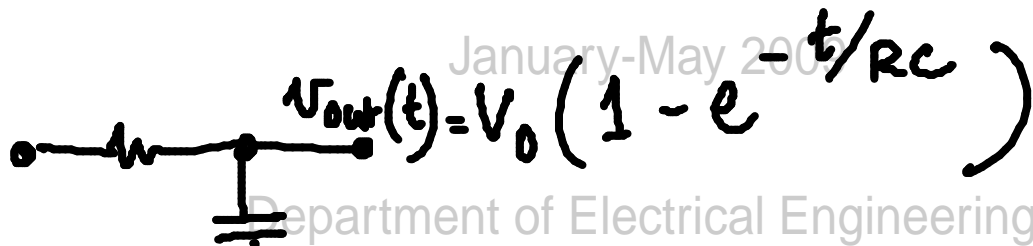
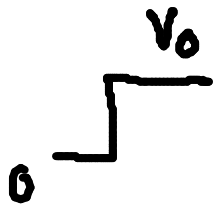


Gain, CM gain, Stages, Swing at output, Stability,
CM feedback, Noise

Slew rate

↳ max rate at which the circuit
output can change.

→ Only for
Non-linear
circuits

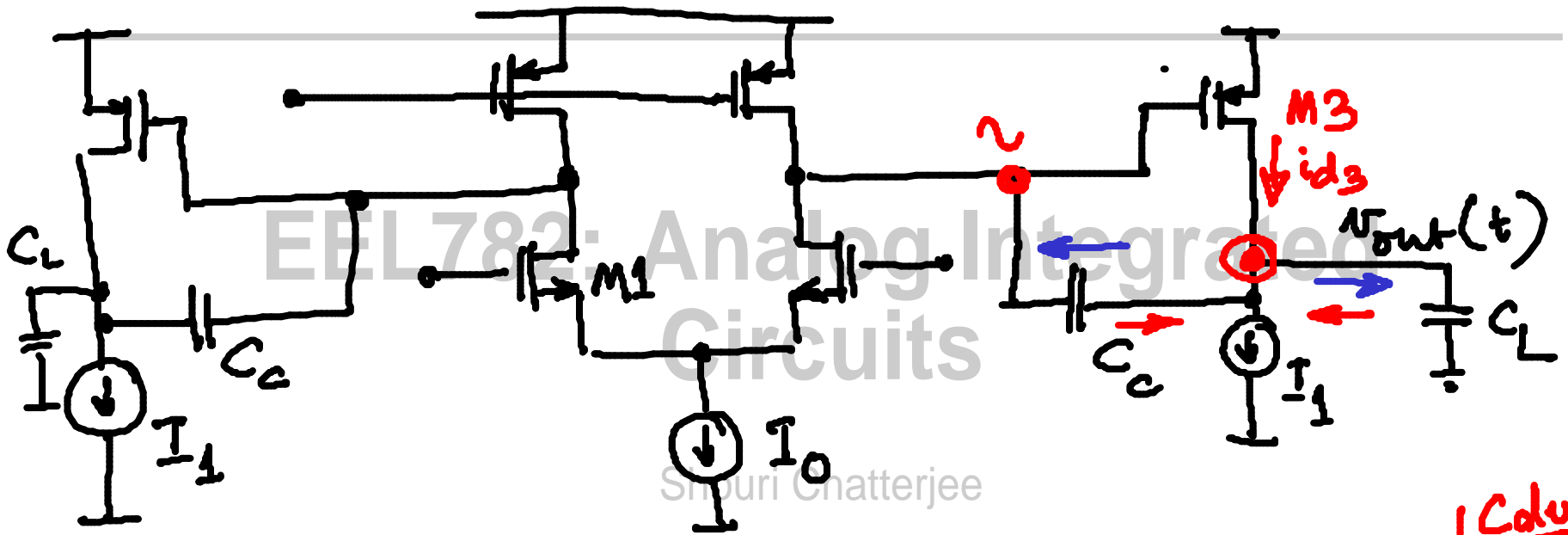


$$v_{out}(t) = V_0 (1 - e^{-t/RC})$$

$$\frac{dv_{out}}{dt} = \frac{V_0}{RC} \cdot e^{-t/RC}$$

$$\left. \frac{dv_{out}}{dt} \right|_{t=0} = \frac{V_0}{RC}$$

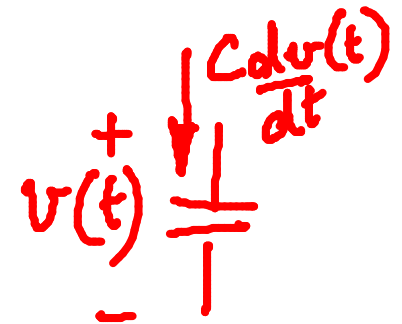




$$UGBW = g_{m1} / C_c$$

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max possible
 $\frac{dv_{out}(t)}{dt}$



