processor programming:
Write assembly language programs for the following using GNU Assembler.
1. Write assembly language programs to evaluate the expressions:
   i) $a = b + c - d * e$
   ii) $z = x * y + w - v + u / k$
   a. Considering 8-bit, 16 bit and 32 bit binary numbers as b, c, d, e.
   b. Considering 2 digit, 4 digit and 8 digit BCD numbers.
   Take the input in consecutive memory locations and also Display the results by using
   "int xx" of 8086. Validate program for the boundary conditions.
2. Write an ALP of 8086 to take N numbers as input. And do the following operations on them.
   a. Arrange in ascending and descending order.
3. Write an ALP of 8086 to take N numbers as input. And do the following operations on them.
   a. Find max and minimum
   b. Find average
   Considering 8-bit, 16 bit binary numbers and 2 digit, 4digit and 8 digit BCD numbers. Display the results by
   using "int xx" of 8086. Validate program for the boundary conditions.
4. Write an ALP of 8086 to take a string of as input (in 'C' format)and do the following Operations on it.
   a. Find the length
   b. Find it is Palindrome or n.
   Considering 8-bit, 16 bit binary numbers and 2 digit, 4digit and 8 digit BCD numbers.
   Display the results by using "int xx" of 8086. Validate program for the boundary conditions.
5. Write an ALP of 8086 to take a string of as input (in 'C' format) and do the following Operations on it.
   a. Find whether given string substring or not.
6. Write an ALP of 8086 to take a string of as input (in 'C' format) and do the following Operations on it
   a. Find the Armstrong number
   b. Find the Fibonacci series for n numbers
   Display the results by using "int xx" of 8086.
7. Write the ALP to implement the above operations as procedures and call from the main procedure.

8. Write an ALP of 8086 to find the factorial of a given number as a Procedure and call from the main program which display the result.