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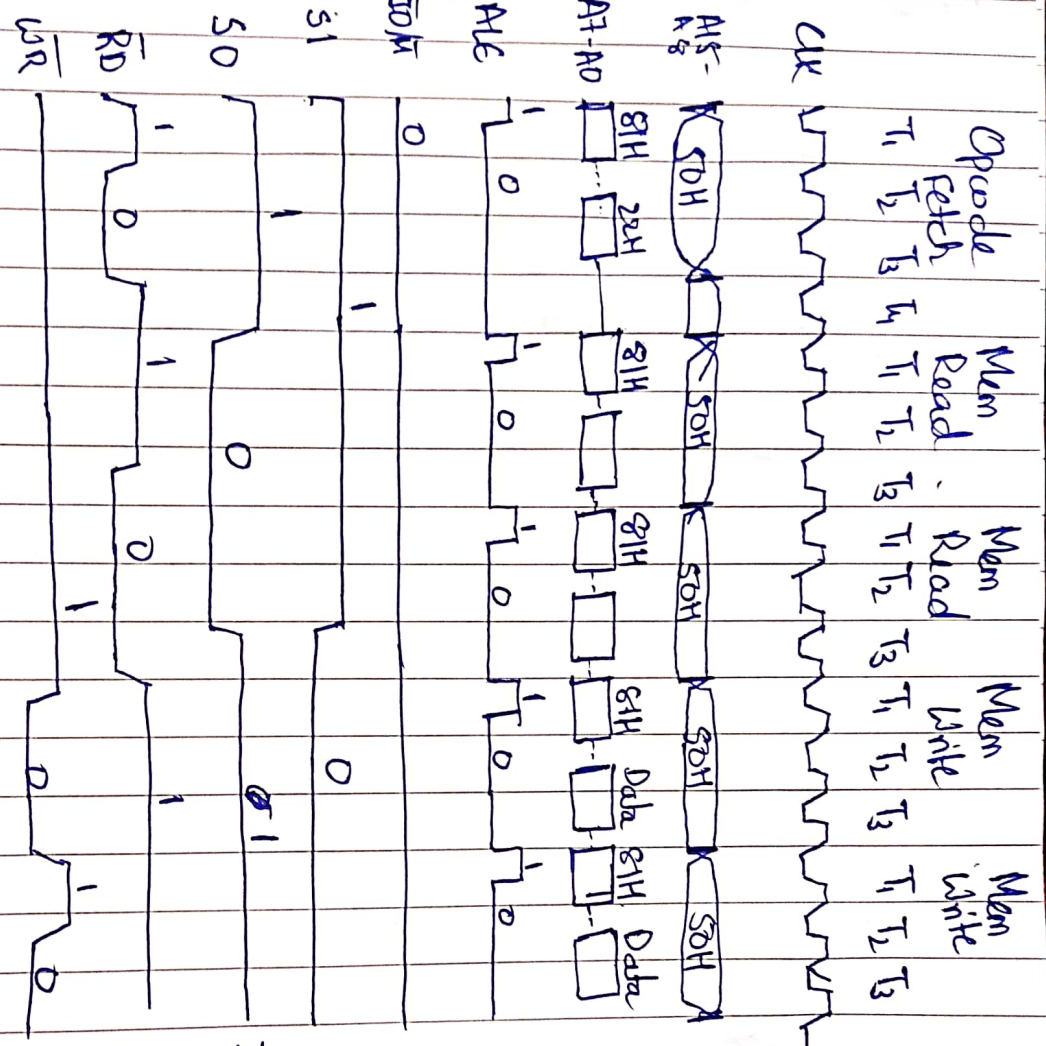
Kunal Rank

Ans 1: The instruction time diagram for SHLD 5081H is as follows:-



A15-A8 = 80H } My Address.
A7-A0 = 81H

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Ans 2:- Given, 32 bit readings in 4 consecutive memory locations.

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Ans 3:- Given that Time period = $\frac{1}{2MHz} = 0.5 \times 10^{-6} = 0.5\mu s$.

Calculating value,

$10 + (6+4+4+10) * X - 3 + 10 = \frac{500}{0.5 \times 10^{-6}} = 500 \times 10^3$

$X = \frac{500 \times 10^3 - 17}{24} = 20832.25_{10}$

$= 5161H$.

```
DELAY: LXI  B, 5161H
LOOP:  DCX B
       MOV A,B
       ORA C
       JNZ LOOP
       RET


       MVI D, AAH      ; D=1010 1010H

ROTATE: MOV A,D
       RLC             ;Rotate through carry.
       MOV D,A
       ANI 01H         ; If its 1, then jump up.
       JZ UP.
       CALL DELAY      ;Delay = 250 ms
       CALL DELAY      ;Delay = 250 ms.
       OUT 10H         ;Display to output port.
       JMP DONE
UP:    CALL DELAY
       OUT 10H.
DONE:  JMP ROTATE.
```

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Ans 4: To check pending RST 7.5, the following code can be used :-

```
~~EI~~          ; ~~Enable Interrupts~~
CHECK: RIM      ; Read Interrupt Mask
       MOV A,B  ; Store Interrupt Mask in A
       ~~CPI 4~~ ANI 40H ; Checks for set D6 bit.
       CPI 40H  ; Checks pending Interrupt for RST 7.5 (D6 bit)
       JZ RST   ; If equal, go to 003CH RST 7.5 location
       JMP EXIT
RST:   CALL 003CH ; Go to 003CH, vector address for RST 7.5
EXIT:  RET       ; Return to main program if no interrupt
```

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Ans 5: The required program is as follows:-

```
MVI B,0H
INR B        ; Resets Zero, Parity, Auxilliary Carry Flags
STC          ; Sets Carry
CMC          ; Resets Carry

MVI A,00FFH
ADI 01H
MVI B,0H     ;
INR B        ; Resets all flags (masked)
~~JC NE~~ JNC NEXT ; ~~If carry~~ no carry, then jump next.
MVI A,01H
~~NEXT: OUT 01H~~ JMP DISP
~~HLT~~
NEXT: MVI A,00H
DISP: OUT 01H
HLT.
```

The ADI instruction sets carry flag and is displayed in the output port.