



YCCE, Nagpur



MGI

ADC interfacing with 8051

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Professor

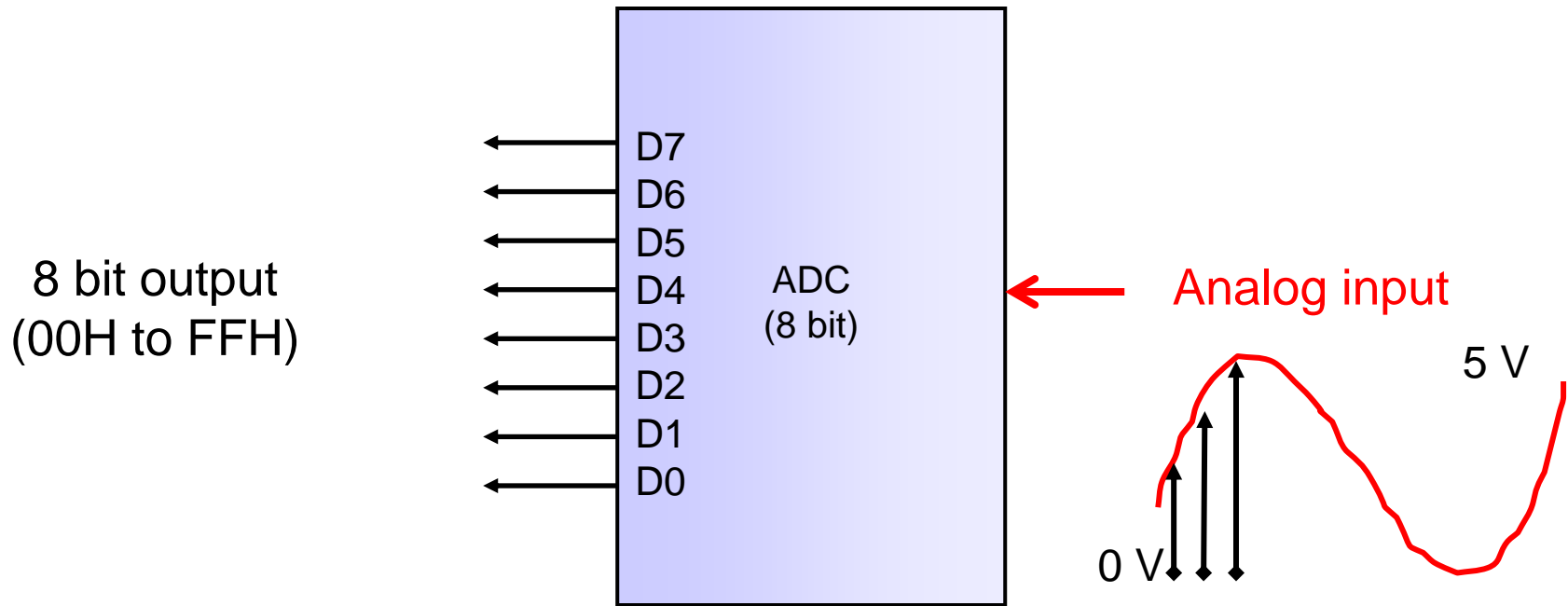
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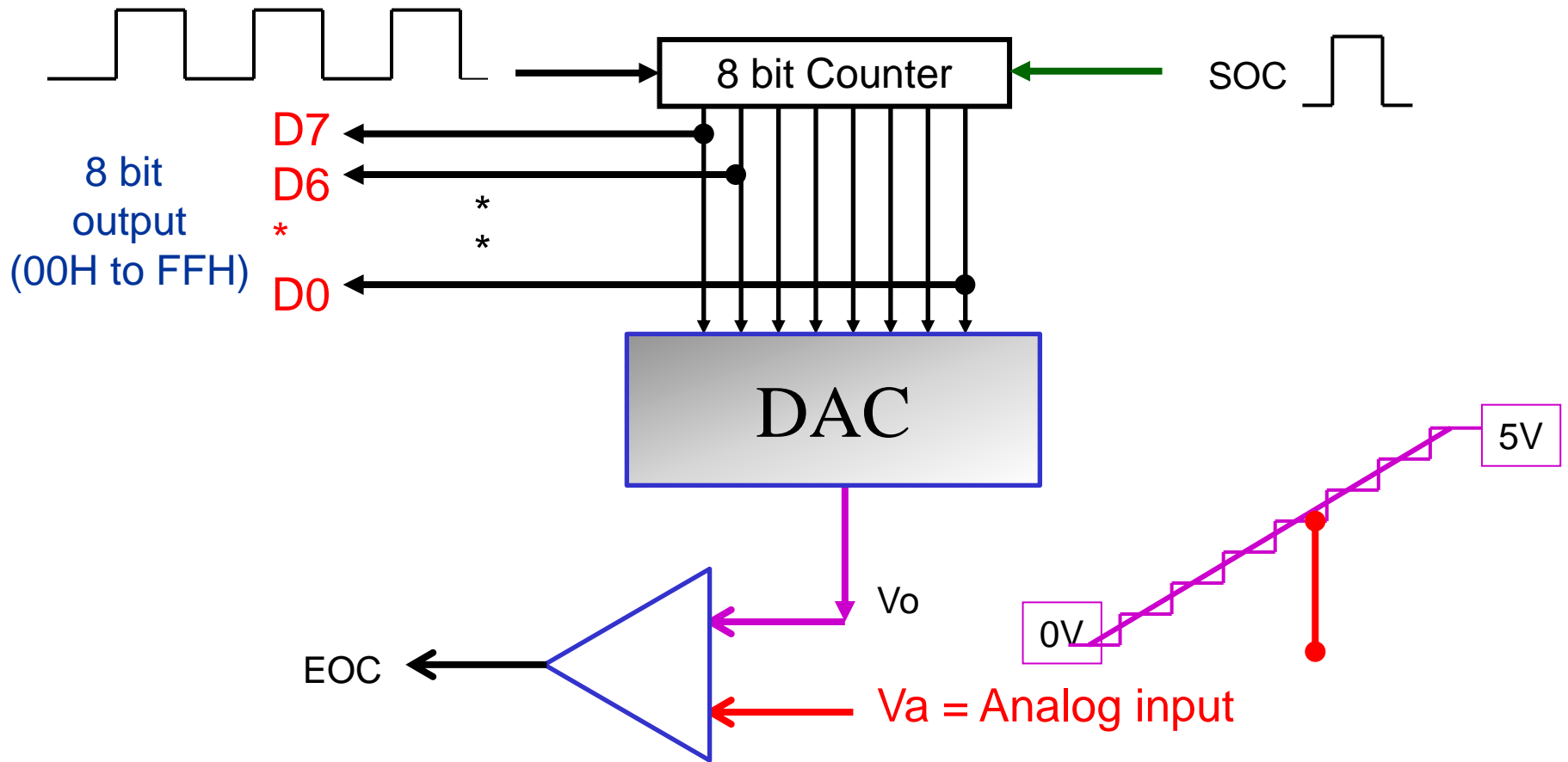
8 bit ADC



