COE 205, Term 101

Computer Organization & Assembly Programming

HW# 2

Q.1. Show the content of the memory allocated based on the following directives, assuming that the first byte is allocated at address 0000H in the data segment.

```
I       DB      -1, 255
        DW      0FAh
        DD      -250
J       DB      `24`
K       EQU     24
        DW      `24`
        DW      offset J
        DB      2 dup (2,4,2 dup(`24`))
```

Q.2. Suppose that you have the following initial content of the registers and memory locations, assuming that variables i and j are defined as byte variables:

AX=F2E9H	BX=0002H	CX=08A0H	DX=F1E0H
SI =0016H	DI =0010H	BP=C2E1H	SP =1330H
DS =1EC0H	ES =2FF4H	CS=3FDFH	SS =5000H
IP =E731H			

Memory Address (hex)			Contents (hex)
2000:	i	0010	1E
		0011	3F
		0012	BC
	j	0013	58
		0014	30
		0015	8A
		0016	D3
		0017	F7
		0018	00

(i) Show the contents of the registers and memory locations modified after the execution of each of the following instructions. Use the initial content of the registers and memory locations for the execution of each instruction. Furthermore, specify the addressing modes of the source and destination operands in each instruction.

1. ADD AX, [BX+16]
2. MOV BH, Byte PTR i+4
3. ADD CL, [SI-2]

4. MOV BYTE PTR [BX+DI+1], -1

5. MOV Word PTR i, offset j

6. MOV DX, [BX][SI]

(ii) Determine the starting and ending addresses of the code segment. What is the physical address of the next instruction to be fetched from memory.

(iii) Determine the physical address of the source operand in the following instruction:

MOV AX, [BX+DI+1]

(iv) Show the contents of AX, BX, and the flags (O,S,Z,A,P, and C) at the end of executing the ADD instruction

```
MOX AX, ABCEH
MOV BX,  4816H
ADD BX, AX
```

(v) Show the contents of AX, BX, and the flags (O,S,Z,A,P, and C) at the end of executing the SUB instruction

```
MOX AX, 6A57H
MOV BX,  74DAH
SUB  AX, BX
```