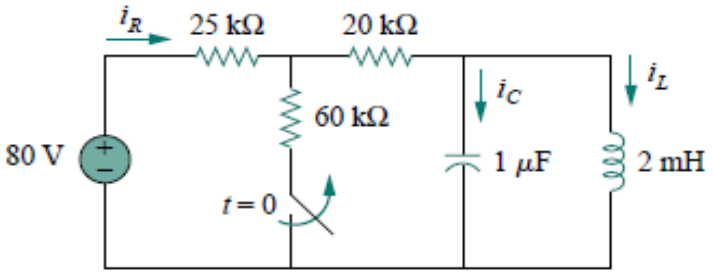
DCE42A **EE-211 Electrical Network Analysis** **Assignment #2**

Q 1 In the circuit shown, determine $i_L(0^+), i_c(0^+), di_L(0^+)/dt, di_c(0^+)/dt, i_L(\infty), i_c(\infty)$, also for t > 0 find damping ratio and comment on the kind of damping the circuit will experience.



Q 2 If the voltage across and current through a series combination of resistance and an unknown energy storage element are

v(t) = 15 cos(10^6t+66.87°) V and i(t) = 3 cos(10^6t+30 °) mA

Find the resistance and unknown element. Also comment on the type of filter implemented through this circuit and find the cutoff frequency as well.

Q 3 A series RLC circuit has $= 100\Omega$, $L = 50\mu H$ and $C = 2nF$. Find ω_0 , Q, BW, ω_L , ω_H. Find ω_1 and ω_2 at which I_m reduces to 25% of its max.

Q 4 A parallel RLC circuit has $= 1K\Omega$, $L = 250\mu H$ and $C = 4nF$. Find ω_0 , Q, BW, ω_L , ω_H. Find ω_1 and ω_2 at which V_m reduces to 25% of its max.

Q 5 A band pass series RLC circuit is required with f_0 = 1MHz and BW = 10KHz, given L = 40mH find appropriate values of R and C.

Q 6 A series RC circuit is driven by a 100KHz 24V peak ac source. Find the appropriate values of R and C that result in I_m = 9.39 mA and φ = 38.5°