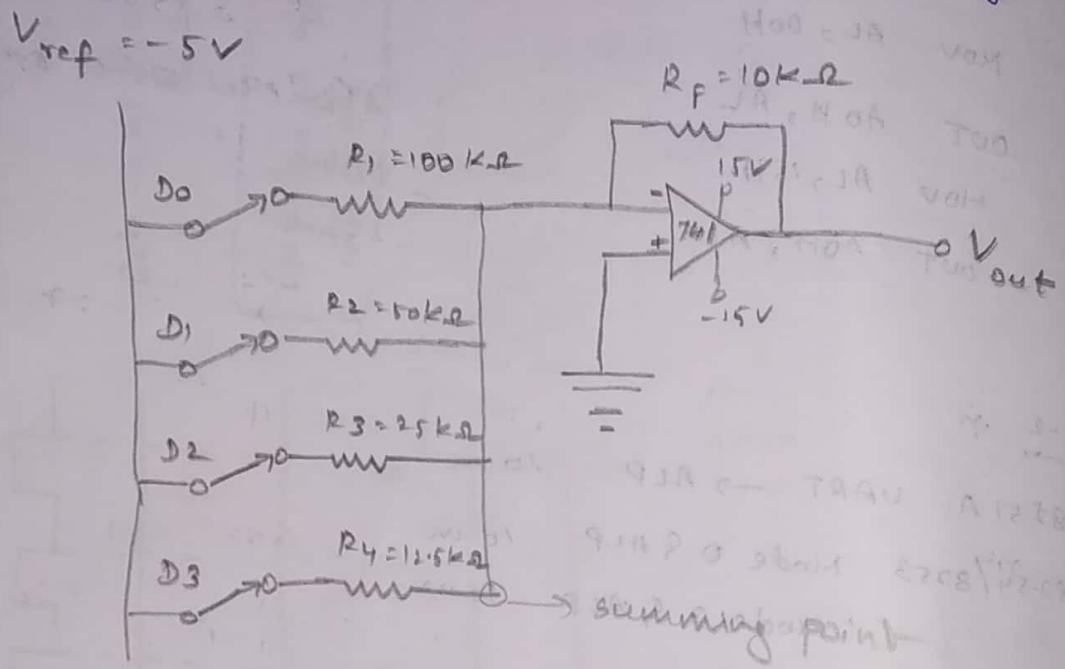
DIGITAL TO ANALOG CONVERTOR

purpose → to convert a binary word to a proportional current (or) voltage



D_0	D_1	D_2	D_3
0	0	0	0
0	0	0	1
0	0	1	0
0	0	1	1
0	1	0	0
0	1	0	1
⋮			
1	1	1	1

weighted Resistor →

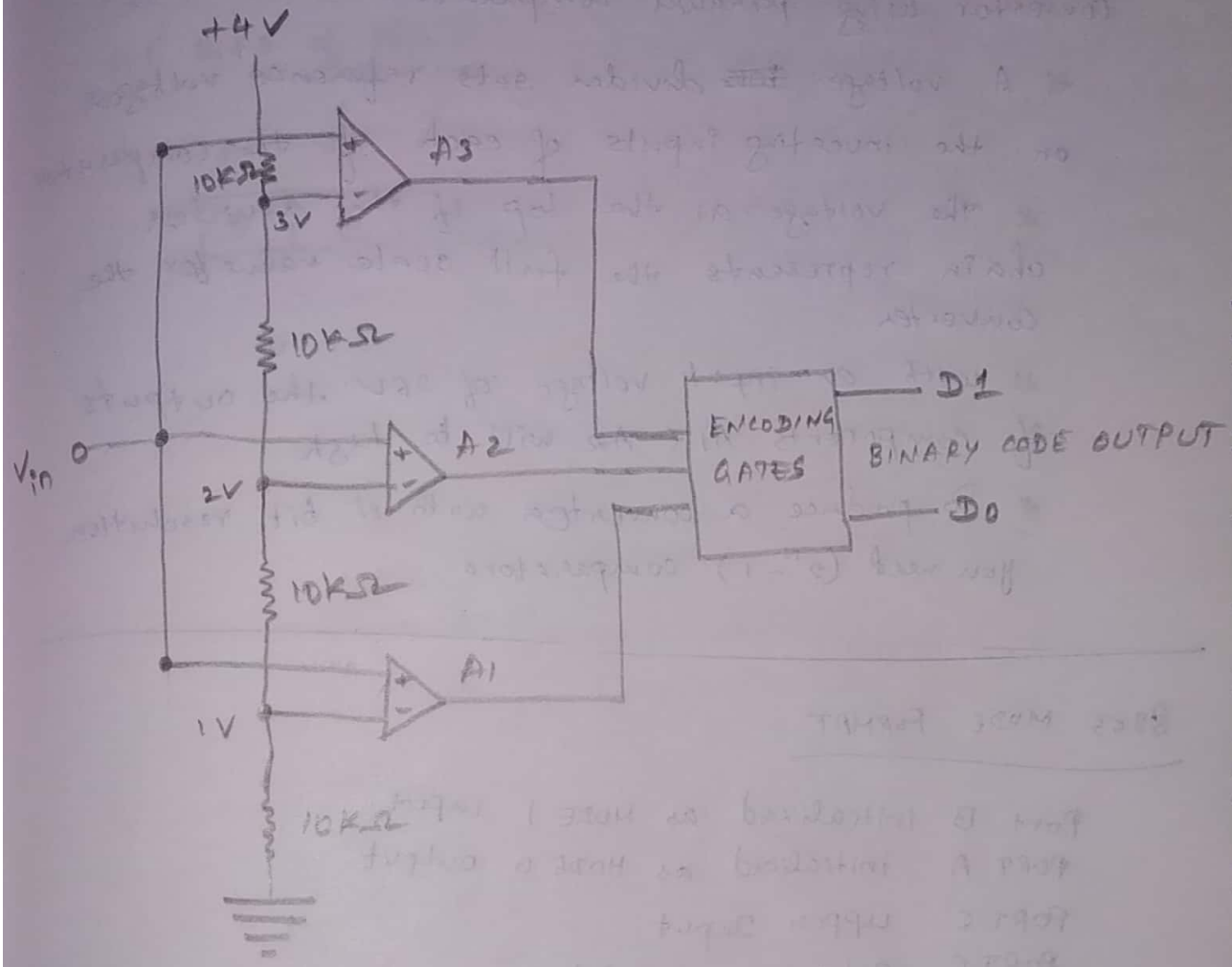
$R_1 = R$

$R_2 = R/2$

$R_3 = R/4$

$R_4 = R/8$

PARALLEL COMPARATOR A/D CONVERTER



Suppose $V_{in} = 2.6$

$1V < 2.6 \rightarrow A_1 = High$

$2V < 2.6 \rightarrow A_2 = High$

$3V > 2.6 \rightarrow A_3 = Low$

10 bit Digital signal $\Rightarrow (2^N - 1)$ comparator

Advantage

faster

Disadv

↑ bits ↑ cost ↑ comparator

* Shown is the circuit for 2-bit A/D Convertor using parallel comparators

* A voltage ~~[illegible]~~ divider sets reference voltages on the inverting inputs of each of the comparato

* the voltage at the top of the divider chain represents the full scale value for the converter

* with an input voltage of 26V the outputs of components A1 & A2 will be high

* To produce a converter with N bit resolution you need $(2^N - 1)$ comparators