Id No **13943**

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Subject **Microprocessor & Assembly Language**

Semester **Summer 2020**

Assignment 2nd

Question 1:

What will be the value of the destination operand after each of the following instructions execute in sequence?

```
.data
val1 WORD 1000h
val2 WORD 2000h
arrayB BYTE 10h, 20h, 30h, 40h, 50h
arrayW WORD 100h, 200h, 300h
arrayD DWORD 10000h, 20000h
.code
mov bx,0A69Bh
movzx cx, bl ; (a) CX = ?
movsx cx, bl ; (b) CX = ?
mov ax, val1
xchg val2, ax ; (c) val2 = ?
mov al, [arrayB+1] ; (d) AL = ?
```

mov ax, [arrayW+2] ; (e) AX = ?

mov eax, [arrayD+4] ; (f) EAX = ?

Answer:

(a)

mov bx,0A69Bh

movzx eax,bx ; EAX = 0000A69Bh

movzx edx,bl ; EDX = 0000009Bh

movzx cx,bl ; CX = 009Bh

(b)

mov bx,0A69Bh

movsx eax,bx ; EAX = FFFFA69Bh

movsx edx,bl ; EDX = FFFFFF9Bh

movsx cx,bl ; CX = FF9Bh

(c)

(d)

mov al,[arrayB+1] ; AL = 20h

(e)

mov ax,[arrayW+2] ; AX = 200h

(f)

mov eax,[arrayD+4] ; EAX = 20000h

Question 2:

Answer:

Question 3:

Answer:

```
mov eax,TYPE myBytes          ;     EAX : 1
mov eax,LENGTHOF myBytes      ;     EAX : 4
mov eax,SIZEOF myBytes ;            EAX : 4
mov eax,TYPE myWords          ;     EAX : 2
mov eax,LENGTHOF myWords      ;     EAX : 4
mov eax,SIZEOF myWords        ;     EAX : 8
mov eax,SIZEOF myString       ;     EAX : 5
```

Question 4:

Answer:

Question 5:

Answer:

(a)

```
mov al,[esi+3] ;  AL = 40h
```

(b)

```
mov esi,OFFSET myWords + 2
mov ax,[esi] ;       AX = 003Bh
```

(c)

```
mov edi,8
mov edx,myDoubles[edi] ;  EDX = 3
```

Question 6

(a)

Answer:

```
.MODEL SMALL
 .STACK 100H

 .DATA
    PROMPT_1  DB  \'Enter the Lower Case Letter : $\'
    PROMPT_2  DB  \'The Upper Case Letter is : $\'

 .CODE
   MAIN PROC
     MOV AX, @DATA              ; initialize DS
     MOV DS, AX

     LEA DX, PROMPT_1           ; load and print PROMPT_1
     MOV AH, 9
     INT 21H

     MOV AH, 1                  ; read a letter
     INT 21H

     MOV BL, AL                 ; save the letter in BL
```

```
    MOV AH, 2                ; return carriage
    MOV DL, 0DH
    INT 21H

    MOV DL, 0AH              ; line feed
    INT 21H

    LEA DX, PROMPT_2         ; load and print PROMPT_2
    MOV AH, 9
    INT 21H

    SUB BL, 20H              ; convert a lower case letter to upper case letter

    MOV AH, 2                ; print the Upper case letter
    MOV DL, BL
    INT 21H

    MOV AH, 4CH              ; return control to DOS
    INT 21H
  MAIN ENDP
END MAIN
```

(b)

Answer:

(c)

Answer:

Clear all bits except bits 0, 1,and 3. Then compare the result with 00001011 binary.

```
and al,00001011b        ; clear unwanted bits
cmp al,00001011b        ; check remaining bits
je L1                   ; all set? jump to L1
```

Question 7:

(a)

Answer:

```
mov eax,var1
cmp eax,var2
jle L1
mov var3,110
mov var4,90
jmp L2
L1: mov var3,128
L2:
```

(b)

Answer:

```
cmp val1,ecx
ja L1
cmp ecx,edx
ja L1
mov x,40
L1: move x,30
next:
```

(c)

Answer:

```
_while:
cmp eax,ebx ; check loop condition cmp eax,ebx ; check loop condition
jae _endwhile ; false? exit loop
inc eax ; body of loop
jmp _while ; repeat the loop
_endwhile:
```