8 bit output
(00H to FFH)



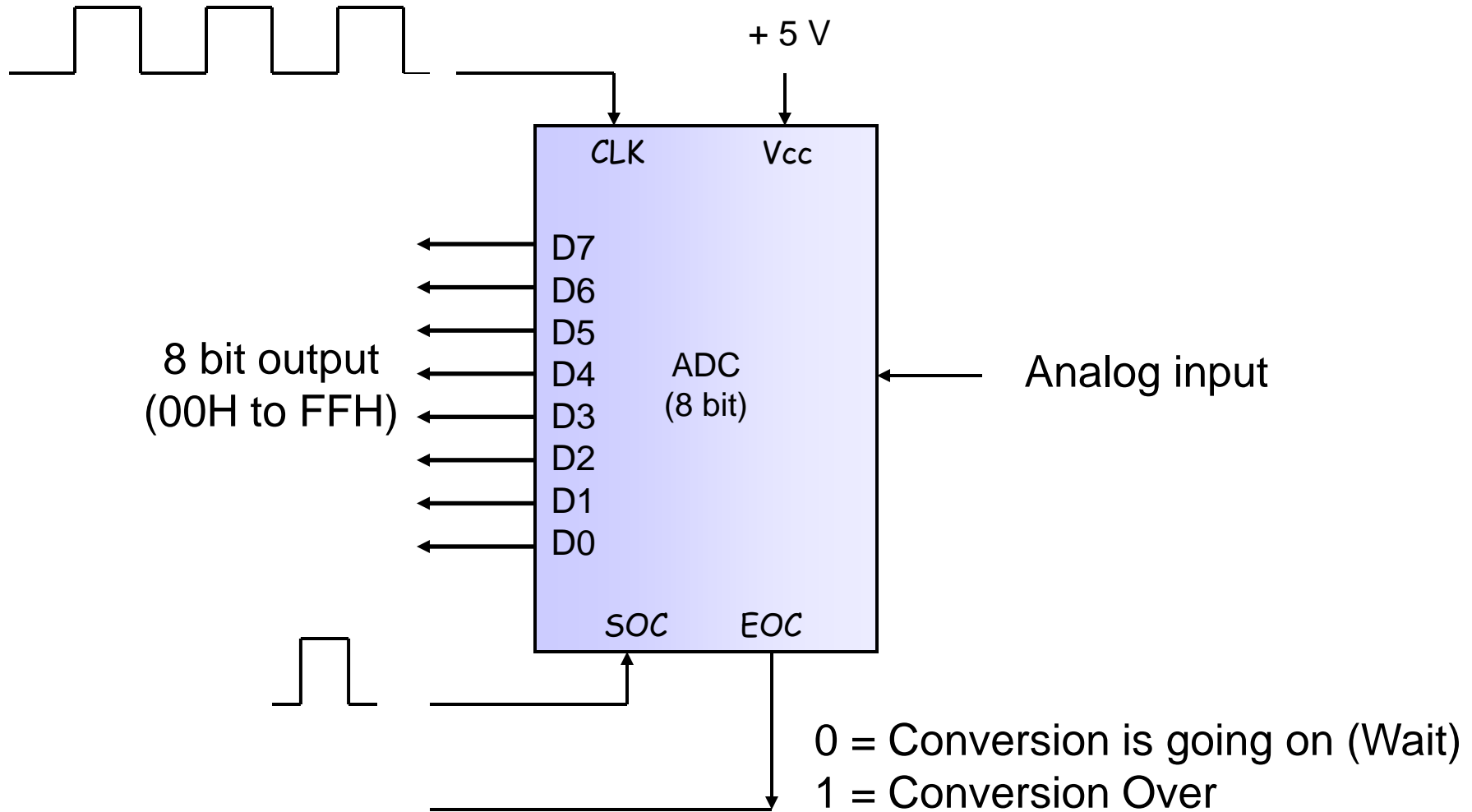
8 bit ADC working



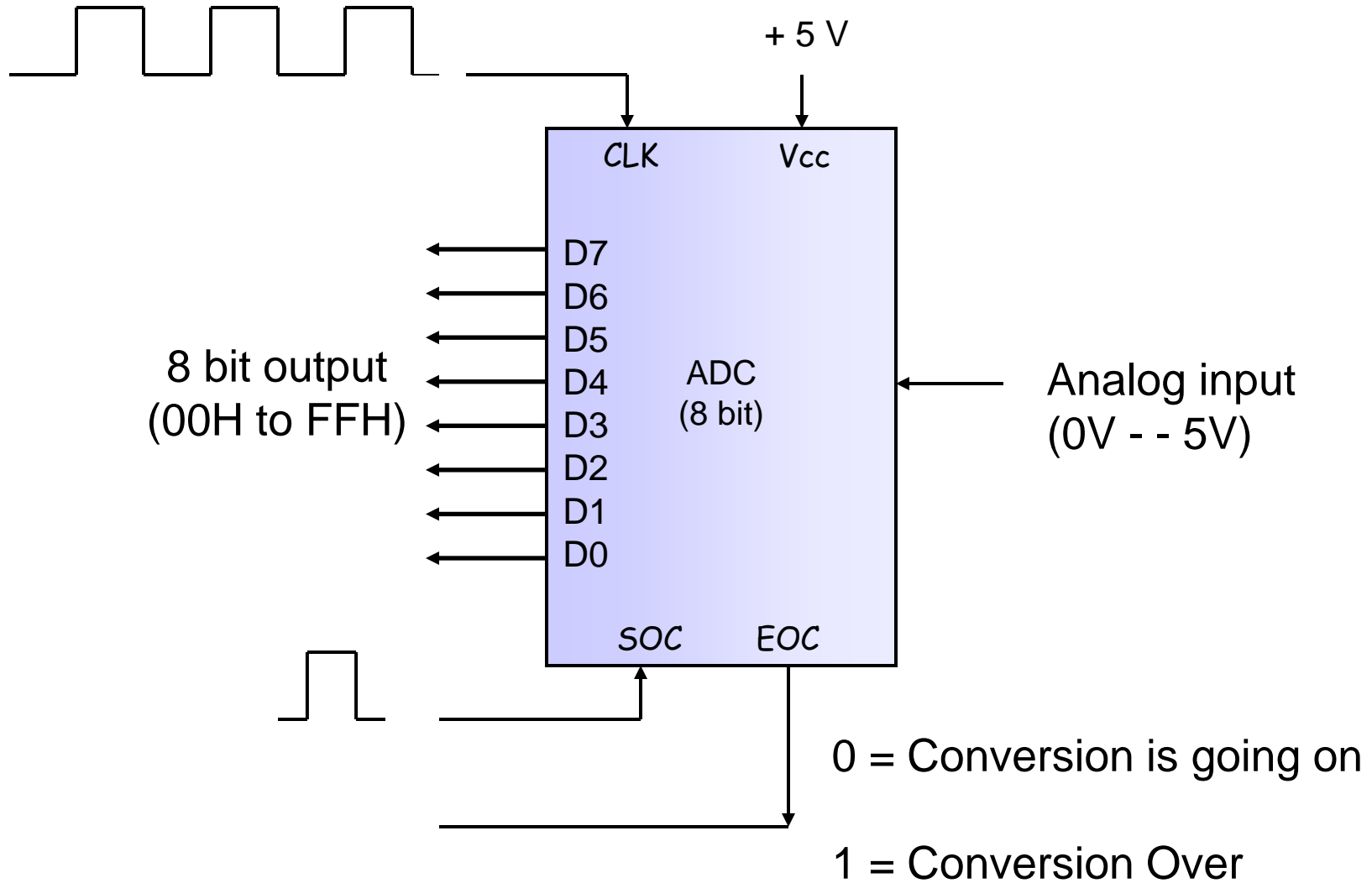
EOC = 0 ; $V_a > V_o$

EOC = 1 ; $V_a \leq V_o$

8 bit ADC

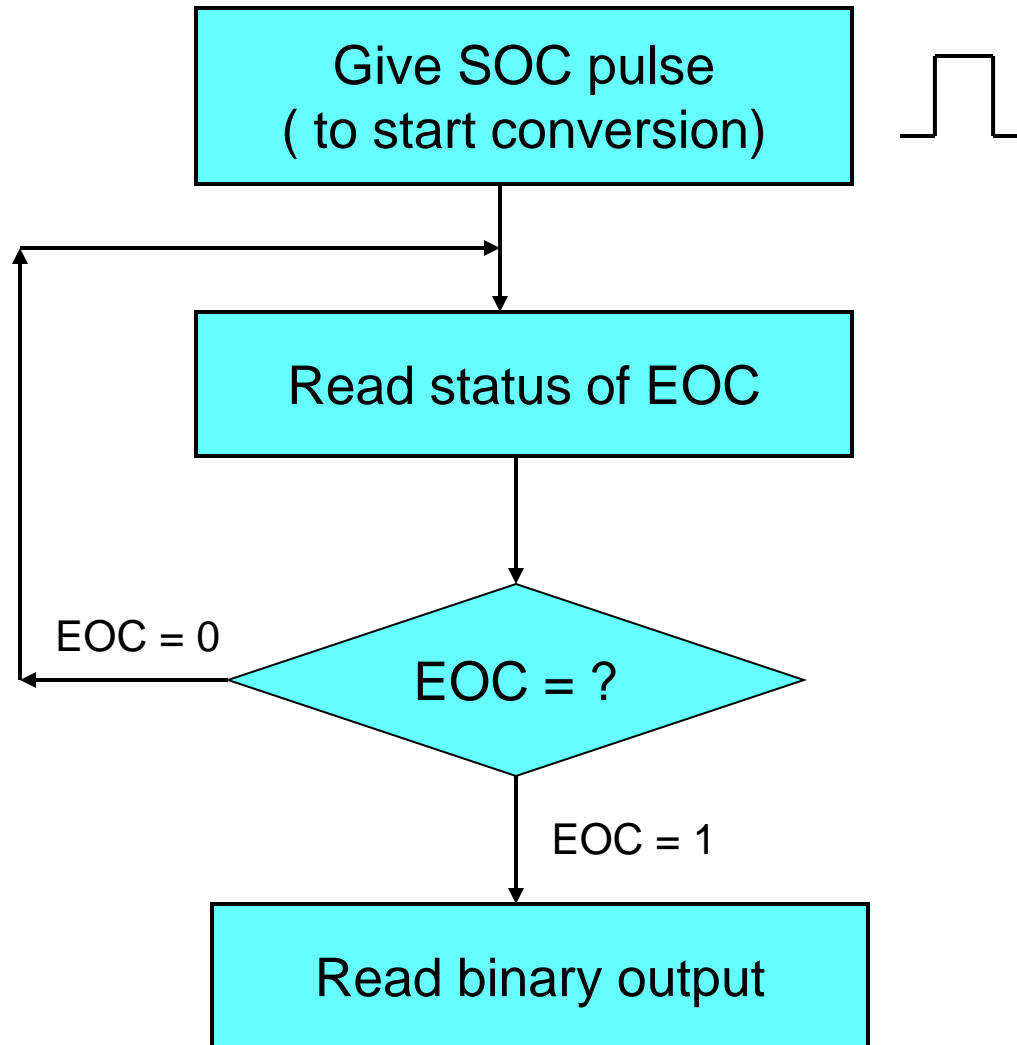


