Faculty of Engineering & Technology
Electrical & Computer Engineering Department

CIRCUIT ANALYSIS ENEE2304

PSpice Project

Prepared by:

Maha Maher Mali 1200746

Instructor: Dr. Hakam Shehadeh

Section: 1

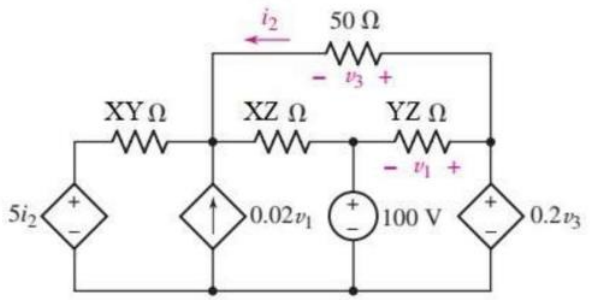
Date: 14/6/2022

Contents

Table of Figures

Question 1

Construct a PSPICE schematic for the circuit shown in the figure below. Simulate the schematic and show voltages at each node and current in each branch.



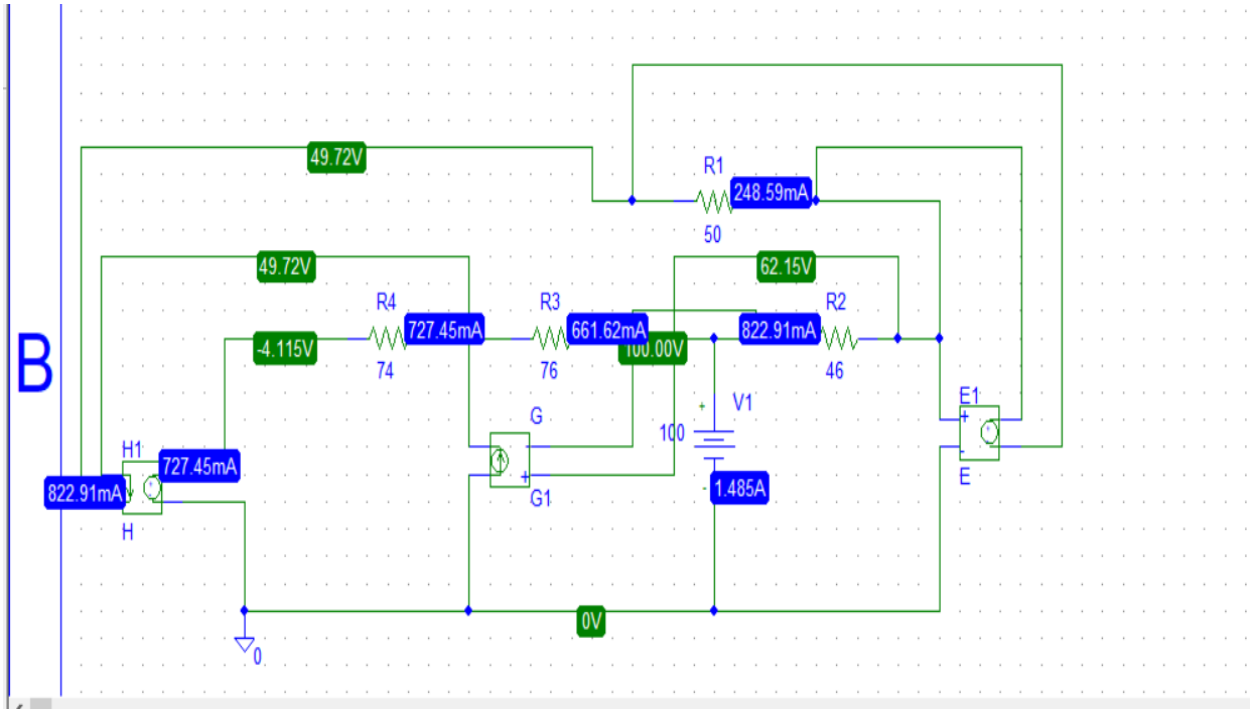
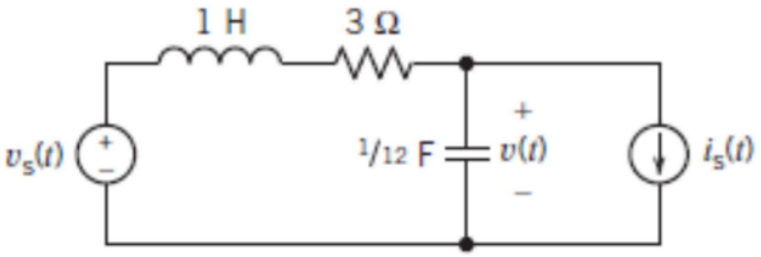


Figure 1: circuit for Question one

For 5i2 I used the current controlled voltage source (H) in PSpice, and for 0.2v3 I used voltage-controlled voltage source(E) in PSpice, and for 0.02v1 I used voltage controlled current source.

