

Circuits Theory and Electronic Fundamentals

Integrated Master in Engineering Physics, IST, University of Lisbon

Lab 3: AC/DC Converter

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1 Introduction

The objective of this laboratory assignment is

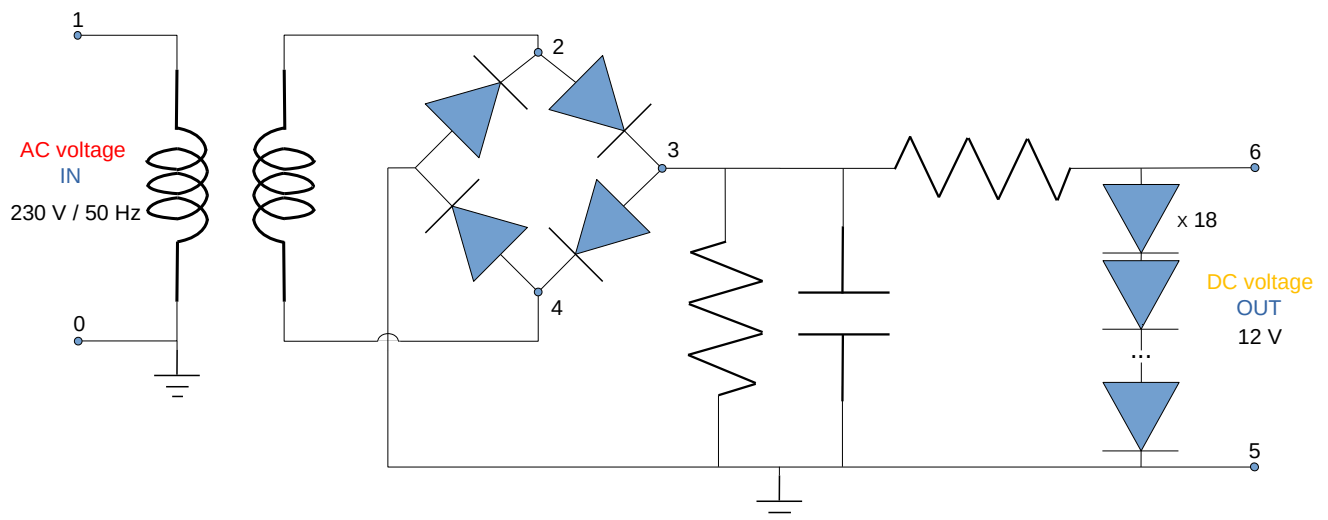


Figure 1: Circuit to be analysed in this laboratory assignment.

2 Theoretical Analysis

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3 Simulation Analysis

Simulating the circuit indicated we have obtained the following graphic that contemplates the voltage after the envelope circuit (out1) and the voltage that actually leaves the system, supposedly 12 V.

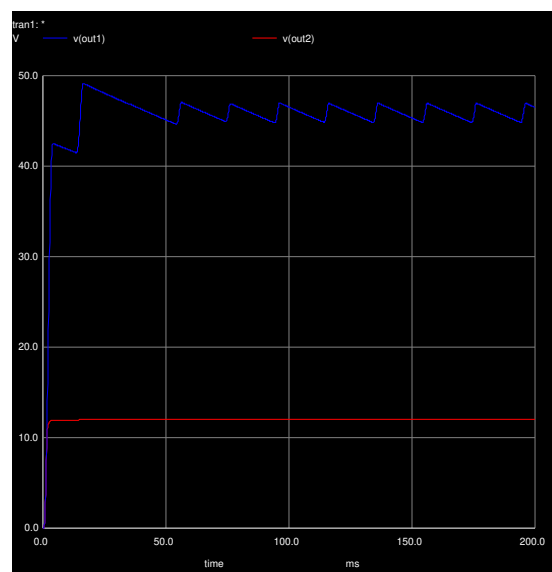


Figure 2: Voltage after envelope circuit(out1) and after voltage ripple circuit (out2)

In the next graph we tried observing the fluctuations of the output around 0 for that we plotted the output voltage obtained at any instant subtracted by the desired voltage 12 V.

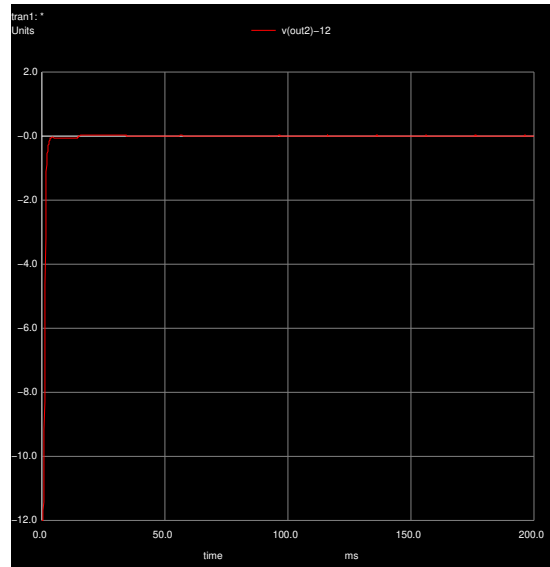


Figure 3: Transient analysis - total response on node 6, $v_6(t)$, and stimulus, $v_s(t) = v_1(t)$, both in volts, in time interval $[0, 20]$ ms and for $f = 1$ kHz.

4 Conclusion

In this laboratory assignment, the objective of