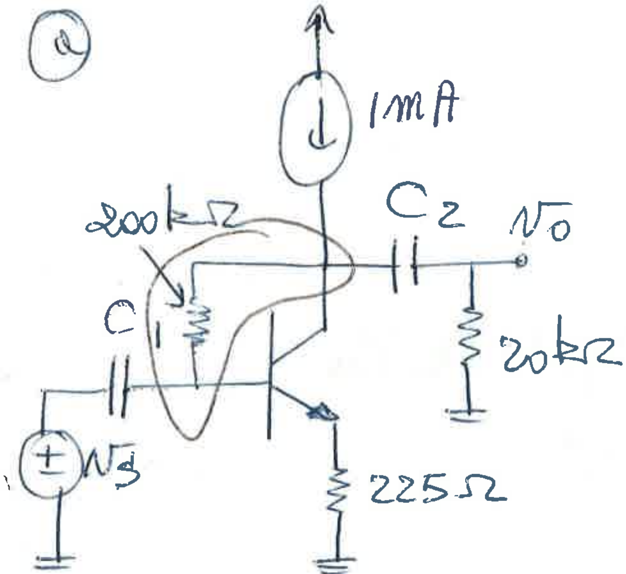
Quiz - May 2, 2011
ECE 352

NAME:

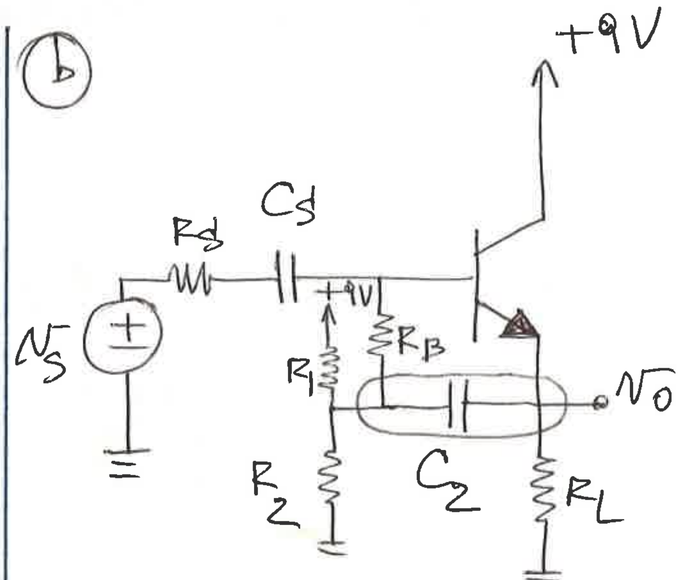
Identify the feedback configuration for the 4 circuits below and circle the feedback network.

(a)



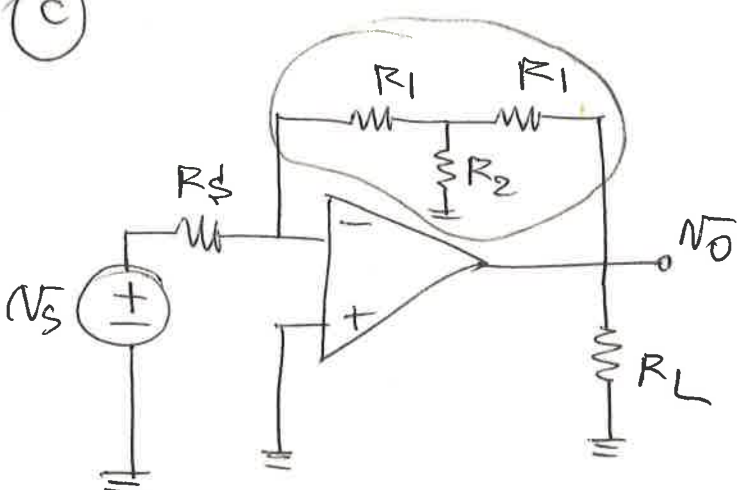
SHUNT-SHUNT

(b)