Question 2

The circuit shown in Figure below has two inputs, vs(t) and is(t), and one output, v(t). When inputs are given by *Vs(t)= Vm sin 6t* V and *is(t)= Im A* the output will be *vo(t)=A sin(6t+θ) + B V*
3Linearity requires that A be proportional to Vm and that B be proportional to Im. Consequently, we can write A= k1.Vm and B= k2.Im, where k1 and k2 are constants yet to be determined.
(a) Use PSpice to determine the value of k1 by simulating the circuit, using Vm =1 V and Im= 0.
(b) Use PSpice to determine the value of k2 by simulating the circuit, using Vm =0 V and Im= 1.
(c) Knowing k1 and k2, specify the values of Vm and Im that are required to cause *vo(t)=5sin(6t+θ)+5 V.* Simulate the circuit, using PSpice to verify the specified values of Vm and Im.
(d) Determine the average power delivered by *vs(t)* using Pspice.



Part A:

Circuit

Vm=1v, Im=0A

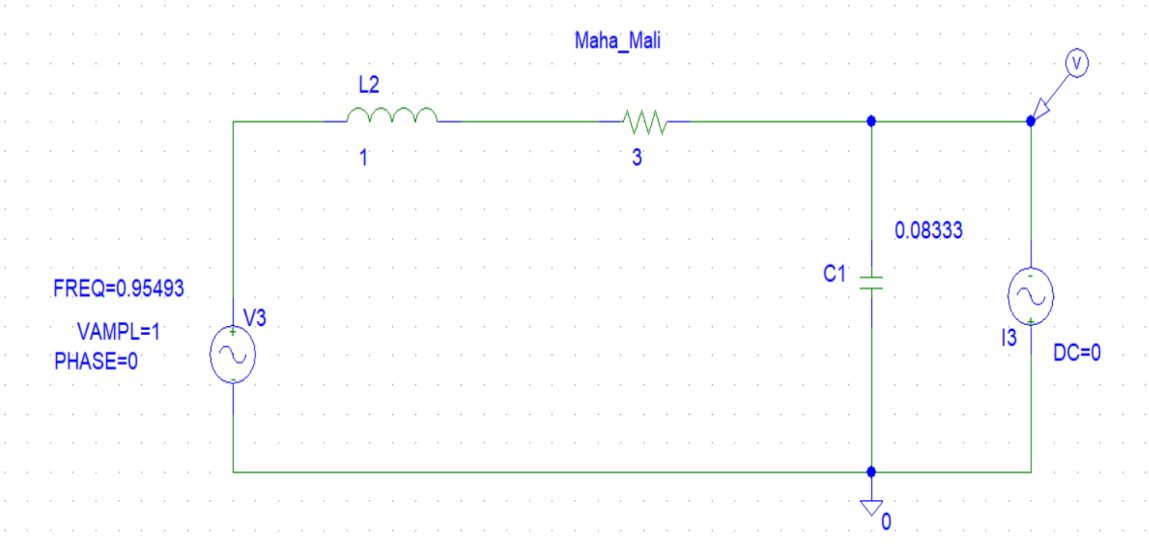


Figure 2: circuit for Q2 part A

The simulation:

