Course Name: Principles of Electrical Engineering II

Course Number and Section: 14:332:222

Lab # 2

TA (Instructor): Siwei Mai

Due Date:

Date Submitted:

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3.1 For L = 100mH, compute the value of C needed for the natural frequency $\omega o = 2\pi fo = 104\pi$. To vary the damping coefficient ζ , vary the value of R. Compute the values of R for each of the six different values of the damping coefficient ζ=0.1, ζ=0.2, ζ=0.4, ζ=0.6, ζ=0.8, and ζ=1.0, (see Table 1 under section 4.4).

$W_0 = 1/Sqrt(LC)$, $C = 1/LW_0^2 = 1/(0.1 * 104\ \pi) =$ **$9.37x10^{-5}F = C$**

ζ	R = 2sqrt(0.1/9.37x10-5) ζ
0.1	6.53
0.2	13.07
0.4	26.13
0.6	39.20
0.8	52.27
1.0	65.34

3.2 From Eq. 5, calculate and fill the theoretical values of the maxima and minima in
Table 1 under section 4.4. Use k = 1, 2, and 3.

ζ τ	K=1	K=2	K=3
0.1	1.729	0.468	1.388
0.2	1.527	0.723	1.146
0.4	1.254	0.936	1.016
0.6	1.095	0.991	1.001
0.8	1.015	1.000	1.000
1.0	Critically damped	Critically damped	Critically damped