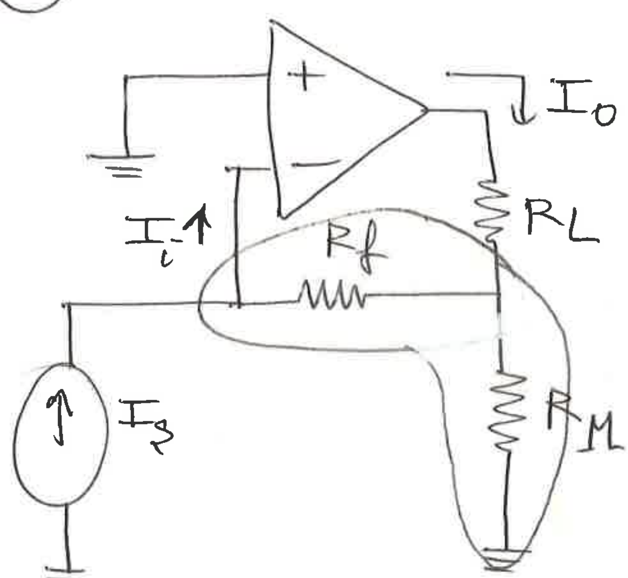
SHUNT-SHUNT

(c)



SHUNT-SHUNT

(d)



SHUNT-SERIES

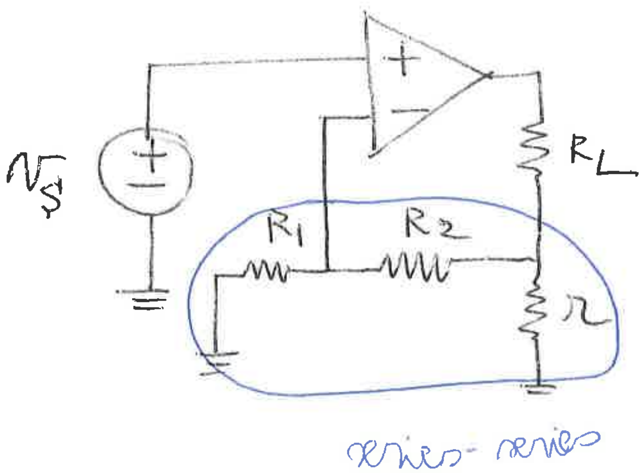
Electronics II, Second Midterm, May 12, 2011 (100pts max)

