40 pts

Name: _____

Class Day / Time: _____

Due Date: _____

Lab #8 – Conditional Processing

1) In the following instruction sequence, show the resulting value of AL where indicated, in binary:

```
mov al,01101111b
and al,00101101b              ; a. _____
mov al,6Dh
and al,4Ah                    ; b. _____
mov al,00001111b
or al,61h                     ; c. _____
mov al,94h
xor al,37h                    ; d. _____
```

2) In the following instruction sequence, show the resulting value of AL where indicated, in hexadecimal:

```
mov al,7Ah
not al                        ; a. _____
mov al,3Dh
and al,74h                    ; b. _____
mov al,9Bh
or al,35h                     ; c. _____
mov al,72h
xor al,0DCh                   ; d. _____
```

3) In the following instruction sequence, show the values of the Carry, Zero, and Sign flags where indicated:

```
mov al,00001111b
test al,00000010b             ; a. CF=        ZF=        SF=
mov al,00000110b
cmp al,00000101b              ; b. CF=        ZF=        SF=
mov al,00000101b
cmp al,00000111b              ; c. CF=        ZF=        SF=
```

4) Write a single instruction using 16-bit operands that clears the high 8 bits of AX and does not change the low 8 bits.

5) Write a single instruction using 16-bit operands that sets the high 8 bits of AX and does not change the low 8 bits.

6) Write a single instruction (other than NOT) that reverses all the bits in EAX.

7) Write instructions that set the Zero flag if the 32-bit value in EAX is even and clear the Zero flag if EAX is odd.

8) Write a single instruction that converts an uppercase character in AL to lowercase but does not modify AL if it already contains a lowercase letter.

9) Write a single instruction that converts an ASCII digit in AL to its corresponding binary value. If AL already contains a binary value (00h to 09h), leave it unchanged.

10) Given two bit-mapped sets named SetX and SetY, write a sequence of instructions that generate a bit string in EAX that represents members in SetX that are not members of SetY.

11) (Yes/No): Will the following code jump to the label named Target?

mov ax,8109h
cmp ax,26h
jg Target

12) (Yes/No): Will the following code jump to the label named Target?

mov ax,-30
cmp ax,-50
jg Target

13) (Yes/No): Will the following code jump to the label named Target?

mov ax,-42
cmp ax,26
ja Target

14) Write instructions that jump to label L1 when the unsigned integer in DX is less than or equal to the integer in CX.

15) Write instructions that jump to label L2 when the signed integer in AX is greater than the integer in CX.

16) Write instructions that first clear bits 0 and 1 in AL. Then, if the destination operand is equal to zero, the code should jump to label L3. Otherwise, it should jump to label L4.