Sheet (4)

Oscillators – part 1

1. If the voltage gain of the amplifier portion of an oscillator is 75, what must be the attenuation of the feedback circuit to sustain the oscillation?
2. Generally describe the change required in the oscillator of problem (3) in order for oscillation to begin when the power is initially turned on?
3. A certain lead-lag circuit has a resonant frequency of 3.5 KHz. What is the rms output voltage if an input signal with a frequency equal to resonant frequency and with an rms value of 2.2V is applied to the input?
4. Calculate the resonant frequency of lead-lag circuit with $R_1=R_2=6.2K\Omega$ and $C_1=C_2=0.02\mu f$?
5. Determine the necessary value of R_2 in figure 1 so that circuit will oscillate, neglect forward resistance of zener diodes (hint: the total gain of the circuit must be 3 when the zener diode is conducting)?

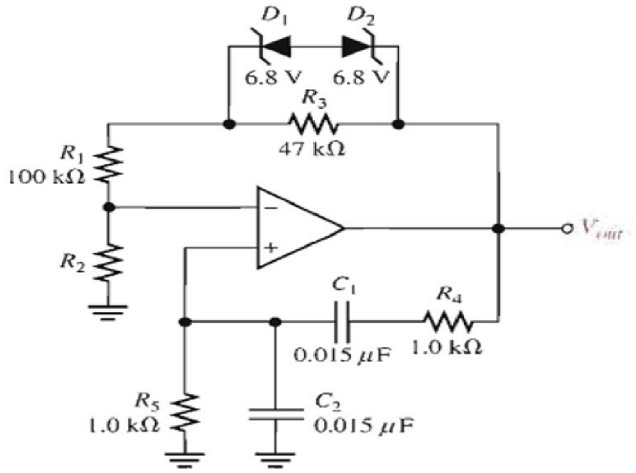

Figure 1

6. Explain the purpose of R3 shown in figure1?
7. For wein-bridge oscillator shown in figure 2, calculate the setting for R_f assuming the internal drain source resistance of JFET is 350Ω, when oscillations are stable.

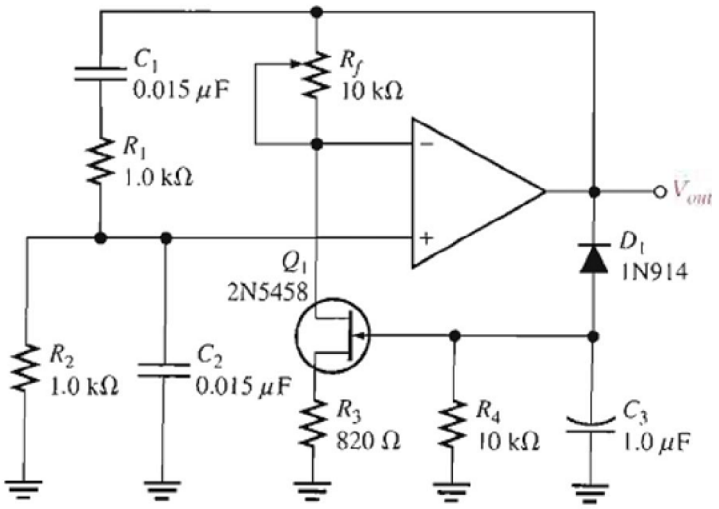

Figure 2

8. Find the frequency of oscillation for wein-bridge oscillator in problem (7)

Good Luck

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