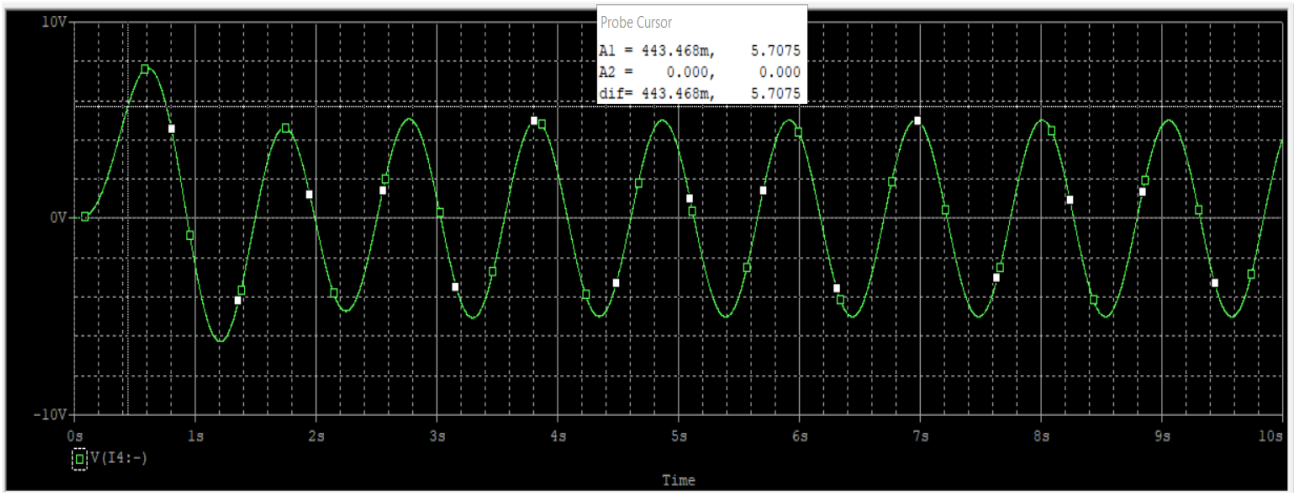


Figure 3: The simulation Q2 part A

K1=0.4 V/A

Part B

Circuit

Vm=0v, Im=0A

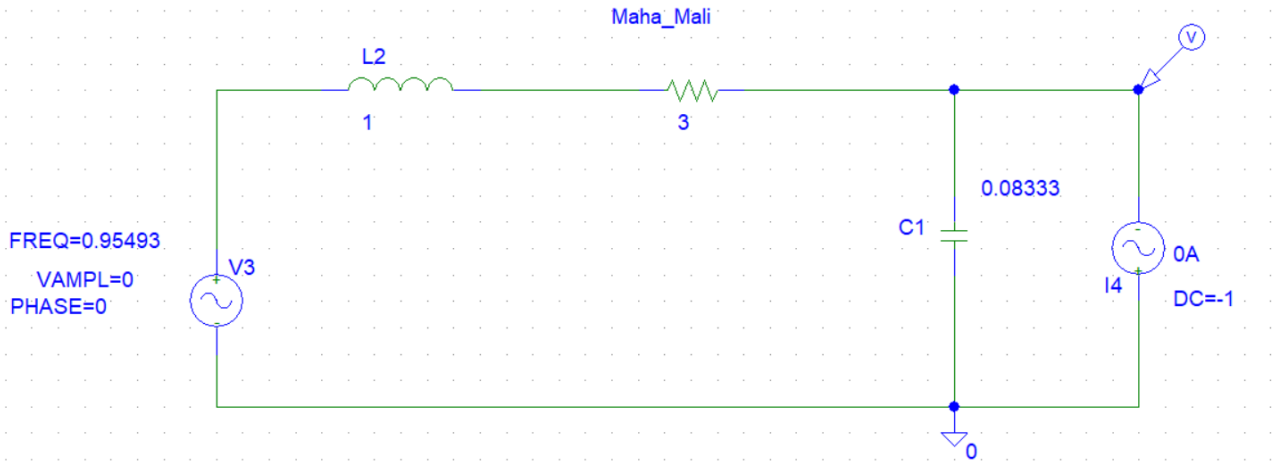


Figure 4: circuit for Q2 part B

The simulation:

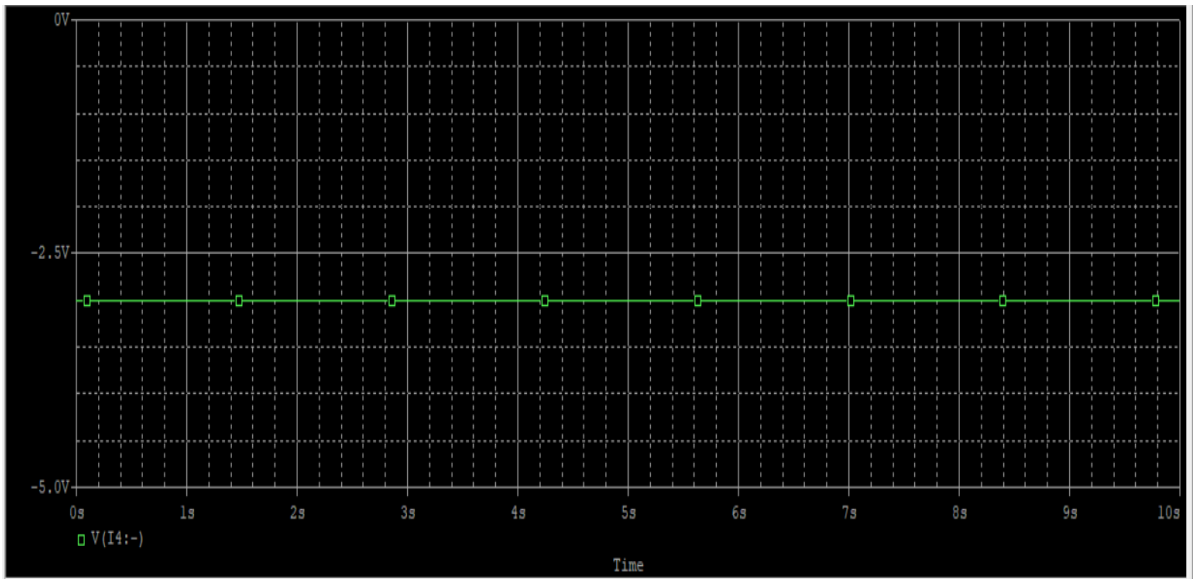


Figure 5: The simulation Q2 part B

K2=-3 V/A

Part c:

