2022

M.Sc.

4th Semester Examination

ELECTRONICS

PAPER—ELC-495 (Practical)

MICROPROCESSOR PROGRAMMING LAB

Full Marks : 50

Time : 2 Hours

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

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

1. Write an assembly language program to add one 8-bit number with another 8-bit number stored at two consecutive memory locations and store the result which may contain a carry. Record the results with 5 sets of date.

2. Write an assembly language program to find 2's complement of an 8-bit number using the following algorithm :

'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.

3. The memory locations XX50H and XX51H contain two 8-bit numbers. Write an assembly language program to divide X by Y (without using repeated subtraction). Store the quotient and remainder in the locations XX80H and XX81H respectively. Repeat the experiment with 5 sets of date.

4. Write an assembly language program to convert an 8-bit binary number into is equivalent Gray code. The binary number is to be stored in the memeory location X200H and the result is to be seen in the memory location X300H. Repeat the experiment with 5 different numbers.

5. A set of ten current reatings is stored in memory locations starting at XX50H. The readings are expected to be positive ($<127_{10}$). Write an assembly language program to :

(a) Check each reading to determine whether it is positive or negative.

(b) reject all negative readings.

(c) add all positive readings.

(d) in the memory location XX80H, store FFH when the sum exceeds eight bits, otherwise store the sum.

Date (H) : 21, C2, 2F, 24, 28, 9F, F2, 30, D8, 19

Repeat the experiment with two more different data sets of ten bytes each.

6. Write an assembly language program to find whether an 8-bit number stored in the memory address XX50H is a prime number or not. If the given number is a prime number, show 01H in the memory location XX80H; otherwise display 00H there-in. Repeat the experiment with 5 different numbers.

7. Write an assembly language program to calculate the square of a given number (< 16_{10}) using the following algorithm :

Step I : Square $\leftarrow$ 0, Count $\leftarrow$ given number, Odd $\leftarrow$ 1

Step II : Square $\leftarrow$ Square + Odd

Step III : Count – 1

Step IV : If count = 0, then go to Step VI

Step V : Odd $\leftarrow$ Odd + 2, go to Step II

Step VI : Store the current value of square.

Repeat the experiment with 5 different numbers.

8. Write an assembly language program to convert an 8-bit binary number stored in a memory location X500H into equivalent BCD number. The memory locations starting from XX70H are specified for the result. Repeat the experiment with 5 different numbers.

9. Write an assembly language program arrange 10 bytes of data in a descending order. The data are stored in memory locations starting from X050H. Store the result from the memory location X500H onwards. Repeat the experiment with three sets of data .

10. Write an assembly language program to find the HCF of three 8-bit numbers stored in three consecutive memory locations starting from XX50H. Store the result to a memory address just after the data locations. Repeat the experiment for 5 different sets of data.

Distribution of Marks

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