Roll no:

CS321: Quiz1 ANSWERS

Max Marks: 100; Time: 1 hr

Q1: Convert $(478)_{10}$ into

(1) a 32-bit unsigned number……

(2) a 32 bit signed number ……

(3) a 32bit representation of -478 is ……

(4) Single Precision Float representation is : ……

(1) 00000000000000000000000111011110

(2) 00000000000000000000000111011110

(3) 11111111111111111111111000100010

(4) 01000011111011110000000000000000 (0x43ef0000)

4x5 Marks

Q2:

Write a 8085/8086 ASM Program to find Sum of the first n natural numbers.

Ans:

```
        LDA n
        MOV B, A
        XRA A
Loop:   ADD B
        DCR B
        JNZ Loop
        STA total
```

(5 points)

Q3 . (Brief explanation of the answer is a requirement). Consider an 8085 Microprocessor system.
The following program start at location 0100H.

```
LXI SP, 00FF
LXI H, 0107
MVI A, 20H
SUB M
```

(a) The content of accumulator when the program counter reaches 0109H is:

Write your answer here:

Ans: 00H

Explanation:

0100 LXI SP, 00FF
0103 LXI H, 0107
0106 MVI A, 20H
0108 SUB M
0109

M Contains the data of memory whose address which is in HL pair.
HL has address 0107
0107 corresponds to 20H.
therefore A-M=20H-20H = **00H (Ans)**

(10 points)

(b) If in addition following code exists from 0109H onwards,
ORI 40H
ADD M
What will be the result in the accumulator after the last instruction is executed?

Write your answer here:

(10 points)

Ans: 60H

After 0109 Accumulator will contain 00H
ORI will execute OR operation between Accumulator and 40H and store the content to Accumulator A = 40H => 00H OR 40H
Now Adding M(20H) with A(40H) gives **60H**.

Q3: Consider the following assembly language program.

```
1          MVI  B,87H
2          MOV A, B
3  START:  JMP  NEXT
4          MVI  B, 00H
5          XRA  B
6          OUT  PORT 1
7          HLT
8  NEXT:   XRA  B
```

```
9        JP      START
10       OUT     PORT 2
11       HLT
```

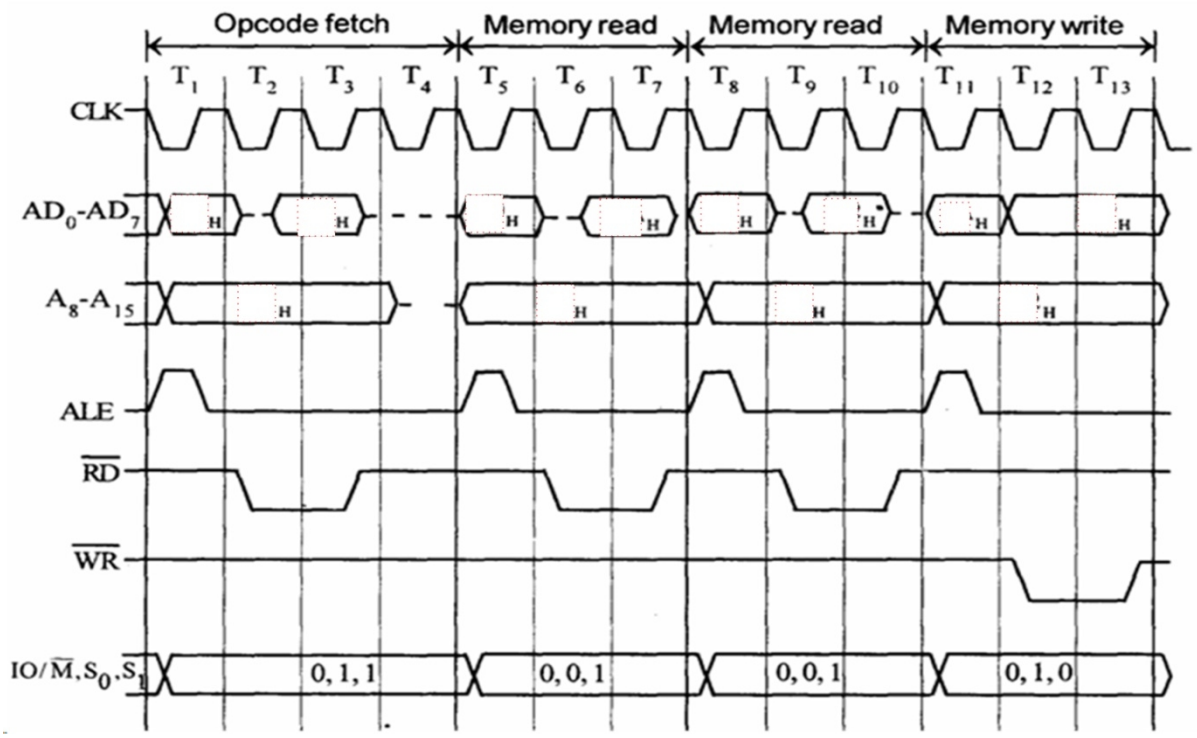
What is the output at PORT 2

First Loop A=87; B=87
NEX: XRA B= A=00; B=87
JP (jump on positive): jumps to Start
XRA B= A xor B , A= 87 (now Sign=1;) goes to OUT PORT 2 instruction.