$$I_1 + C_L \frac{dv_{out}}{dt} + C_c \frac{dv_{out}}{dt} = id_3$$

$$I_1 + (C_L + C_c) \frac{dv_{out}}{dt} > 0$$

$$\frac{I_1}{C_L + C_c} > \frac{dv_{out}}{dt}$$

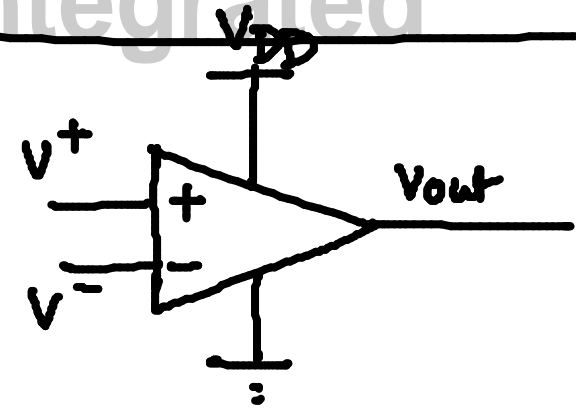
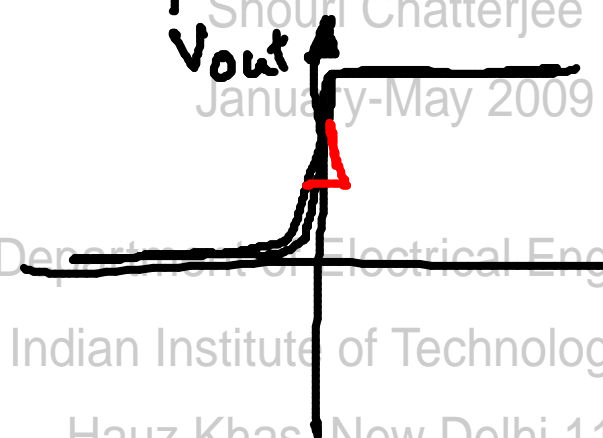
Max rate of change @ output $\propto I_{2nd\ stage}$

$\downarrow C_c \uparrow$

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COMPARATOR

2 inputs, 1 output



Any compensation needed?

CMFB?

external
No feedback

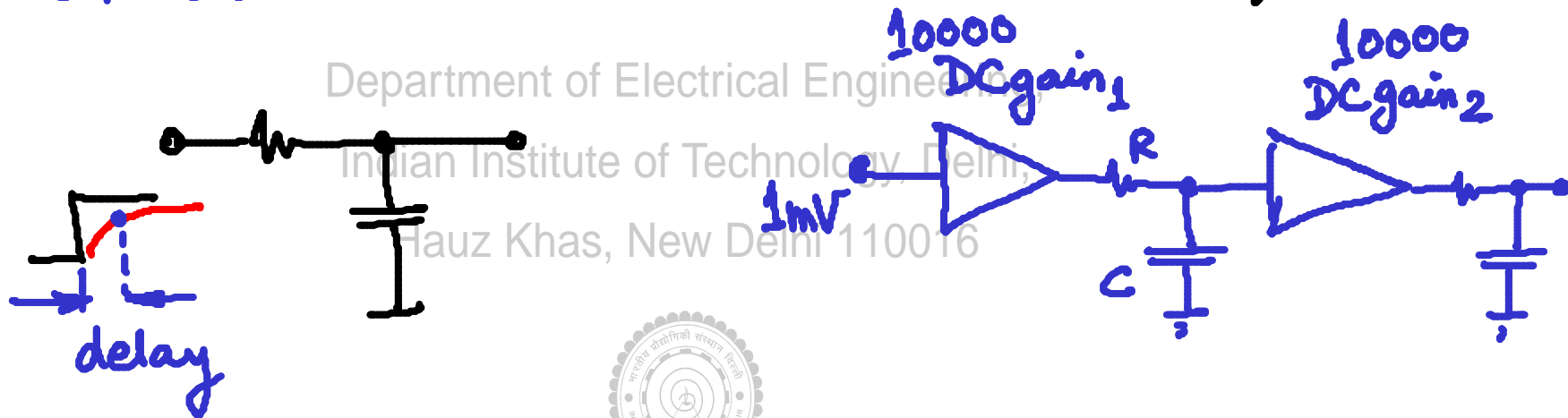
→ no compensation

→ One output
no CMFB



Design parameters :

1. VERY LARGE DC gain
2. Matching / Offset at input
3. ICMR input CM range
4. Speed (delay) → slew rate
DC gain
bandwidth
5. Resolution



1 - stage → large b/w, bad gain
small delay

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