3.

a) Sort a given set of ‘n’ numbers in ascending order using the Bubble Sort algorithm.

```
.model small

.stack

.data

 a db 10h,40h,12h,04h,19h

 cnt dw $-a

.code

 mov ax,@data

 mov ds,ax

 mov dx,cnt

 dec dx

again0:

 lea si,a

 again1:

mov cx,dx

mov al,[si]

 cmp al,[si+1]

 jl hi

 xchg [si+1],al

 xchg [si],al

 hi:

 loop again1

 dec dx

 jnz again0


 mov ah,4ch
```

```
 int 21h

 end
```

b) Read the status of two 8-bit inputs (X & Y) from the Logic Controller Interface and display

X*Y.

```
.model small

.stack

.data

inc si

.code

m db 10,13,”Enter the 1st 8-bit number : $”

n db 10,13,”Enter the 2nd 8-bit number : $”

PA equ 9800H

PB equ 9801H

PC equ 9802H

CR equ 9803H

mov ax,@data

mov ds,ax

mov al,82H

mov dx,CR

out dx,al

lea dx,m

mov ah,09H

int 21H

mov ah,01H

int 21H

mov dx,PB
```

```
in al,dx

mov bl,al

lea dx,n

mov ah,09H

int 21H

mov ah,01H

int 21H

mov dx,PB

in al,dx

mul bl

mov dx,PA

out dx,al

call delay

mov al,ah

out dx,al

call delay

mov ah,4cH

int 21H

delay PROC

push cx

push bx

mov cx,0FFFFH

up : mov bx,0FFFFH

up1 : dec bx

jnz up1

loop up

mov ah,01H ; O/p will be displayed until user enters any key
```

```
int 21H
pop bx
pop cx
RET
delay ENDP
end
```