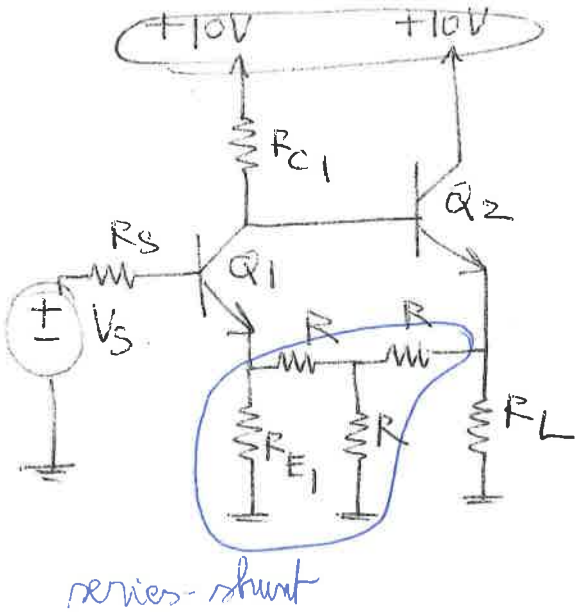
Name: SOLUTION

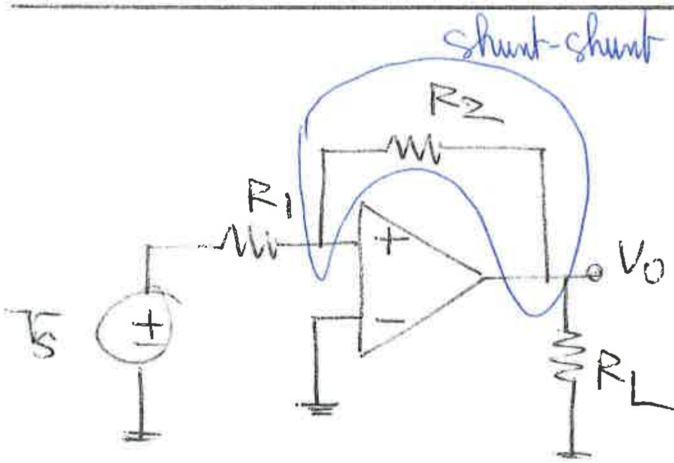
I. (20 pts): Feedback Loop and Feedback Network Identification

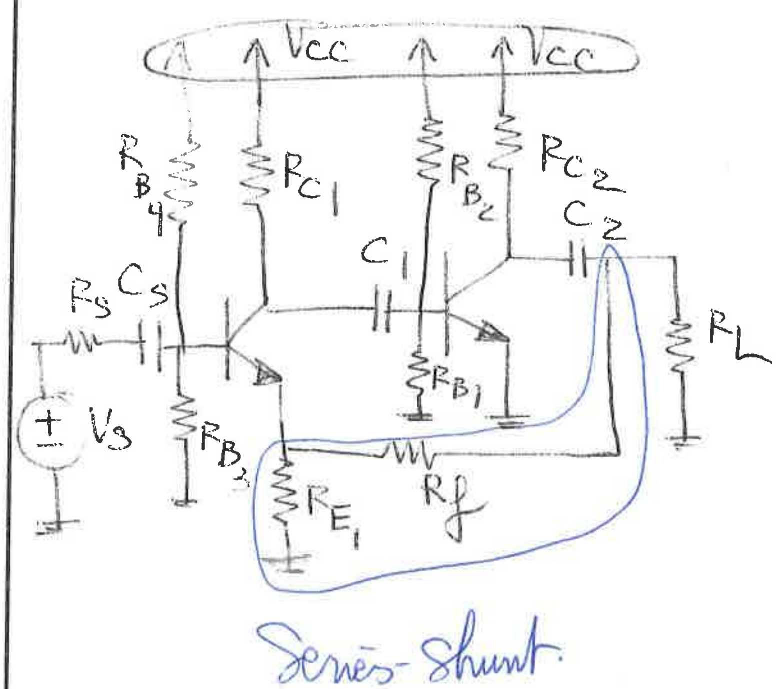
For the 4 networks below

- (a) Circle the feedback loop.
- (b) Identify next to each feedback amplifier which of the four feedback configuration you are dealing with, i.e, series-series, series-shunt, shunt-series, or shunt-shunt.









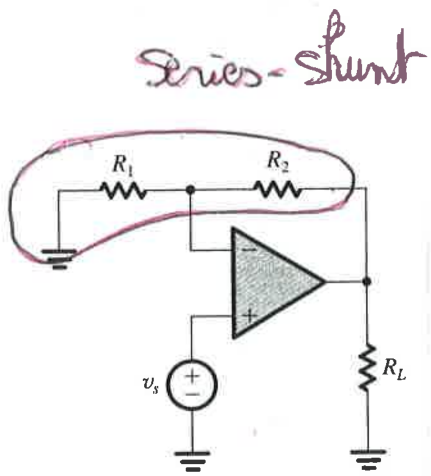
Test 2 - Spring 2007 (100pts max) - M. Cahay

NAME:

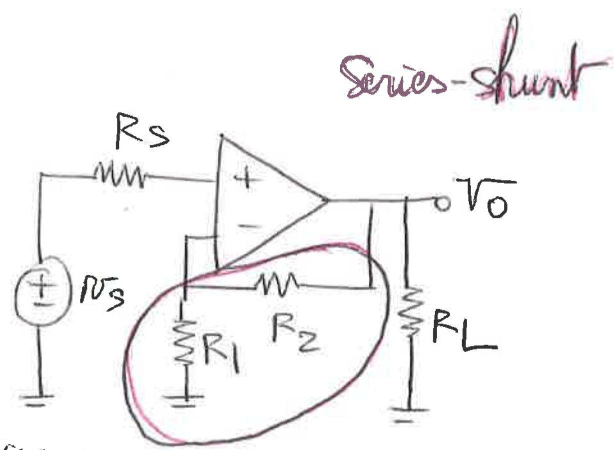
ELECTRONICS II

April 7, 2007

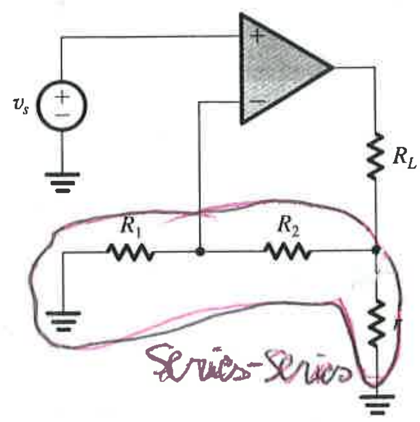
I.(12 pts) In the circuits below, identify the type of feedback used (series-shunt, series-series, shunt-series, or shunt-shunt) and circle the feedback network. Just write the type of configuration you think the amplifier is. No need to explain why.



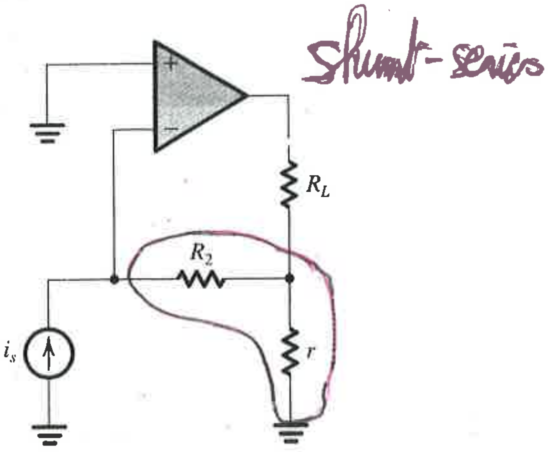
(a)



(b)