8 bit ADC

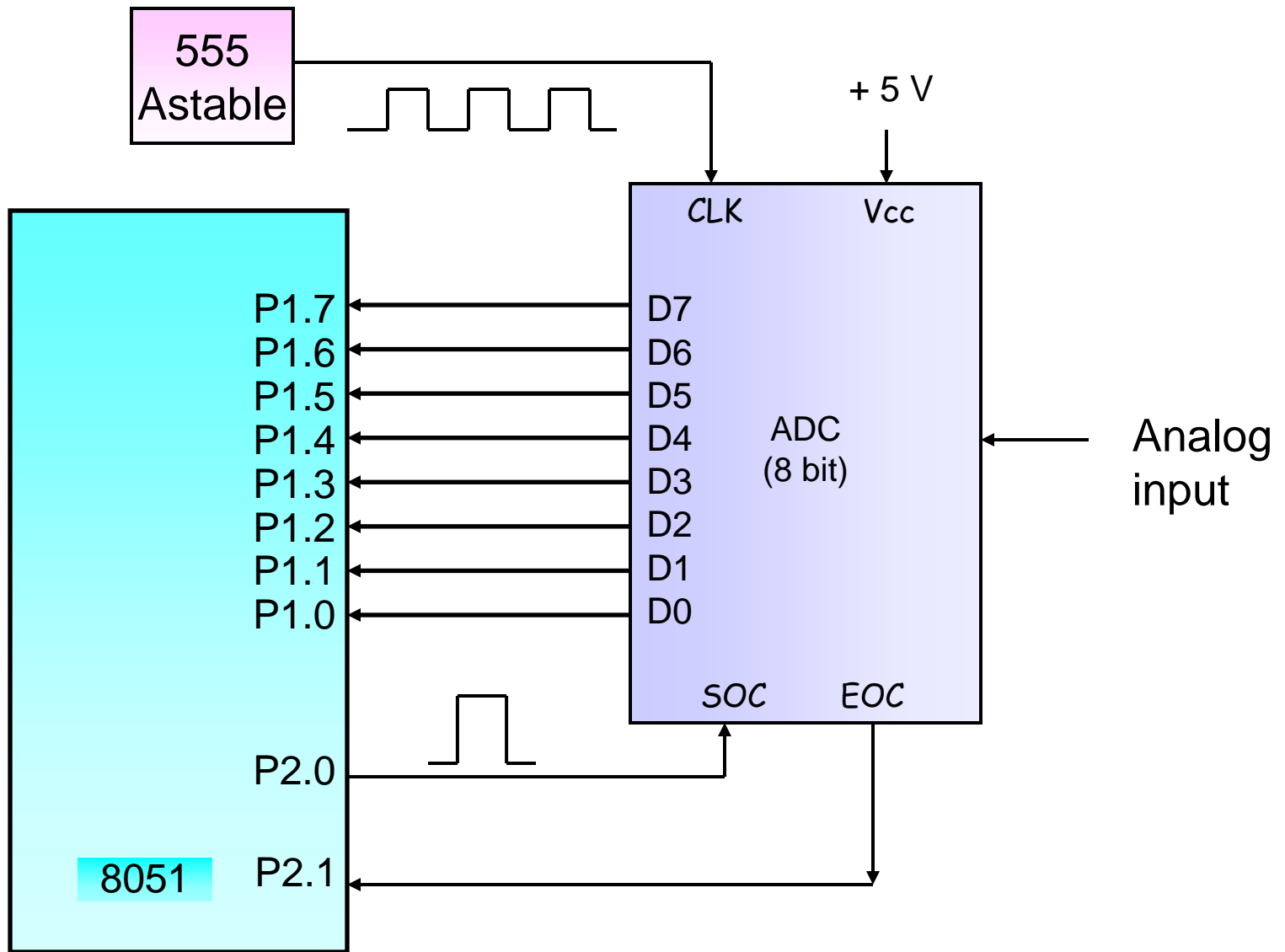


Algorithm for ADC

After applying sample of analog input



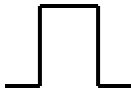
Interfacing 8 bit ADC



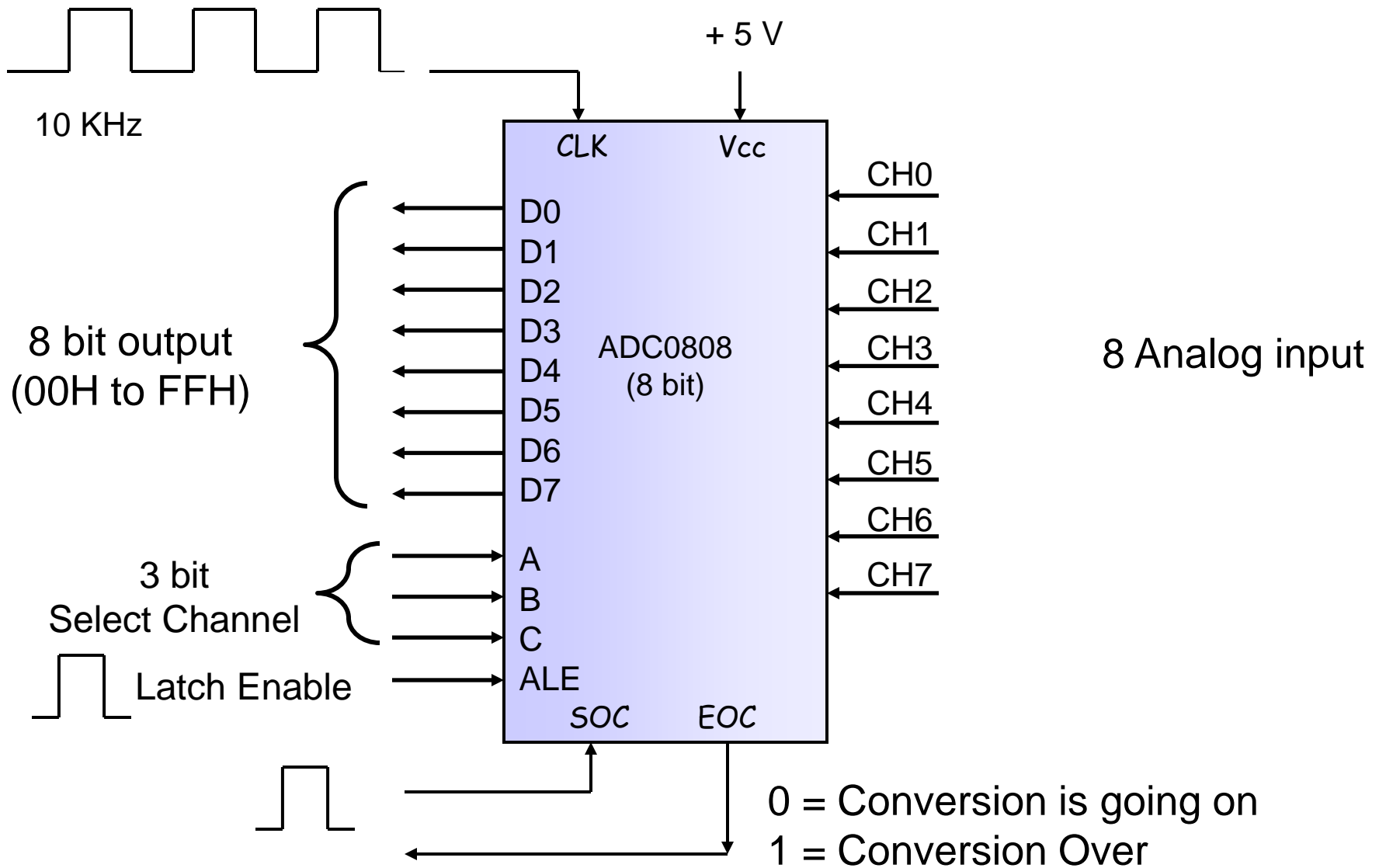
Problem #1

Q. Draw interfacing of 8 bit ADC with 8051. Write program to read binary output of ADC and store result in M.L. 72H

■ Program:

```
        CLR  P2.0      ; Give start of conversion pulse
        SETB P2.0      ;
        NOP           ; 1 μsec delay 
        CLR  P2.0      ;
L1:     JNB  P2.1, L1   ; Read and check EOC
        MOV  A, P1     ; Read binary output
        MOV  72H, A    ; Store result in M.L.
L2:     SJMP L2
```


