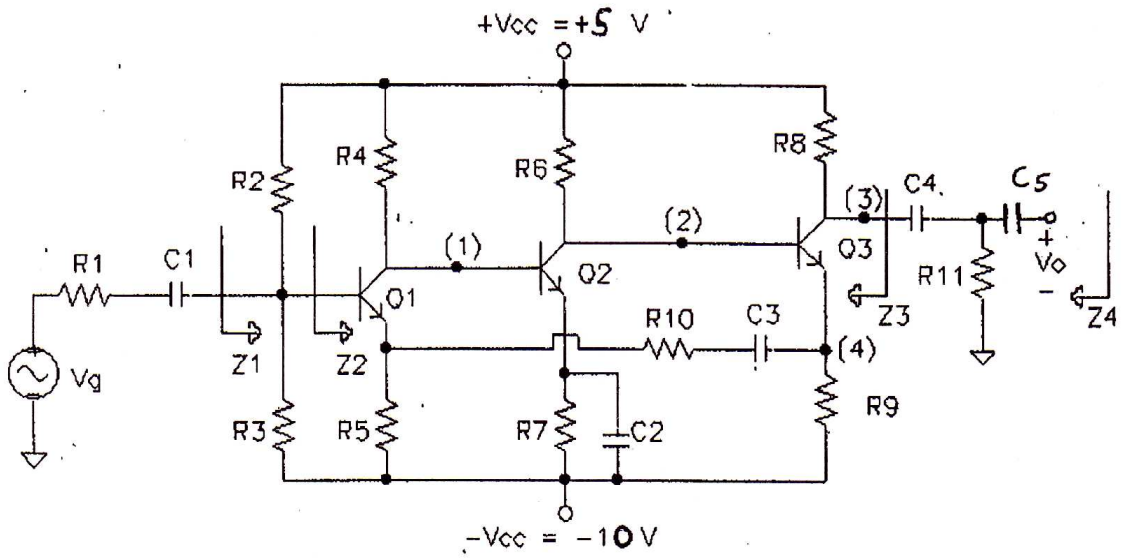
Handout 2: Feedback Amplifiers

Problem 1

C_1= 2μF, C_5=10μF C_2,C_3,C_4=∞.

$C_{\pi 2}$=5pF y $C_{\mu 2}$=1pF $C_{\pi 1}$=$C_{\pi 3}$=$C_{\mu 1}$=$C_{\mu 3}$=0 pF.



V_{BE} = 0,7V	R_1 = 1 KΩ	R_2 = 34,5KΩ	R_3 = 3KΩ
β_F =β_O=100	R_4 = 12,8KΩ	R_5 = 500Ω	R_6 = 12,3KΩ
V_T = 25mV	R_7 = 1,5KΩ	R_8 = 2KΩ	R_9 = 500Ω
$r_o \rightarrow \infty$	R_{10} = 25KΩ	R_{11} = 2KΩ	

Analyze the circuit under the condition that the feedback network is placed so that C3 rests on point (4).

1) Draw the small signal equivalent circuit of the above amplifier.

2) What is the electronic magnitude sensed at the output?
What is the electronic magnitude feedback to the input?

3) Draw on the circuit where is the error signal produced. What is the corresponding feedback configuration?

Based on the previous analysis, answer the following:

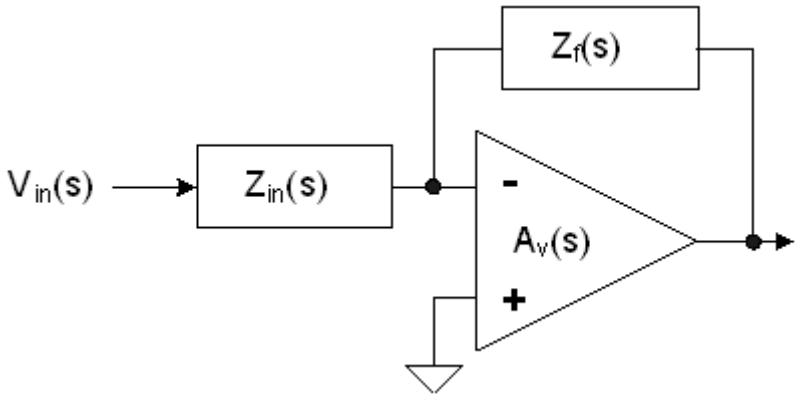
4) Draw the feedback network, and calculate the loading effects of the feedback network.

5) Load the basic amplifier and calculate the gain A'

6) What is the meaning of Z2? and of Z1? Calculate.

7) What is changed when the feedback network is placed so that C3 rests on point (3).

Problem II.

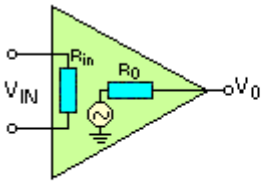


For the electronic feedback OP AMP scheme shown above, answer the following wuestions:

1) What type of feedback configuration does it present?

2) Assuming that the impedances shown are established through resistances, draw the feedback network. Calculate the feedback factor and the loading effects of the feedback network.

3) Using the following equivalent for the OP AMP, draw the Basic Amplifier including the loading effects of the feedback network, and calculate the gain A'.



$V_0 = A_v V_{in}$