Lab 1 Marking Guide

	Student Name	ID Number	Group No.
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Abstract		**5**
Brief and summarizes the results of the lab		1
Mention the voltage regulation number for the positive rail		1
Mention the voltage regulation number for the negative rail		1
Mention the ripple voltage number for the positive rail		1
Mention the ripple voltage number for the negative rail		1
Objectives		**5**
Mention ±10V and ±9V DC 25 mA supply		1
Mention ±5% voltage regulation		2
Mention voltage ripple < 0.5%		2
Design		**20**
Explain how and why the design was split up (rectifier, filter and regulator stages)		5
Explain how testing must occur for each stage (1k resistor for filter stage, no load, full load, etc.)		3
Explain and justify why the rectifier design was chosen		2
Explain and justify why the filter design was chosen (LPF)		2
How do the simulation and results from earlier inform later design work? (Picking capacitor amounts, picking $R_{Ballast}$, etc.)		5
Explain the Zener diode design including $R_{Ballast}$ calculations		3
Simulation for ±10 V output (Individual)		**10**
Simulation for the transformer showing the results for both sides of the transformer		1
Simulation for the Rectifier - positive rail		1
Simulation for the Rectifier - negative rail		1
Simulation for the filters - positive rail (should be loaded with 1 kΩ)		1
Simulation for the filters - negative rail (should be loaded with 1 kΩ)		1
Simulation for the positive rail regulator - no load voltage		1
Simulation for the positive rail regulator - full load voltage (should be loaded with 400 Ω)		1
Simulation for the negative rail regulator - no load voltage		1
Simulation for the negative rail regulator - full load voltage (should be loaded with 400 Ω)		1
Simulation showing the voltage ripple of the both rails (should be loaded with 400 Ω)		1
Simulation for ±9 V output (Individual)		**10**
Simulation for the transformer showing the results for both sides of the transformer		1
Simulation for the Rectifier - positive rail		1
Simulation for the Rectifier - negative rail		1
Simulation for the filters - positive rail (should be loaded with 1 kΩ)		1
Simulation for the filters - negative rail (should be loaded with 1 kΩ)		1
Simulation for the positive rail regulator - no load voltage		1

Simulation for the positive rail regulator - full load voltage (should be loaded with 400 Ω)		1
Simulation for the negative rail regulator - no load voltage		1
Simulation for the negative rail regulator - full load voltage (should be loaded with 400 Ω)		1
Simulation showing the voltage ripple of the both rails (should be loaded with 400 Ω)		1
Results		**10**
Comparison of design, simulation, and results; discrepancies discussed/explained; shows judgement/evaluation of design performance		4
Voltage regulation calculations for both simulations		2
Voltage ripple for both the positive and negative rails for both simulations		2
All schematics should be neat, labeled and correct		2
Discussions		**10**
1. What type of filter was used (BPF, BSF, LPF, or HPF)? Why is this the appropriate choice for this application?		2
2. Was additional filtering required, how will the filter need to be adjusted?		1
3. What are the inefficiencies of the power supply? What would be better design solutions?		2
4. Is there a difference between calculations and simulations? Why is there a difference?		3
5. Were there any other difficulties you faced? What steps could you do to address these issues (even if you didn't actually do them or could not do them		2
Conclusions (properly summarizes results and findings)		**5**
Figures (figures are labeled, of good quality and readable)		**5**
Lab Report Total		**80**
Lab 1a check in		5
Lab 1a check out		5
Lab 1b check in		5
Lab 1b check out		5
Lab Mark Total		**20**
Lab 1 Total		**100**

Marked by: _____Signature: _____Date:_____