8 bit 8 Channel ADC0808

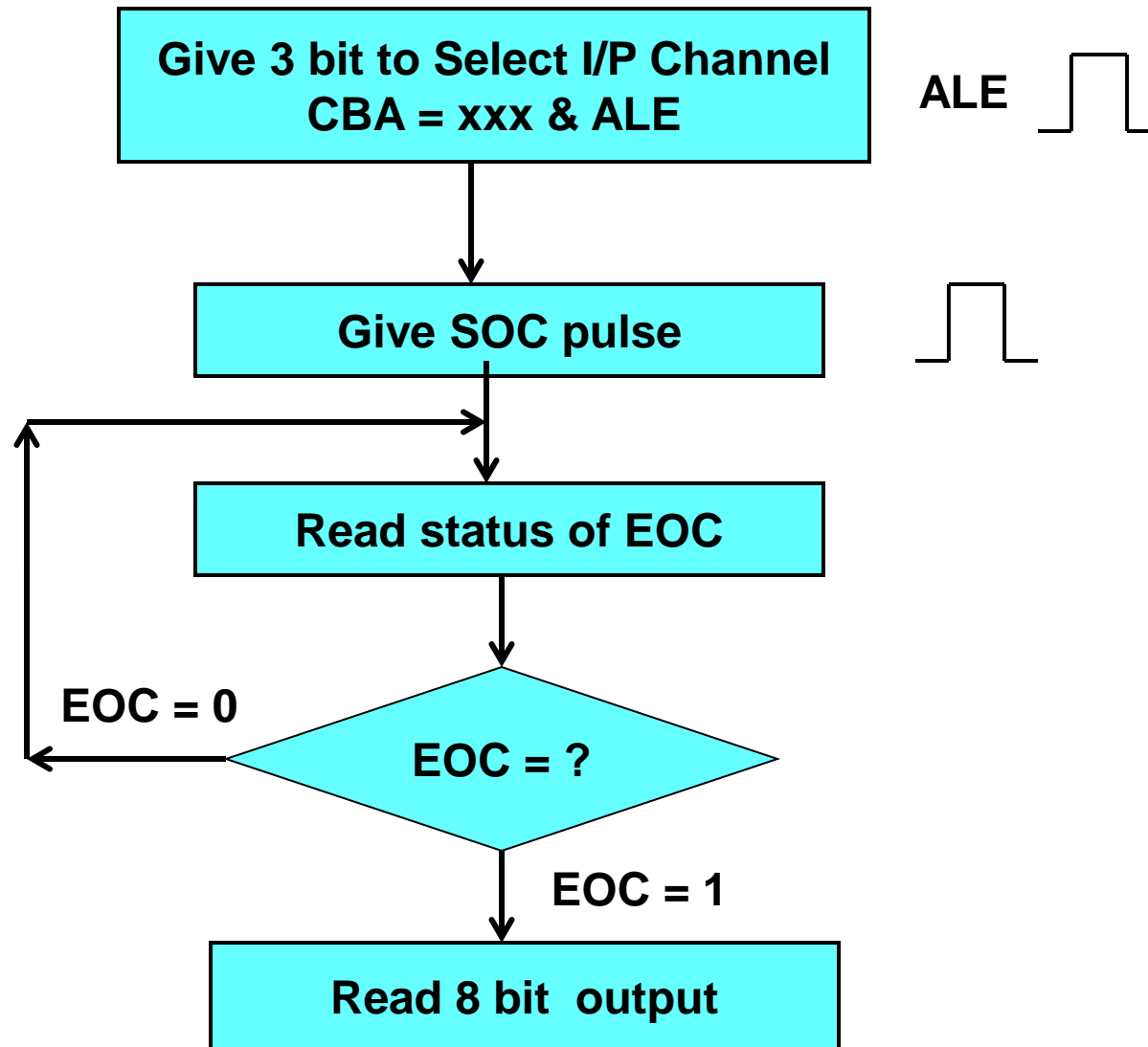


ADC 0808

