NATIONAL INSTITUTE OF TECHNOLOGY, WARANGAL

(An Institution of National Importance)

DEPARTMENT OF ELECTRICAL ENGINEERING

8086 Microprocessor Assembly language Programming

1. Arithmetic Programs: Write an ALP (assembly language program) to

1.1 Store two 8-bit numbers in BL & DL. ADD them and save the result in CL.
1.2 Store two 16-bit numbers in AX & BX. ADD them and save the result in AX.
1.3 Store two 8-bit numbers in CL & DL. Subtract DL from CL save the result in CL.
1.4 Store two 16-bit numbers in BX & CX. Subtract CX from BX save the result in AX.
1.5 Store two 8-bit numbers in AL & CL. Multiply AL and CL save the result in AX.
1.6 Store two 16-bit numbers in AX & BX. Multiply AX and BX save the result in CX and DX.
1.7 Store two 8-bit numbers in AL & BL. Divide AL and BL save the result in registers of your choice.
1.8 Store two 16-bit numbers in AX & BX. Divide AX and BX save the result in registers of your choice.

2. Write an ALP to form a square of each element of the given byte array

Input: Memory location		Data
1000	:	01H
1001	:	03H
1002	:	05H
1003	:	02H
1004 `	;`	06H
1005	:	08H
1006	:	07H

3. Write an ALP to find the number of one's in a word stored in consecutive memory locations.

Input: Memory location		Data
1000	:	23H
1001	:	12H
Output: Memory location		Data
2000	:	05H

4. Write an ALP to find the mean square of a data stored in successive memory locations.

Input: Memory location		Data
1000	:	01H
1001	:	02H
1002	:	03H
1003	:	04H

5. Write an ALP to output Fibonacci series upto 15 terms.

6. Write an ALP to arrange the given elements of the array in ascending and descending order.

7. write an ALP to find the nature of the roots of the quadratic equation whose coefficients are stored in successive memory locations and output is

Output:
2000: 00 if the roots are real and equal
01 if the roots are real and distinct
02 if the roots are imaginary

8. Write an ALP to count the number of elements in a word array with the end of the array marked by 0000H

9. Write an ALP to find the largest element and lowest element of the given byte array.

10. Write an ALP to convert the given Fahrenheit temperature to Celsius temperature
Hint: F=C*9/5+32 or C=(F-32)*5/9

11. Write an ALP to find out the product and addition of two 3X3 matrices when the elements are stored in successive memory location row-wise.

12. Write an ALP to add two ASCII numbers and also add two BCD numbers.

13. Write an ALP to convert a hexadecimal to decimal number

14. Write an ALP to find the no occurrence of an element in a byte array

15. Write an ALP using the loop instructions with indirect addressing that copies a string from source to target reversing the character order in the process.
Input: "This is the string"
Output: "gnirts eht si siht"

16. Write the GCD of two 8-bit numbers.
Input: 1000: 12H
1001:0CH
Output: 2000:06H

17. A company makes several parts. Each part is coded below. The code is 16-bit width with 4-bits for part number and 8-bits for serial number. Find the total number of items with part number=4

Model No.	Part No,	Serial No.
4-bit	4-bit	8-bit