Embedded System

Tutorial 2,3

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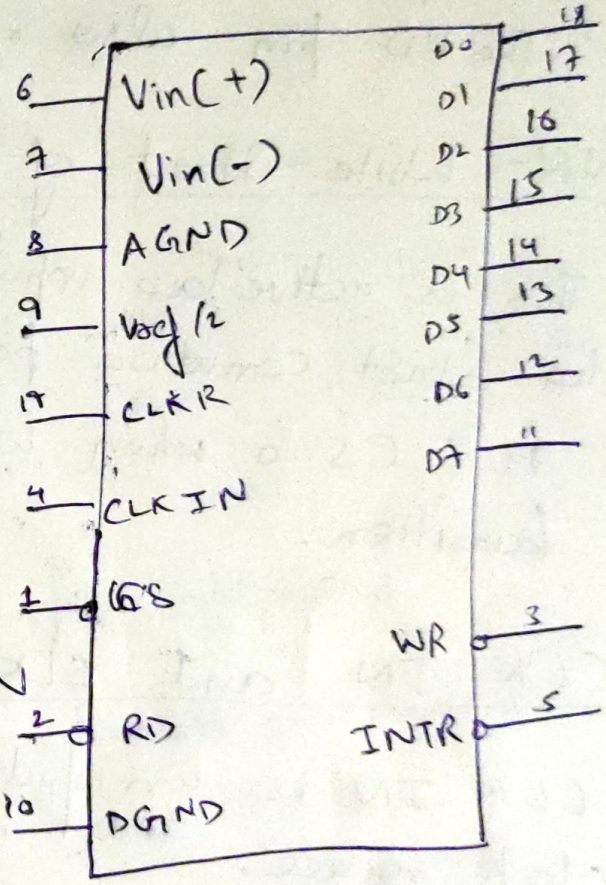
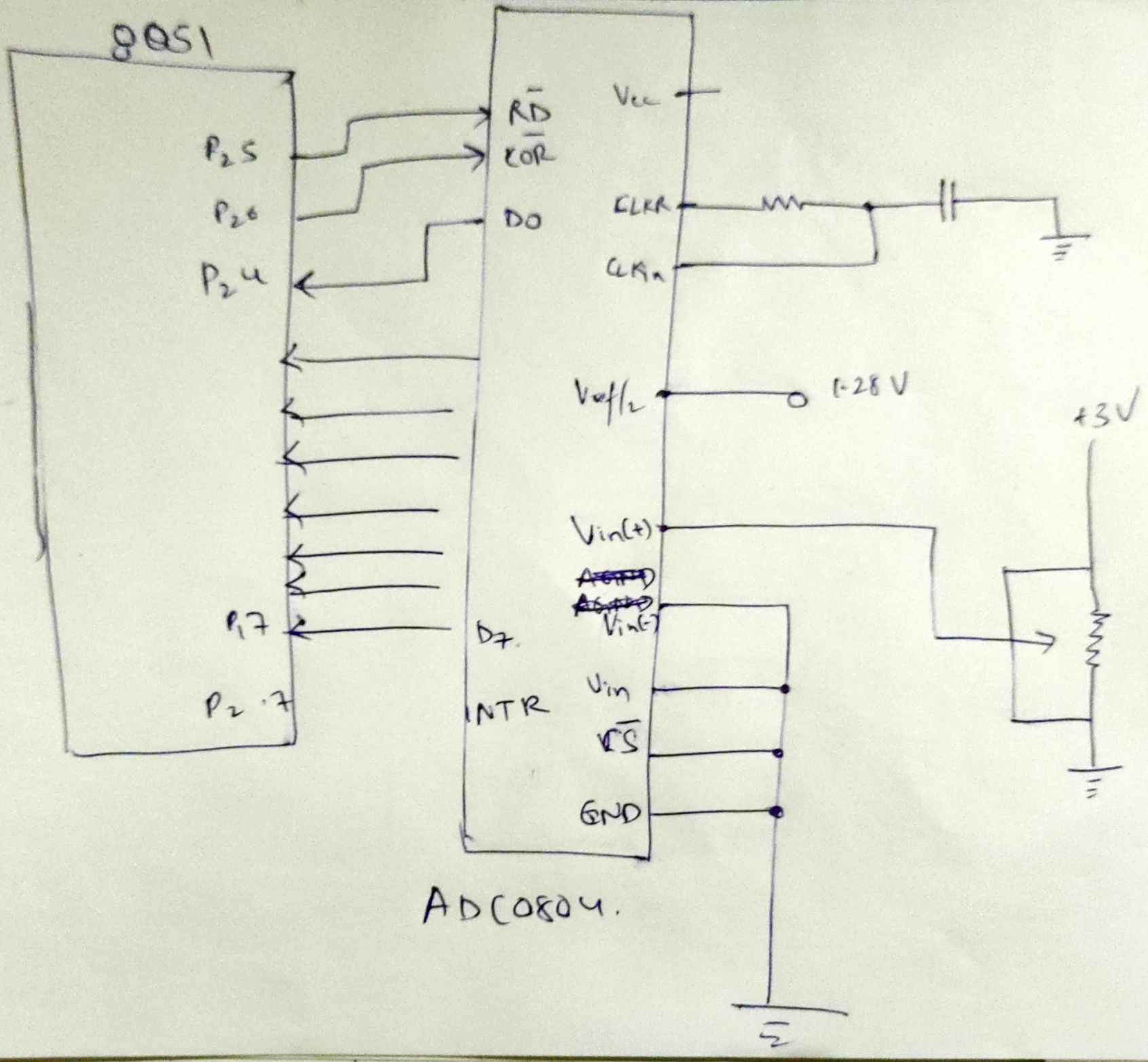
Question-1

