

1. Assume that the state of the 8088 registers and memory just prior to the execution of each instruction from (a) to (e) is as follows:
(AX) = 0010H, (BX) = 0020H, (CX) = 0040H, (DX) = 0040H (DI) = 0200H,
(DS:100H)=10H, (DS:101H)=00H, (DS:120H)=FFH, (DS:121H)=FFH,
(DS:200H)=30H, (DS:201H)=00H, (DS:210H)=40H, (DS:211H)=00H.

What result is produced in the destination operand by executing the instruction?

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|----------------------------|-------|
| a. ADD AX, 00FFH | 010FH |
| b. INC BYTE PTR [0100H] | 11H |
| c. SUB CL, BL | 20H |
| d. DEC BYTE PTR [DI]+0010H | 3FH |
| e. MUL DX | 0400H |

2. What is the result in AL after executing each step of the following instructions?

MOV AL, 0FFH	AL = FFH
AND AL, 80H	AL = 80H
SHL AL, 1	AL = 00H

3. Implement the following expression in assembly language, using 32-bit integers (you may modify any registers you wish):

`eax = -dword1 + (edx - ecx) + 1 (NOT GRADED)`

```
sub edx,ecx
mov eax,dword1
neg eax      ; eax = -dword1
add eax,edx
inc eax
```

4. Using the following data definitions, write instructions that use MOVSB to copy all the bytes from **source** to **target**:

```
.data
source BYTE 50 DUP(?)
target BYTE 100 DUP(?)
.code
;(first 4 statements may be in any order)
mov esi,OFFSET source
mov edi,OFFSET target
mov ecx,SIZEOF source
cld
rep movsb
```

5. What does the following instruction do CMOVPE? Moves the data if the if the parity is even
6. Write a near procedure that multiplies a byte unsigned number by 2 and does not destroy the contents of registers? What is the largest of that number without setting the carry flag?
- a) Mult PROC near uses AX BL
- ```
Mov BL,2
Mov AL, 35H ; any number of two hex digits will do
Mul BL,
Ret
Mult ENDP
```
- b) 01111111b
7. Explain what happens when PUSH BX instruction executes. Make sure to show where BH and BL are stored. (Assume SP=0100H and SS=0200H). Stack location is SS\*10H+SP=02100H, puts BH in 020ffh and BL in 020feH and SP becomes FEH
8. Explain how OUT DX, AX instruction operates. Sends the word content of AX to output port stored in DX
9. [T/F, why?] You can have only six different segments [DS,CS,SS,ES,GS, and FS] in the full segment memory organization model. F, you can define more segments in full segment model
10. Encode the following instruction in machine code (One part is required)
- a. XOR CL, [1234H] = 320E3412H or 1A0E3412H
- b. MOV [BX+DI+1234h], DS = 8C9B3412H
11. Convert the following opcode into instructions (One part is required)
- a. 8ED8H=MOV DS, AX
- b. B80120H=MOV AX, 2001H

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12. What is the single instruction that changes the content of AX from unpacked BCD to binary? AAA