# M.Sc. 4th Semester Examination, 2024

## ELECTRONICS

*( Microprocessor and Microcontrollers Lab )*

( Practical )

PAPER — ELC-495 (New)

*Full Marks* : 50

*Time* : 3 hours

*The questions are of equal value*

Answer any **one** question selecting it by lucky draw

1. Write an assembly language program to transfer a block of eight data stored in memory locations X100 H to X107 H. The

data are to be stored in the locations starting from X200 H to X207 H in reverse order. Repeat the experiment for three sets of data.

2. Write an assembly language program to find 2's complement of a 16-bit number. Repeat the experiment for five numbers.

3. Write an assembly language program to add two 8-bit numbers stored at two consecutive memory locations X100 H & X101 H, respectively and store the result in memory locations X102 H & X103 H, which may contain carry.

4. Write an assembly language program to convert an 8-bit binary number into its equivalent gray code. The binary number to be stored in memory location X100 H and the result is to be stored in memory location X101 H. Repeat the experiment with five different numbers.

5. Write an assembly language program to convert a BCD number stored in memory location X400 H into its equivalent binary number. Store the result in memory location X500 H. Repeat the experiment for five different numbers.

6. Write an assembly language program to calculate the square of a given number (<16) using the following algorithm :

   Step 1: Square = 0, C= Given number, X = 1

   Step 2: Square = Square +X

   Step 3: C=C−1.

   Step 4: If C = 0, then goto Step 6

   Step 5: x = x+2, goto Step 2

   Step 6: Store the Square Value

   Step 7: Terminate

   Repeat the experiment for 5 sets of data.

7. The memory locations X100 H & X101 H contain two 8-bit numbers, among them one is dividend (x) and another is diviser (y). Write an assembly language program to divide x by y. Store the quotient & the remainder in the memory locations X102 H & X103 H. Perform the experiment for five numbers.

8. Write an assembly language program to find the smallest number in a given array of 10 numbers. The array is stored in the memory locations starting from X150 H onwards. Store the result at the memory locations starting from X250 H. Repeat the experiment with three different arrays.

9. How would you control an LED blinking using Arduino ? Draw its circuit and write the program to do this experiment.

10. Write an Arduino program to control a servo motor and make it sweep back and forth between specific angles. Draw the circuit.

11. Write an assembly language program to sort a set of ten data bytes in descending order that are stored from memory location X500H.

12. Write an assembly language program to control the traffic light system using 8085 and 8255 PPI.

13. Write an assembly language program to exchange two set of data bytes of length five where one set is stored from memory location X500H and another from memory location X600H.

14. Write an assembly language program to interface ADC and DAC with 8085 and demonstrate generation of square wave.

15. Write an assembly language program to control the operation of Steeper Motor using 8085 and 8255 PPI.

## Distribution of Marks

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|---|---|
| Flow Chart | : 05 Marks |
| Assembly language program | : 10 Marks |
| Execution of program | : 10 Marks |
| Results | : 05 Marks |
| Discussion | : 05 Marks |
| Viva-voce | : 10 Marks |
| Laboratory note book | : 05 Marks |
| Total | : 50 Marks |

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