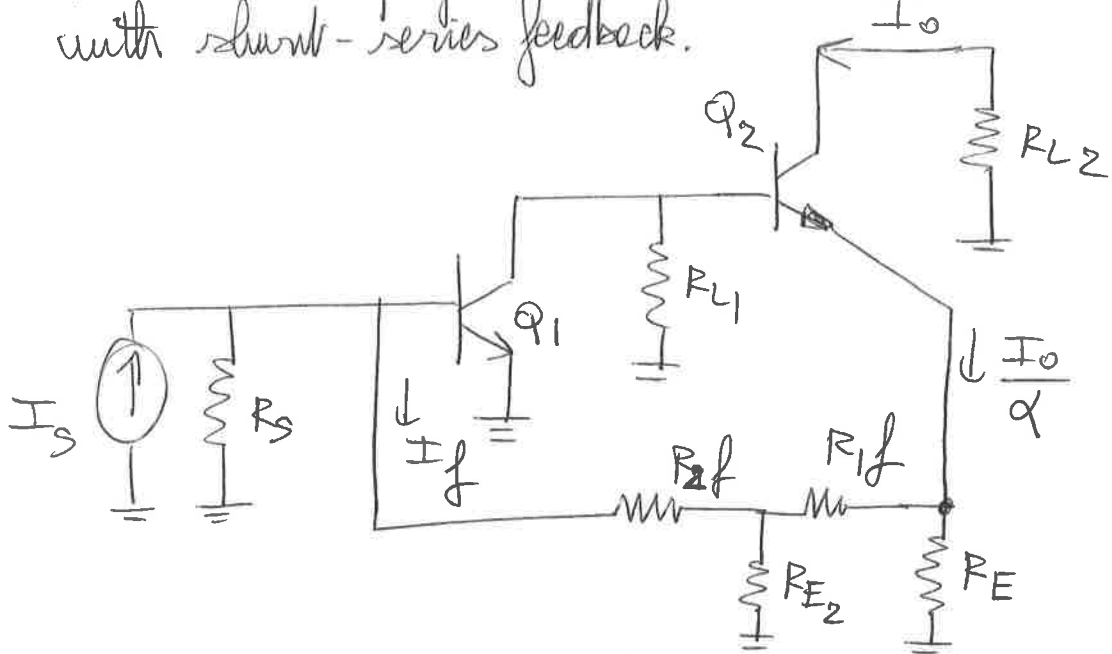


(c)

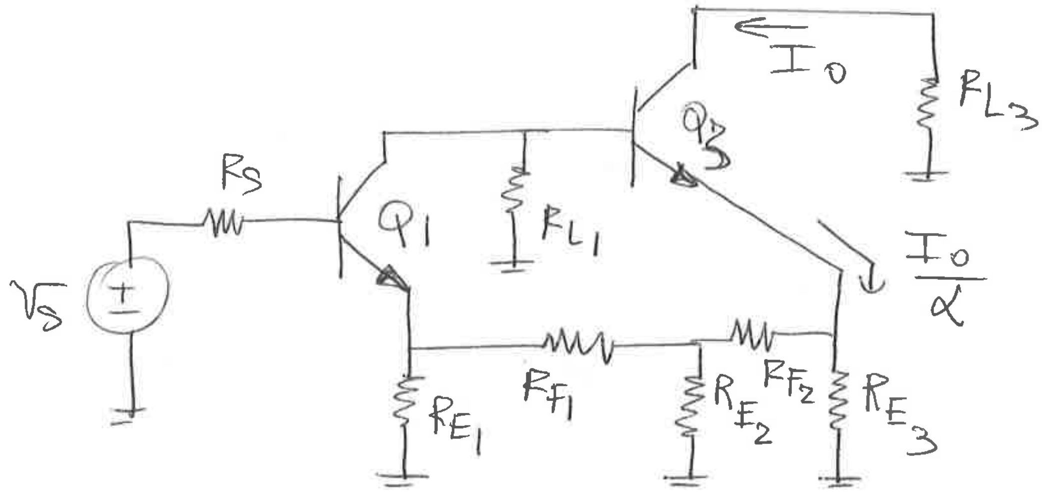


(d)

Transistor amplifier
with shunt-series feedback.



