Team Assignment 11 M. Murray. C. Pike. S. Ahmed

1. $H(s) = \dfrac{\dfrac{1}{LC}}{s^2 + \dfrac{R}{L} + \dfrac{1}{LC}} = \dfrac{10^{12}}{s^2 + 2*10^6 + 10^{12}} = \dfrac{10^{12}}{(s+10^6)^2}$

:Part A

2. no zeros:
   Poles $= -10^6 \ (double)$
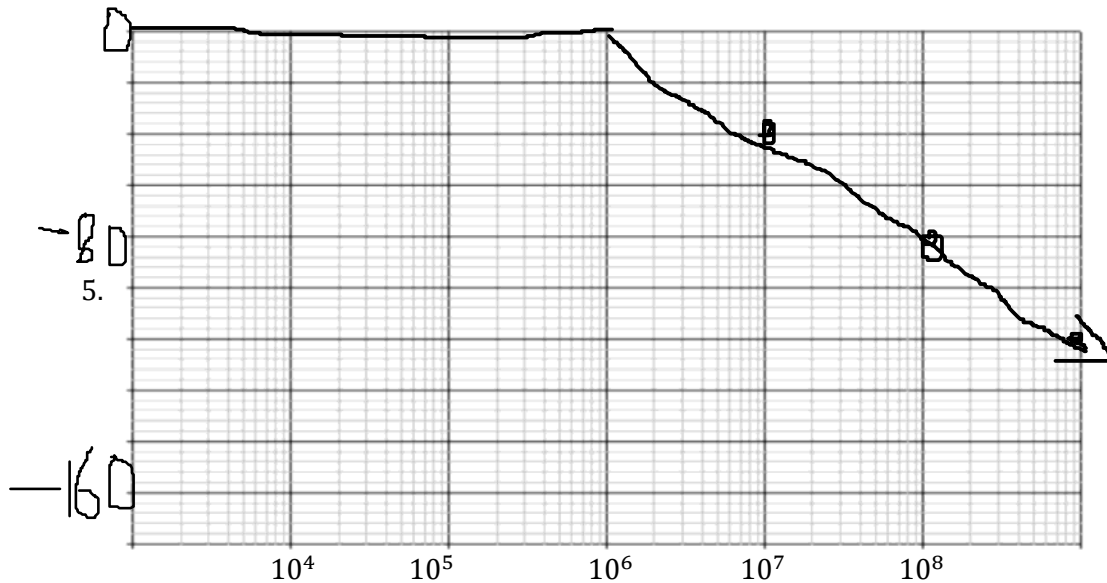
3. $2\zeta\omega_0 = \dfrac{R}{L}$

   $\zeta = \dfrac{10^6}{\sqrt{10^{12}}} = 1$

4. Circuit is critically damped   Frequency Range $= \omega < 10^6 = 0 \ ; \omega > 10^6 = -40dB/Decade$

5.

1. $H(s) = \dfrac{sL}{R + sL + \dfrac{1}{sC}} = \dfrac{s^2}{s^2 + 2*10^6 + 10^{12}} = \dfrac{s^2}{(s+10^6)^2}$

2. Zero: 0
   Pole: $10^6 \ (double)$

:Part B

3. $2\zeta\omega_0 = \dfrac{R}{L}$

   $\zeta = \dfrac{10^6}{\sqrt{10^{12}}} = 1$

4. Circuit is critically damped

5. Frequency range: $\omega < 10^6 = -\dfrac{40dB}{Decade} \ ; \ \omega > 10^6 = 0$