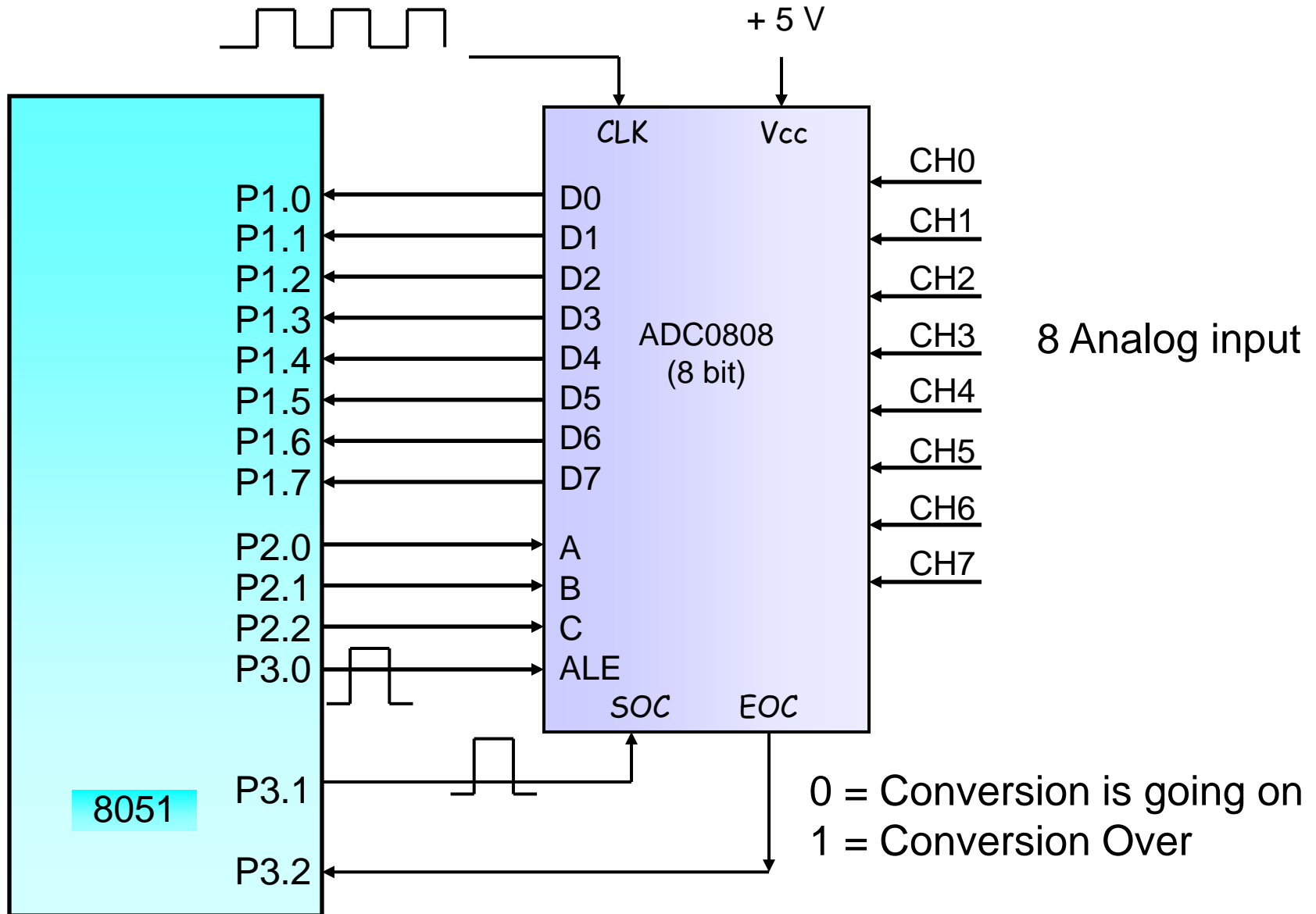
3 bits are used to Select One Analog Input Channel

