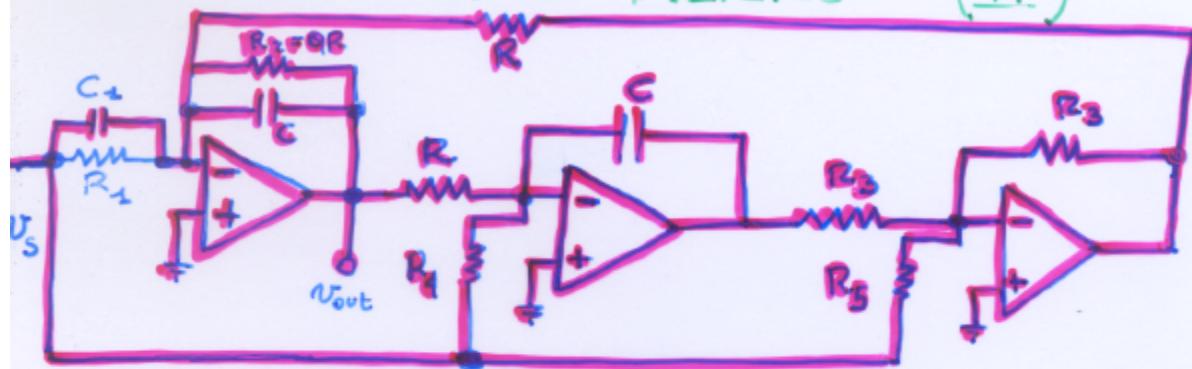


# UNIVERSAL ACTIVE FILTERS (II)



$$\frac{V_{out}}{V_s}(s) = \frac{s^2 \left( \frac{C_1}{C} \right) + \frac{s}{C} \left( \frac{1}{R_1} - \frac{R_3}{R_2 R_5} \right) + \frac{1}{R R_1 C^2}}{s^2 + s \left( \frac{R}{R_2} \right) \frac{1}{RC} + \frac{1}{R^2 C^2}}$$



passa-basso :  $C_1 = 0$  ;  $R_1 = \infty$  ; DC gain =  $\frac{R_3}{R_4}$  ;  $R_5 = \infty$

passa-banda : - positivo :  $C_1 = 0$  ;  $R_1 = \infty$  ;  $R_4 = \infty$  ;  $R_5 = \frac{Q R_3}{\text{center freq. gain}}$

- negativo :  $C_1 = 0$  ;  $R_1 = \frac{QR}{\text{center freq. gain}}$  ;  $R_4 = \infty$  ;  $R_5 = \infty$

passa-alto :  $C_1 = C * (\text{high freq. gain})$  ;  $R_1 = \infty$  ;  $R_4 = \infty$  ;  $R_5 = \infty$

match :  $C_1 = C * (\text{high freq. gain})$  ;  $R_1 = \infty$  ;  $R_2 = R \left( \frac{\omega_0}{\omega_N} \right)^2 / (\text{high freq. gain})$   
 $R_5 = \infty$

passa-tutto :  $C_1 = C * \text{guadagno}$  ;  $R_1 = \infty$  ;  $R_4 = \frac{R}{\text{guadagno}}$  ;  $R_5 = \frac{QR_3}{\text{guadagno}}$