

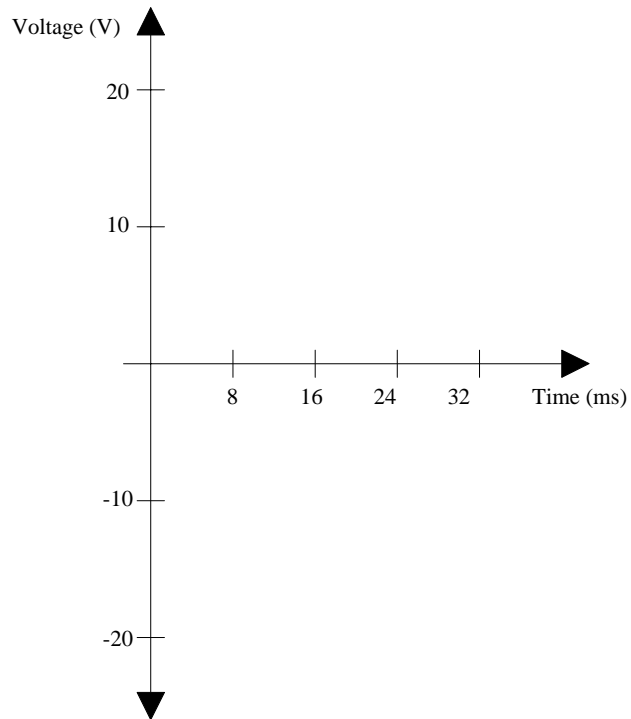
EE 40 PROJECT 1: AN AUDIO AMPLIFIER

Part 1: Power Supply

Report

1 Analyzing The Transformer

Sketch V_{out} :

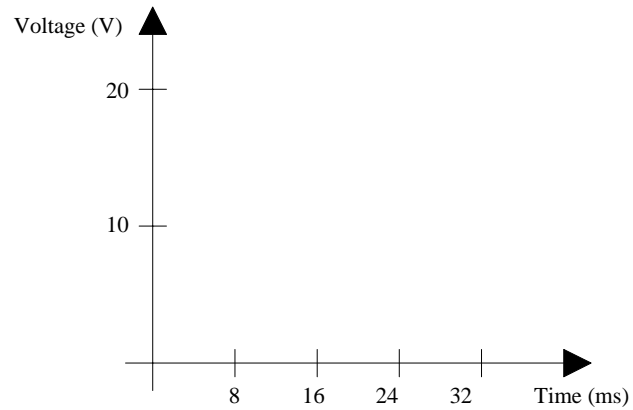


What is the maximum voltage you see at V_{out} ? What is the minimum?

How does the waveform differ from your expectations, and why is it this way?

2 Adding In The Bridge Rectifier

Sketch V_{out} :

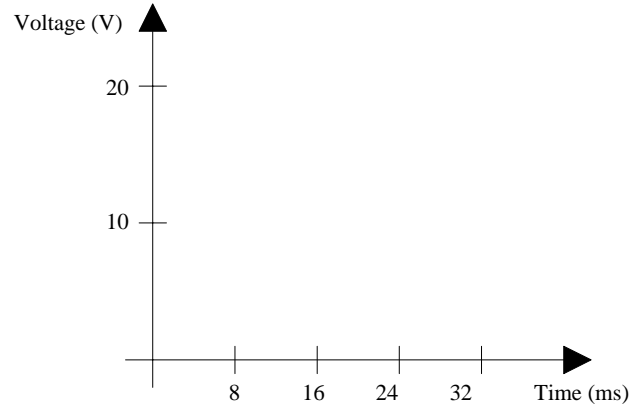


What is the maximum voltage you see at V_{out} ? What is the minimum?

What is the frequency of V_{out} ? Why?

3 Analyzing the Bridge Rectifier

Sketch V_{out} :



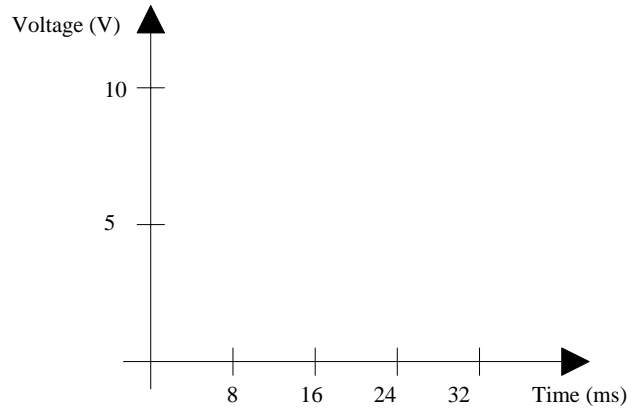
What is the average voltage seen at V_{out} ?

4 Bridge Rectifier Ripple

Use your oscilloscopes to measure V_{ripple} for this very simple AC to DC converter. What is the frequency of this ripple voltage?

5 Linear Voltage Regulator

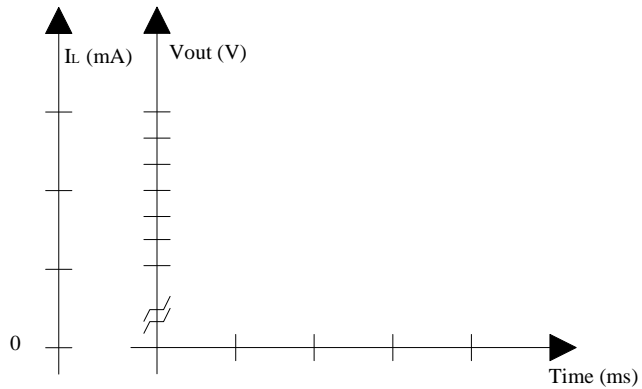
Sketch V_{out} (on the next page):



What is the average value (DC component) of V_{out} ? What is V_{ripple} ?

6 Response to a Changing Load

Sketch V_{out} and I_L on the same axes. Please label the axes.



Approximately how long does the v-reg take to stabilize the output voltage?

7 Efficiency

Output power measurement:

Average input power measurement and calculation:

	Current (A)	Voltage (V)	Power (W)
1			
2			
3			
4			
5			
			Total Power
			Average Power

What is the total efficiency of the circuit without the transformer? What is the efficiency including the transformer?

Why is this efficiency so low? Where did all the excess power go?

REVISION HISTORY

Name	Date	Note
David Lin	7/28/05	Revised Fall 2004 audio amplifier project for use with <12V supply and summer schedule.