

**2023****M.Sc.****4th Semester Examination****ELECTRONICS****PAPER : ELC-495****( Practical )***Full Marks : 50**Time : 3 hours*

*The figures in the right hand margin indicate marks.*

**( MICROPROCESSOR PROGRAMMING LAB )**

Answer *any one* question from the following :

1. Write an assembly language program to transfer a block of data stored in memory locations X050H to X05FH. The data are to be stored from the locations starting from X300 H to X30F H in reverse order. Repeat the process for three different blocks of data.

2. Write an assembly language program to convert an 8-bit binary number stored in memory location XX00 H into its equivalent Gray code. Store the result in the memory address XX50 H. Repeat the experiment for 5 different numbers.
  
3. Write an assembly language program to convert an 8-bit Gray code into its equivalent binary equivalent number. The Gray code is stored in memory address X200 H and the result is to be stored in memory location X300 H. Repeat the experiment for 5 different Gray codes.
  
4. Write an assembly language program to find the largest number in a given array of 10 elements. The array is stored in the memory locations starting from X200 H onwards. Store the result at the memory location X300 H. Repeat the experiment with three different arrays.
  
5. Write an assembly language program to arrange 10 bytes of data in ascending order. The data are stored in memory locations starting from X050 H. Repeat the experiment with three different arrays.

( 3 )

6. The memory locations XX50 H and XX51 H contain two 8-bit numbers. Write an assembly language program to multiply the numbers using 'shift and add' method. Store the result in the locations XX80 H and XX81 H respectively. Repeat the experiment with 5 sets of data.
  
7. Write an assembly language program to perform 8-bit division using 'shift and subtract' method. The memory locations XX50 H and XX51 H contain the two 8 bit numbers. Store the quotient and remainder in the locations XX80 H and XX81 H respectively. Repeat the experiment with 5 sets of data.
  
8. Write an assembly language program to add two 8-bit numbers stored in XX50 H and XX51 H memory locations. Store the result which may contain a carry. Repeat the process with 5 sets of data.
  
9. Write an assembly language program to find 2's complement of an 8-bit number using the following algorithm :

( 4 )

“Copy all the bits starting from LSB of the byte up to the first 1 bit of the number and then complement all the bits up to MSB.”

Repeat the experiment for 5 numbers.

10. Write an assembly language program to calculate factorial of a whole number. Store the number and its result in consecutive memory locations.

Data : 00 H, 01 H, 03 H, 05 H and 07 H

### Distribution of Marks

Flow chart	: 05 marks
Assembly language programme	: 10 marks
Execution of the program	: 10 marks
Result	: 05 marks
Discuss	: 05 marks
Viva-voce	: 10 marks
Laboratory notebook	: 05 marks
Total	: 50 marks

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