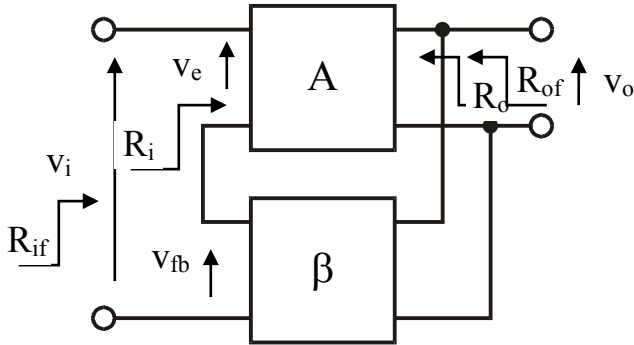


EE3110 Analogue Electronic Circuits
Feedback Amplifier Analysis

Name : _____ Student Number : _____ Date : _____

For each of the diagram below, label all variables involved for the analysis of feedback topology, and then fill in the entries in the corresponding table box provided. The first one is done for you. Please use suitable subscripts to represent the correct types of signal or gain etc.

1.



Feedback type: series - shunt

Feedback signal: voltage

Output signal: voltage

Amplifier gain: $A_V = v_o/v_e$

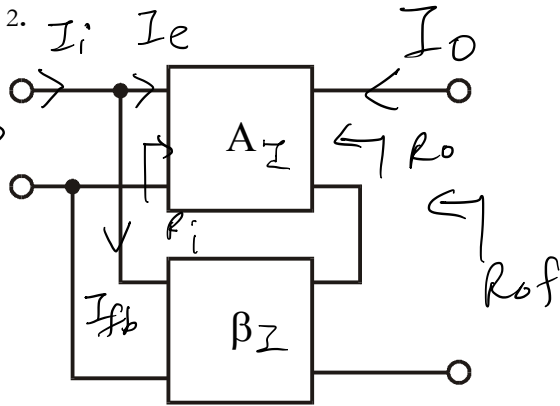
Feedback network gain: $\beta_V = v_{fb}/v_o$

Amplifier name: voltage amplifier

Input resistance with feedback: $R_{if} = R_i (1 + \beta_V A_V)$

Output resistance with feedback: $R_{of} = R_o / (1 + \beta_V A_V)$

Feedback gain: $A_{Vf} = 1 / (1 + \beta_V A_V)$



Feedback type: Shunt - series

Feedback signal: Current

Output signal: Current

Amplifier gain: $A_I = I_o/I_e$

Feedback network gain: $\beta_I = I_{fb} / I_o$

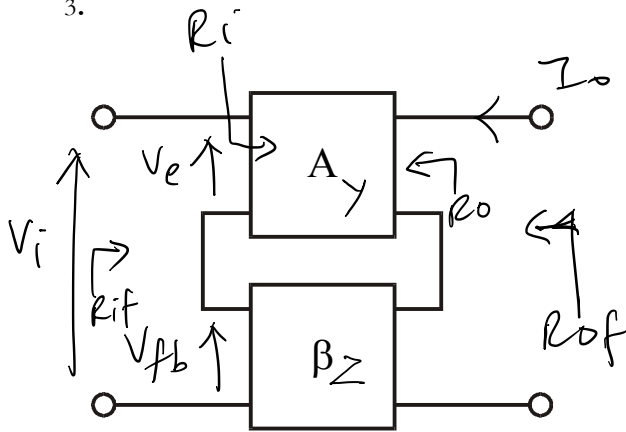
Amplifier name: Current amplifier

Input resistance with feedback: $R_{if} = R_i / (1 + \beta_I A_I)$

Output resistance with feedback: $R_{of} = R_o (1 + \beta_I A_I)$

Feedback gain: $A_{If} = A_I / (1 + \beta_I A_I)$

3.



Feedback type: Series - series

Feedback signal: Voltage

Output signal: Current

Amplifier gain: $A_y = I_o / V_e$

Feedback network gain: $\beta_z = V_{fb} / I_o$

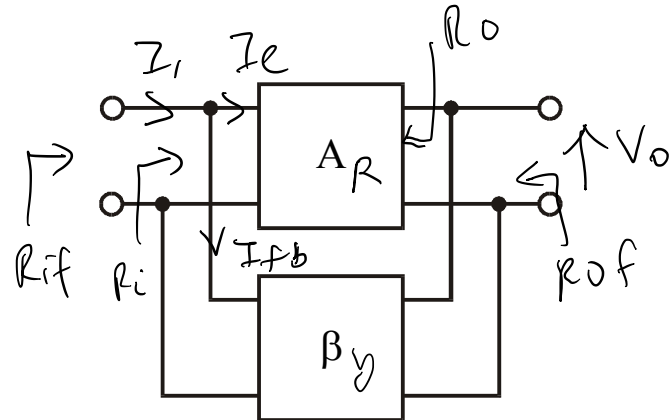
Amplifier name: Transconductance amplifier

Input resistance with feedback: $R_{if} = R_i (1 + \beta_z A_y)$

Output resistance with feedback: $R_{of} = R_o (1 + \beta_z A_y)$

Feedback gain: $A_{yf} = A_y / (1 + \beta_z A_y)$

4.



Feedback type: Shunt -shunt

Feedback signal: Current

Output signal: Voltage

Amplifier gain: $A_R = V_o / I_e$

Feedback network gain: $\beta_y = I_{fb} / V_o$

Amplifier name: Trans-resistance amplifier

Input resistance with feedback: $R_{if} = R_i / (1 + \beta_y A_R)$

Output resistance with feedback: $R_{of} = R_o / (1 + \beta_y A_R)$

Feedback gain: $A_{Rf} = A_R / (1 + \beta_y A_R)$