

EE312 Exp. #4

**FEEDBACK**

Report #4

 **COURSE LECTURER:**

Assistant Professor Dr. M.A.Alsunaidi

**LABORATORY INSTRUCTOR:**

Research Assistant Dr. DenizÖzenli

Prepared by

Name:

Surname:

#ID:

***CAUTIONARY REMARK: All questions will be answered in the assigned blanks. Don’t use extra place for the answers due to the fact that they are not guaranteed to be evaluated.***

**Part 1--Introduction:** Explain the main objective of the experiment on your own words. (5pt)

**Part 2--Procedure: a) Feedback:** Mention negative feedback’s advantages and drawbacks. Which criterion is it required to keep your circuit from oscillation? Explain (10pt)

**b)** Consider Figure 1 below. For these values, calculate β, Avf, Rif, Rof values. Specify your feedback type with reasons. Compare these values with your measurement results during the lab. Comment on results. (20pt) **Hint:** Use low frequency h-parameter model. Take R2 as 4k7Ω.



**Figure. 1**

**c) Calculating corner frequencies**: Calculate fL and fH of the given circuit in Figure.1 above. Compare theoretical results with your measured values during the lab. Comment on the comparison if there are some differences. (15pt)

**Part-3—LT-Spice Simulation Part:** Construct Figure.1 in the LT-Spice and utilizing BC 237 BJT model in the Appendix. **a) DC Analysis:** Give DC op. points. (10pt)

**b) AC Analysis:** Plot AC gain of the circuit and specify the cut-off frequencies. Compare them with your measured values during the lab. Comment on results.(15pt)

**c) Zin and Zout measuring:** Plot Zinand Zout in the frequency domain. (10pt)

**Part-4--Conclusion:** Conclude your report with your learning from this experiment on your own words. Moreover, you can discuss or criticize some over-expected or under-expected sides of the experiment. (10pt)

**Part-5--References:** If you have referred parts, specify their references below. (5pt)

***Appendix:***

***BC237 BJT Model Parameters for Spice Simulation:***

.MODEL BC237 NPN (IS=1.8E-14, ISE=5.0E-14, NF=0.9955, NE=1.46, BF=400, BR=35.5, IKF=0.14, IKR=0.03, ISC=1.72E-13, NC=1.27, NR=1.005, RB=0.56, RE=0.6, RC=0.25, VAF=80, VAR=12.5, CJE=13E-12, TF=0.64E-9, CJC=4E-12, TR=50.72E-9, VJC=0.54, MJC=0.33)