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(Theory Assignment - 1)

Machine code for instruction:

(i) MOV SI, [BX+2]

Soln: Opcode = MOV (which gives 100010)

D = Transfer to register (which gives 1)

W = 16 bit/word (which gives 1)

So byte one of machine code will be = 10001011
"1"

MOD = 8 bit displacement so 01

REG = SI · so 110

R/M = DS:[BX] so 111

So . 2nd byte of machine code will be = 01110111

Displacement = 02H

So byte 3 of machine code will be = 00000010

So the machine code is = 10001011 0111 01110000010B

Ans:

(ii) MOV CH, DH

Soln: Opcode = MOV ~~(tuh~~ = 100010

D = Transfer to register = 1

W = 8 bit / word = 0

so byte 1 of machine code will be = 1000 1010 W

MOD = R/M in a register so 11

REG = CH so 101 (destination reg)

R/M = DH (source) so 110

so 2nd byte of machine code will be = ~~10001010~~

= 11101110

so, the machine code is = 1000101011101110

Ans:

(iii) MOV DL, [DI + 1000H]

Soln: Opcode = MOV = 100010

D = Transfer to register = 1

W = 8 bit/word = 0

So, byte 1 of machine code will be = 10001010

MOD = 16 bit displacement = 10

REG = DL = 010

R/M = DS:[DI] = 101

So, 2nd byte of machine code will be = 10010101

Displacement = 1000H

So, 3rd byte of machine code will be = 00000000 000 10000

So, the machine code is,

1000101010010101 000 000 000001 0000

Ans:

(iv) MOV DL, [DI + 1H]

Soln: Opcode = MOV = 100010

D = Transfer to register = 1

W = 8 bit/word = 0

So, byte 1 of machine code will be = 10001010

MOD = 8 bit displacement = 01

REG = DL so 010

R/M = DS:[DI] so 101

So, 2nd byte of machine code will be = 01 010 101

Displacement = 01H

So, 3nd byte of machine code will be = 0000 0001

So, the machine code is,

1000101001010101 0000 0001

Ans: