T3 - AC -> DC circuit

Integrated Master in Physics Engineering

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1   Introduction

In this laboratory assignment our aim is to design a circuit capable of converting an AC voltage input into a DC voltage output. More specifically, we will convert a voltage input of $230V$ and $50Hz$ into an approximate voltage output of $12V$. To achieve this, we will use diodes, resistors, a transformer and a capacitor.
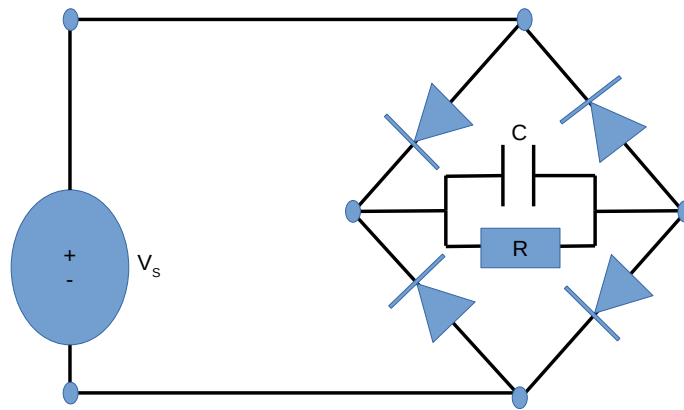
Figure 1: Circuit to be studied

2 Theoretical Analysis

Our Value of n used was 17.25. Therefore we used a voltage source of 13.3333 V. We used R= 50 Kohm and C= 20 F We reached an outstanding value of merith of 0.09.

Using Octave we reached the following results:

3 Simulation Analysis

Using Ngspice we reached the following results:

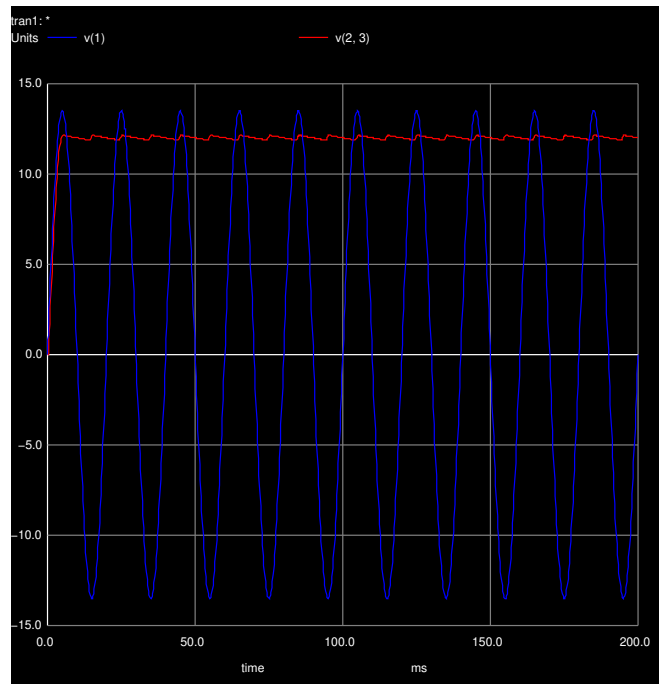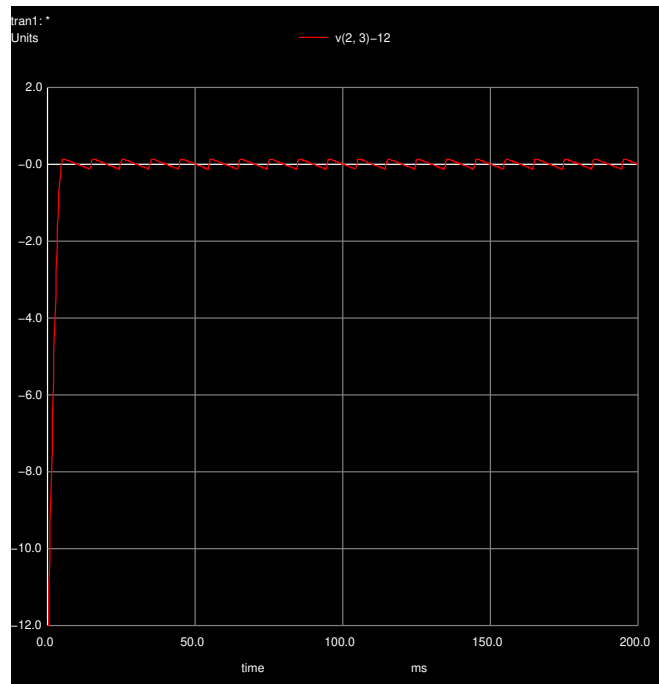| Name	Value
ripple	2.618828e-01
average	1.201291e+01

Figure 2: Vo e Vs

Figure 3: Vo-12

Side by side we reach the following: ...

4 Conclusion