

*Arab Academy for Science & Technology & Maritime Transport College of
Engineering & Technology*



EC434: Analog Signal Processing

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Sheet (2)

2nd Order RLC Low Pass Filters

1) Design second order LPF with natural frequency $= 10^4/2\pi$ Hz and $Q = 2$. Use $R=10k\Omega$. Sketch the frequency response of the designed filter. Plot the poles S-Plane.

2) Design second order RLC LPF where $p_{1,2} = -150 * 10^3 \pm j 593.7 * 10^3$.

Find w_p , and then plot $H(jw)$ vs w_o . Plot the poles on the S-Plane

3) for a second order RLC low pass filter, given the following:\

a. $L = 3.6$ mH

b. $C = 500$ pF

c. $R = 10K$

Find the following:

1- The transfer function, $H(s)$

2- The natural frequency, w_o

3- The peak frequency, w_p

4- The quality factor, Q

5- Find the system poles, P_1 and P_2 .

6- Plot the poles on the S-Plane.