

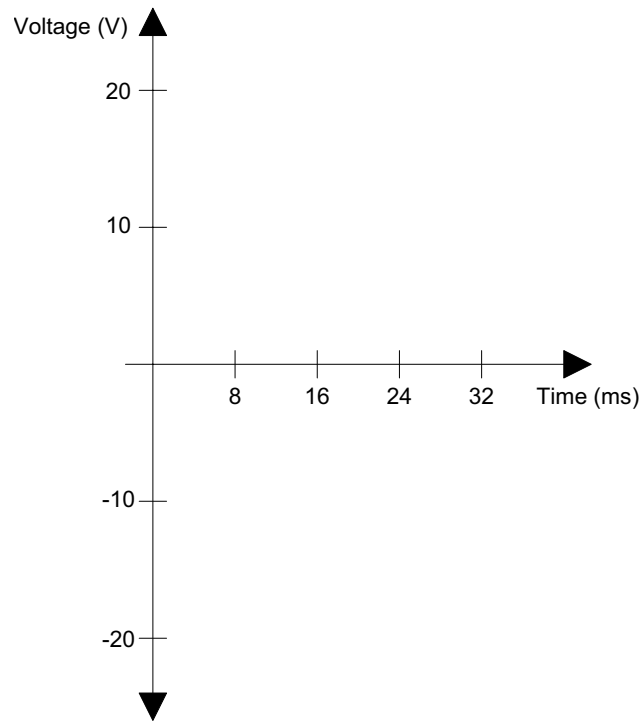
EE 43/100 FINAL PROJECT: AN AUDIO AMPLIFIER

Part 1: Power Supply

Report

1 Analyzing The Transformer

Sketch V_{out} :

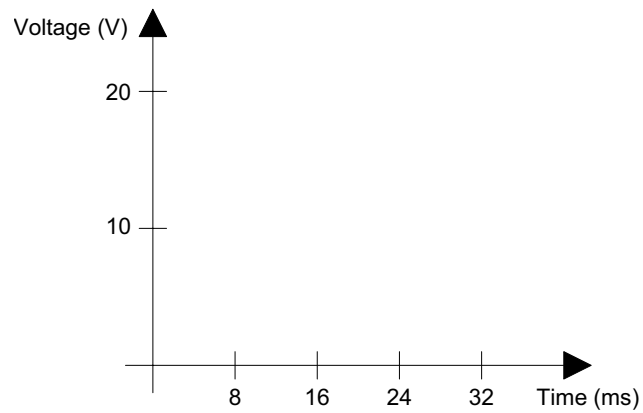


What is the maximum voltage you see at V_{out} ? What is the minimum?

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

2 Adding In The Bridge Rectifier

Sketch V_{out} :

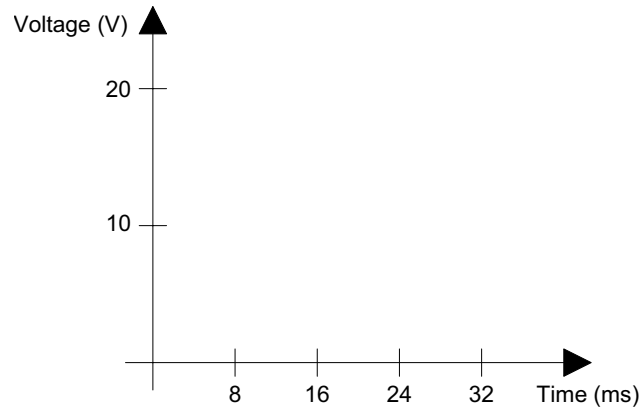


What is the maximum voltage you see at V_{out} ? What is the minimum?

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

3 Analyzing The Bridge Rectifier

Sketch V_{out} :



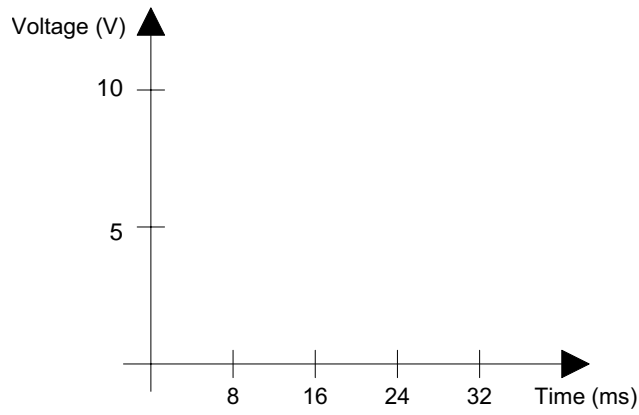
What is the average voltage seen at V_{out} ?

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

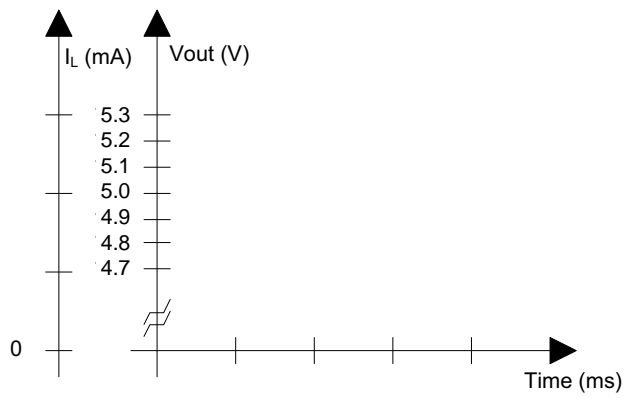
Sketch V_{out} :



What is the average value (DC component) of V_{out} ? What is V_{ripple} ? (just subjectively compare V_{ripple} to part 4)

6 Response To A Changing Load

Sketch V_{out} and I_L on the same 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:

What is the total efficiency including the transformer?

Why is this efficiency so low? Where did all the excess power go? How can we build a better AC to DC

converter?