Q.1 Write an 8086 assembly language program for addition of two 8 bit numbers.

Answer: DATA SEGMENT

     NUM1 DB 9H

     NUM2 DB 7H

     RESULT DB ?

   ENDS

   CODE SEGMENT

    ASSUME DS:DATA CS:CODE

   START:

     MOV AX,DATA

     MOV DS,AX

     MOV AL,NUM1

     ADD AL,NUM2

     MOV RESULT,AL

   ENDS

   END START

Q5 Sum of BCD numbers

Answer:

DATA SEGMENT

  NUM1 **DB** 05

  NUM2 **DB** 06

RESULT **DB** ?

ENDS

CODE SEGMENT

ASSUME DS:**DATA** CS:**CODE**

START:

MOV AX,**DATA**

MOV DS,AX

MOV AL,NUM1

ADD AL,NUM2

MOV RESULT,AL

MOV AH,0

AAA

ENDS

END START

Q2. Sum of series of 10 numbers and store result in memory location total.

Solution: data segment

List db 12,34,56,78,98,01,13,78,18,36

Total dw ?

Data Ends

Code segment

Start:MOV AX, @data

MOV DS, AX

```asm
        MOV AX, 0000H

        MOV CX, 0AH ; counter

        MOV BL, 00H ; to count carry

        MOV SI, offset List

Back: ADD AL, [SI]

        JC Label

Back1: INC SI

        LOOP Back

MOV Total, AX

MOV Total+2, BL

Label: INC BL

        JMP Back1

Code ends

End start
```

Q3. Write a program to multiply 2 numbers (16-bit data) for 8086.

Solution

```asm
 data segment

 Multiplier dw 1234H

 Multiplicant dw 3456H

Product dw ?

Data ends

code segment

 start:  MOV AX, @data

 MOV DS, AX

 MOV AX, Multiplicant
```

MUL Multiplier

MOV Product, AX

MOV Product+2, DX

Code ends

End start

Q4. Write a program to find Largest No. in a block of data. Length of block is 0A. Store the maximum in location result.

data segment

List db 80, 81, 78, 65, 23, 45, 89, 90, 10, 99

Result db ?

Data ends

code segment

ASSUME CS: CODE, DS: DATA

Start: MOV AX, @data

MOV DS, AX

MOV SI, offset List

MOV AL, 00H

MOV CX, 0AH

Back: CMP AL, [SI]

JNC Ahead

MOV AL, [SI]

Ahead: INC SI

LOOP Back

MOV Result, AL

Code ends

End start

Q5. Write an 8086 assembly language program for sorting the numbers in ascending order.

Solution: DATA SEGMENT

LIST DB 12H,45H,28H,25H,A5H,F3H,14H,F4H,5AH,85H

COUNT EQU 10

DATA ENDS

CODE SEGMENT

ASSUME CS: CODE, DS: DATA

START: MOV AX, 2000H

   MOV DS, AX   ; **INITIALIZE THE SEGMENT**

   MOV CX, COUNT

   DEC CX

BACK2: MOV DX,COUNT

   DEC DX

   MOV SI,OFFSET LIST ;LOAD OFFSET OFVARIABLE LIST TO SI

BACK1: MOV AL, [SI]   ; LOAD THE FIRST NO. IN AL

   INC SI   ; POINTER TO NEXT NO.

   CMP AL, [SI]   ; COMPARE TWO NOS.

   JC NEXT   ; IF 1ST NO. LARGER THAN NEXT NO.JUMP TO REPEAT LOOP

   MOV BH,[SI]

   MOV [SI],AL

     DEC SI

     MOV [SI],BH

     INC SI

  NEXT: DEC DX

     JNZ BACK1

     LOOP BACK2

CODE ENDS

      END START

Q6. Write an 8086 assembly language program for sorting the numbers in descending order.

Solution: DATA SEGMENT

    LIST DB 12H,45,28H,25H,A5H,F3H,14H,F4H,5AH,85H

    COUNT EQU 10

    DATA ENDS

    CODE SEGMENT

    ASSUME CS: CODE, DS: DATA

    START: MOV AX, 2000H

     MOV DS, AX   **; INITIALIZE THE SEGMENT**

     MOV CX, COUNT

     DEC CX

   BACK2: MOV DX, COUNT

     DEC DX

     MOV SI, OFFSET LIST ;LOAD OFFSET OFVARIABLE LIST TO SI

```
BACK1: MOV AL, [SI]              ; LOAD THE FIRST NO. IN AL

       INC SI                   ; POINTER TO NEXT NO.

       CMP AL, [SI]             ; COMPARE TWO NOS.

       JNC NEXT        ; IF 1ST NO. SMALLER THAN NEXT NO. JUMP TO REPEAT
LOOP

       MOV BH,[SI]

       MOV [SI], AL

       DEC SI

       MOV [SI], BH

       INC SI
NEXT: DEC DX

       JNZ BACK1

       LOOP BACK2
CODE ENDS

       END START
```