Example of series-series feedback topology



SERIES-SERIES CONFIGURATION

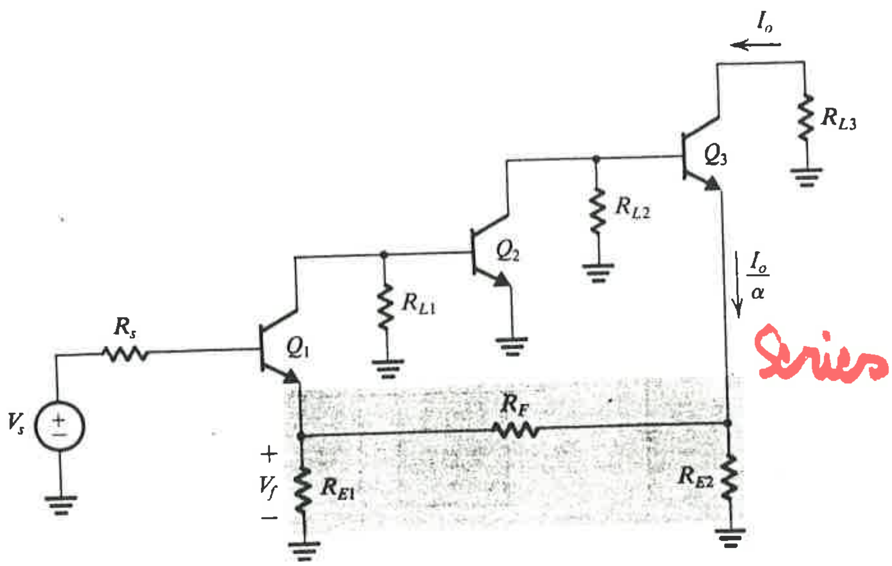


Fig. 8.6 An example of the series–series feedback topology.

SHUNT-SHUNT CONFIGURATION

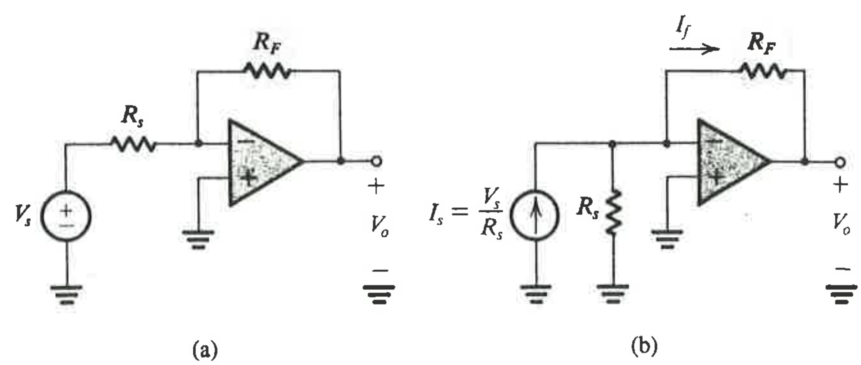


Fig. 8.7 The inverting op-amp configuration as an example of shunt–shunt feedback.

