10.

a) Write a program to simulate a Decimal Up-counter to display 00-99.

```
.model small

.stack

.data

.code

mov ax,@data

mov ds,ax

mov bx,3030h

up1: call disp

 call delay

 inc bl

 cmp bl,39h

 ja down1

 jmp up1

down1:mov bl,30h

 inc bh

 cmp bh,39h

 ja exit

 jmp up1

exit: mov ah,4ch

 int 21h

disp PROC

mov dl,bh

mov ah,02h

int 21h

mov dl,bl
```

```
        mov ah,02h

        int 21h

        push bx

        mov ah,03h

        mov bh,00h

        int 10h

        sub dl,02h

        mov ah,02h

        int 10h

        pop bx

        RET

        disp ENDP

        delay PROC

        up3: mov bx,8fffh

        up2: dec bx

         jnz up2

         loop up3

         pop bx

         RET

         delay ENDP


        end
```

b) Generate a Half Rectified Sine wave form using the DAC interface. (The output of the DAC is

to be displayed on the CRO).

```
        push bx

        mov cx,0c455h
```

```
        .model small

        .stack

        .data

array db 7fH, 8cH, 99H, 0a6H, 0b2H, 0beH, 0c9H, 0d3H, 0ddH, 0e5H,
0ecH,

0f3H, 0f7H, 0fbH, 0fdH, 0feH, 0fdH, 0fbH, 0f7H, 0f3H, 0ecH, 0e5H,
0ddH,

0d3H, 0c9H, 0beH, 0b2H, 0a6H, 99H, 8cH, 7fH

db 7FH, 7FH, 7FH, 7FH, 7FH, 7FH, 7FH, 7FH, 7FH, 7FH, 7FH, 7FH, 7FH,

7FH, 7FH, 7FH, 7FH, 7FH, 7FH, 7FH, 7FH, 7FH, 7FH, 7FH, 7FH, , 7FH,
7FH,

7FH, 7FH, 7FH

len dw ($-array)

PA equ 9800H

PB equ 9801H

PC equ 9802H

CR equ 9803H

        .code

mov ax,@data

mov ds,ax

mov al,80H

mov dx,CR

out dx,al

up1 : lea si, array

mov cx,len

up : mov dx,PA

mov al,[si]

out dx,al

mov dx,PB
```

```asm
        out dx,al
        call delay
        inc si
        loop up
        jmp up1
        mov ah,4cH
        int 21H
delay PROC
        mov bl,0FFH
up2 : dec bl
        jnz up2
        RET
Delay ENDP
        end
```