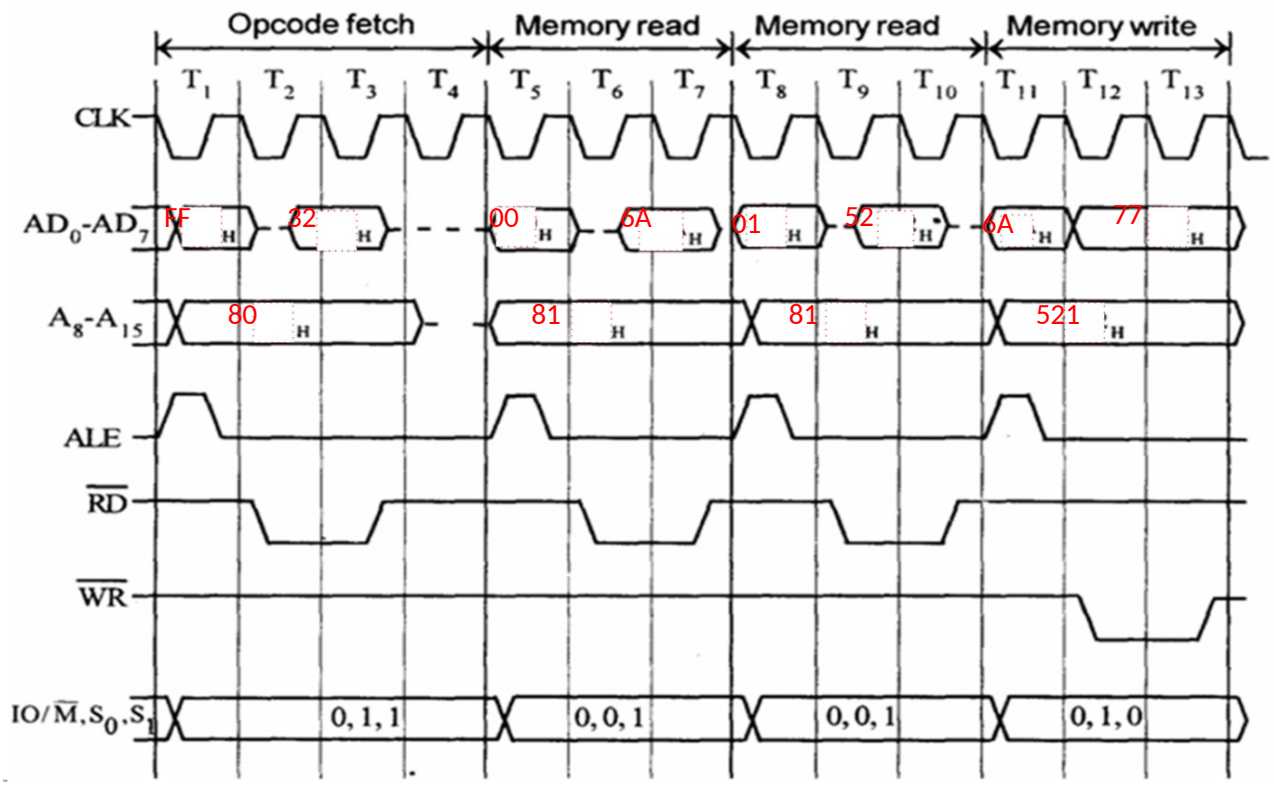
Ans: output of 87H at PORT2

(15 points)

Q4: Figure shows the timing diagram of STA 526AH instruction in 8085. Assuming that Accumulation contains 77_H and instruction is stored in memory starting 80FF H, which contains opcode 32H, fill the content of Address and Data bus in the timing diagram (places marked **H**)



(5 Points)



ANS

80FF: 32

8100:6A

8101:52

ACC:77

(16 points)

Q5 In an 8086 Processor, If ax contains 0002h and bx contains 01FFh

After mul bx

dx = 0000h ax = 03FEh

If ax contains 0001h and bx contains FFFFh

mul bx
dx = 0000h ax = FFFFh
imul bx
dx = FFFFh ax = FFFFh

(12 points)

Q6 In an 8086 Processor, If dx = 0000h, ax = 00005h, and bx = 0002h

div bx

ax = 0002h dx = 0001h

If dx = 0000h, ax = 0005h, and bx = FFFE fffh

div bx

ax = 0000h dx = 0005h

idiv bx

ax = FFFEh dx = 0001h

(12 points)