SERIES-SHUNT CONFIGURATION

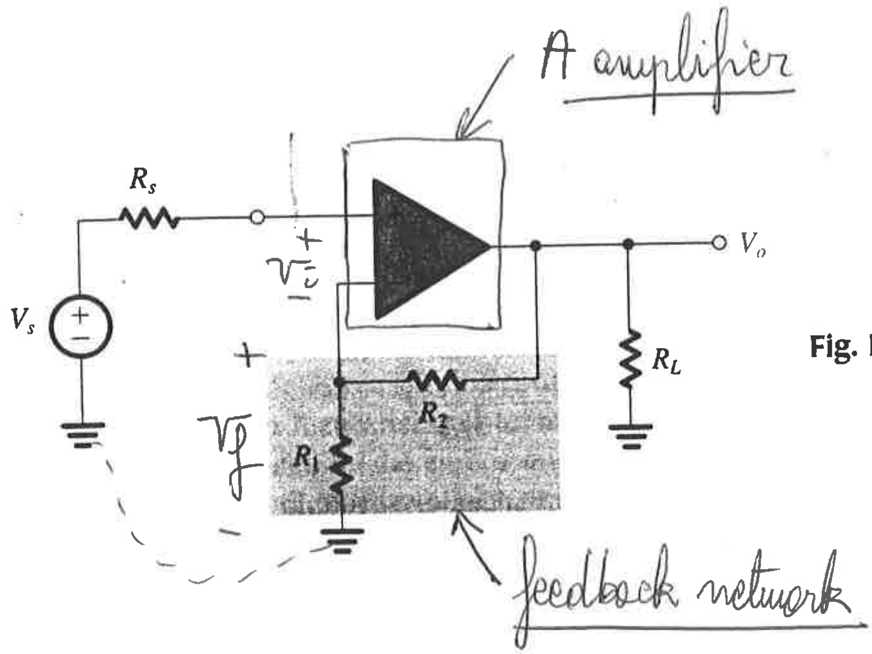


Fig. E8.1

SHUNT-SERIES CONFIGURATION

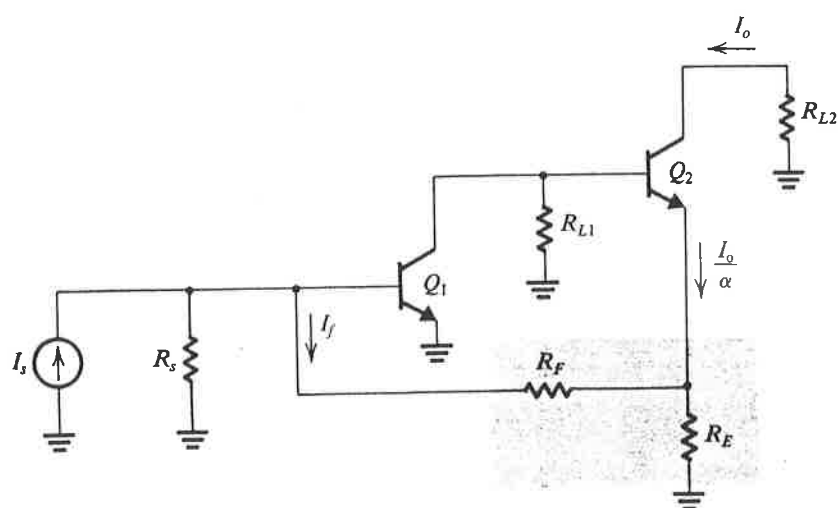
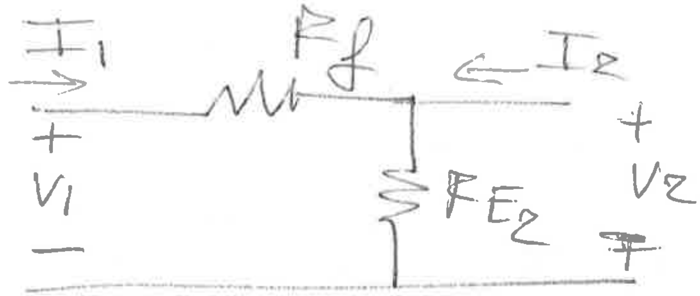


Fig. 8.5 A transistor amplifier with shunt–series feedback.

$$\begin{bmatrix} I_1 \\ V_2 \end{bmatrix} = \begin{bmatrix} g_{11} & g_{12} \\ g_{21} & g_{22} \end{bmatrix} \begin{bmatrix} V_1 \\ I_2 \end{bmatrix}$$

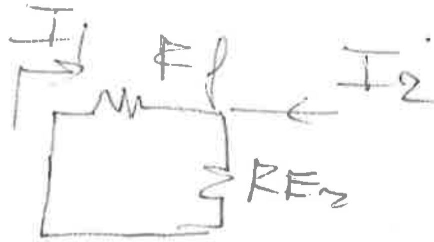
$(\Omega^{-1})\ g_{11} = \left.\frac{I_1}{V_1}\right|_{I_2=0}$ $\qquad g_{12} = \left.\frac{I_1}{I_2}\right|_{V_1=0}$ (1)

(1) $g_{21} = \left.\frac{V_2}{V_1}\right|_{I_2=0}$ $\qquad g_{22} = \left.\frac{V_2}{I_2}\right|_{V_1=0}$ (Ω)



$R_1 = g_{11}^{-1} = R_F + R_{E_2}$

$g_{22} = R_2 = (R_f \,//\, R_{E_2})$



$g_{12} = \beta =$

$$\boxed{g_{12} = \frac{-R_{E_2}}{R_{E_2}+R_f}}$$

$I_1 = \frac{-R_{E_2}}{R_{E_2}+R_f} I_2$