3 bit Channel Selector	Analog input Channel
C B A	
000	CH-0
001	CH-1
010	CH-2
011	CH-3
100	CH-4
101	CH-5
110	CH-6
111	CH-7

Algorithm for ADC0808



Interfacing 8 bit ADC0808





Problem #2

Q. Draw interfacing of 8 bit ADC0808 with 8051. Write program to read Channel 1 input and store result in M.L. 72H

■ Program logic:

1. Give 3 bit for selection of analog input channel (001)
2. Give high pulse on ALE
3. Give high pulse on SOC
4. Read EOC signal and check
5. If EOC = 1, then
6. Read 8 bit data from ADC
7. Store digital value in M. L.

Program #2 ..

```
MOV A, #01H ; Select channel 1
MOV P2, A   ; CBA = 001
CLR P3.0   ; Give ALE pulse
SETB P3.0  ;
NOP        ;
CLR P3.0   ; 
CLR P3.1   ; Give SOC pulse
SETB P3.1  ;
NOP        ;
CLR P3.1   ; 
L1: JNB P3.2, L1 ; Read and check EOC
MOV A, P1   ; Read binary output
MOV 72H, A  ; Store result in M.L.
L2: SJMP L2
```

Problem #3

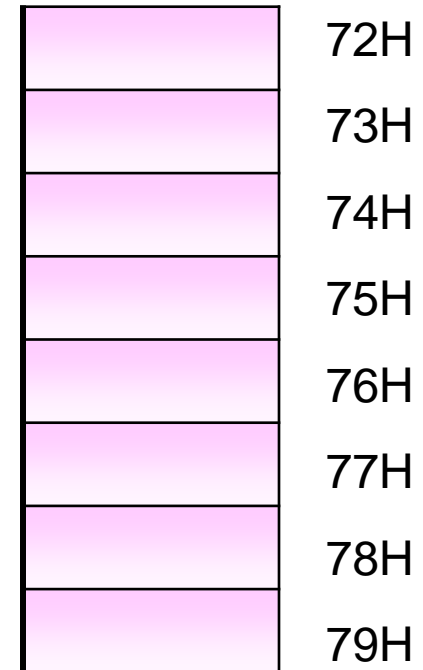
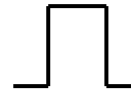
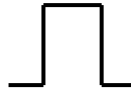
Q. Draw interfacing of 8 bit ADC0808 with 8051. Write program to read all 8 Channel input and store result from M.L. 72H

■ Program logic:

1. Give 3 bit for selection of analog input channel
2. Give high pulse on ALE
3. Give high pulse on SoC
4. Read EoC signal and check
5. If EoC = 1, then
6. Read 8 bit data from ADC
7. Store digital value in M. L.
8. Repeat step 1 to step 7 for next channel

Program #3 ..

```
MOV R5, #00H ; Channel no
MOV R0, #72H ; Memory Pointer
L2: MOV A, R5
MOV P2, A ; Select Channel
CLR P3.0 ; Give ALE pulse
SETB P3.0 ;
NOP ;
CLR P3.0 ;
CLR P3.1 ; Give SOC pulse
SETB P3.1 ;
NOP ;
CLR P3.1 ;
L1: JNB P3.2, L1 ; Read and check EOC
MOV A, P1 ; Read binary output
MOV @R0, A ; Store result in M.L.
INC R0
INC R5
CJNZ R5, #08H, L2 ; Check & repeat till 07
L3: SJMP L3
```



Thank You!!