ADC -0804

- The ADC-0804 IC is an 8-bit parallel ADC in the family of the ADC0800 series from National Semiconductor.
- It works with +5V and has resolution of 8 bits.
- The conversion time varies depending on the clocking signals applied to th CLK IN pin.
- But it cannot be faster than 110 μs.




8051
P2.5
P2.6
P2.4
P1.7
P2.7
RD
COR
DO
D7
INTR
Vcc
CLKR
CLKin
Vref/2
1.28 V
+3V
Vin(+)
Vin(-)
Vin
CS
GND
ADC0804.

CS - Chip Select

It is an active low input used to activate the ADC0804 chip.

RD - Read

- Input signal in active low
- When CS=0, if a high-to-low pulse is applied to the RD pin.
- The RD pin also refferd as Output Enable (OE.

WR - Write - Start of Conversation.

- This is active low input, used to inform ADC0804 to start conversion process.
- If CS=0 when WR make a ~~high~~ low-to-high transition.

CLK IN and CLK R

- CLK IN is an input pin connected to an external clock source.
- To use internal clock generator, the CLK IN and CLK R are connected to the capacitor and a resistor.
- $f = \frac{1}{1.1\,RC}$.

INTR - Interrupt - End on Conversation.

- This is an o/p pin and is in active Low.
- After INTR goes low, we make CS=0

Vin(+) and Vin(-)

- These are differential analog inputs.
- Vin = Vin(+) + Vin(-)

VCC

- This is +5V power supply.

Vref/2

- It is an input voltage used for reference voltage.
- If this pin is open, the analog input voltage for the ADC0804 is in the range of 0 to 5V.

D0 - D7

- These are digital data output pins since ADC0804 is parallel ADC chip.

→ $Dout = \frac{Vin}{Step\ Size}$.

A Ground, D Ground

- There are 2 pins providing the ground for both the analog signals and the digital signals
- ~~the~~ we have two grounded pins in order to isolate the analog Vin signal.

Question 2