Circuit

Vm=5/k1=5/0.405=12.35v, Im=5/k2=5/-3=-1.67 A

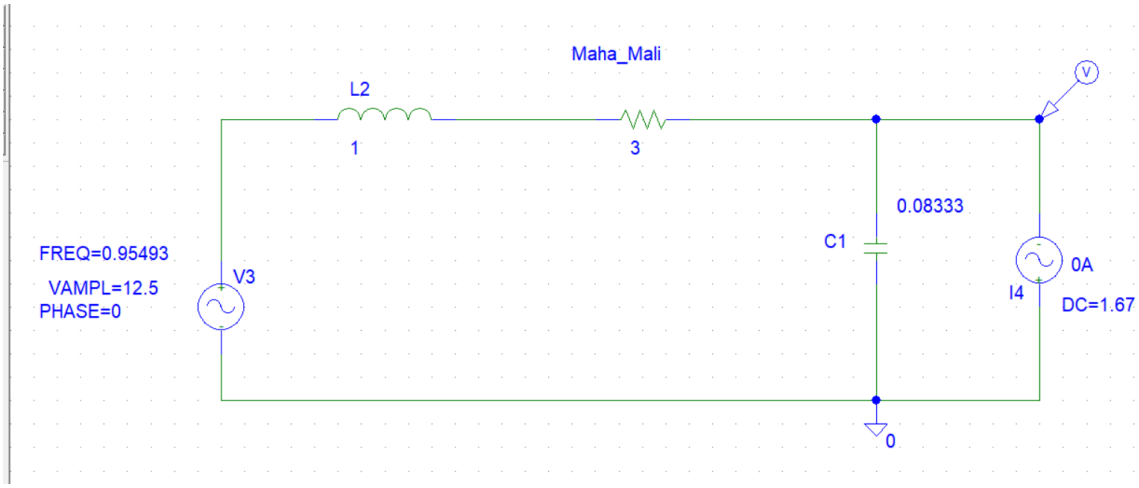


Figure 6 :circuit for Q2 part C

The simulation:

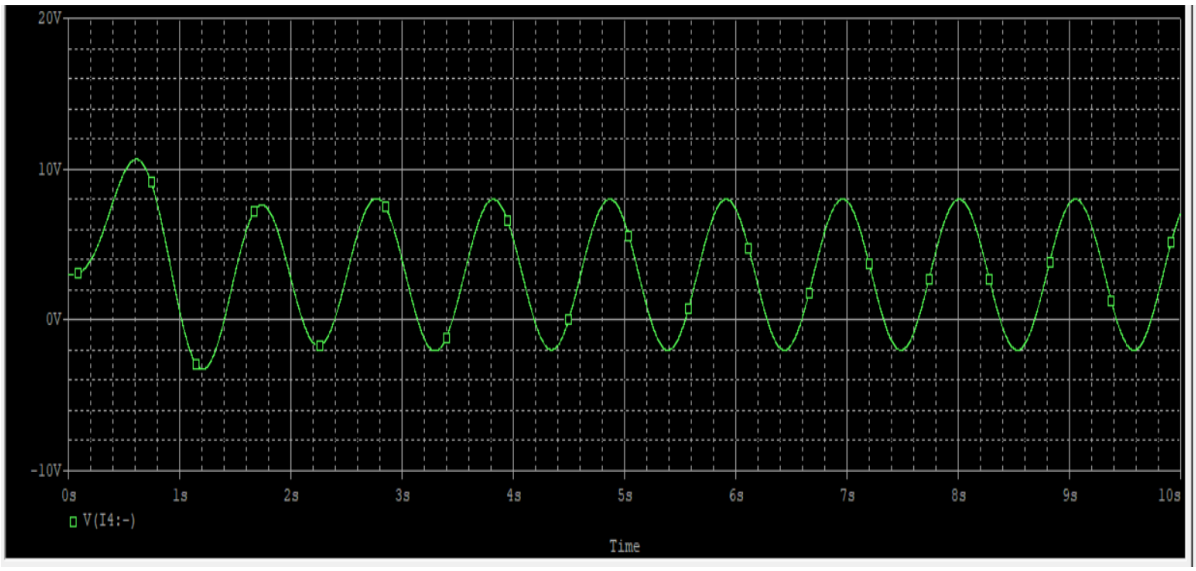


Figure 7: The simulation Q2 part C

Part D:

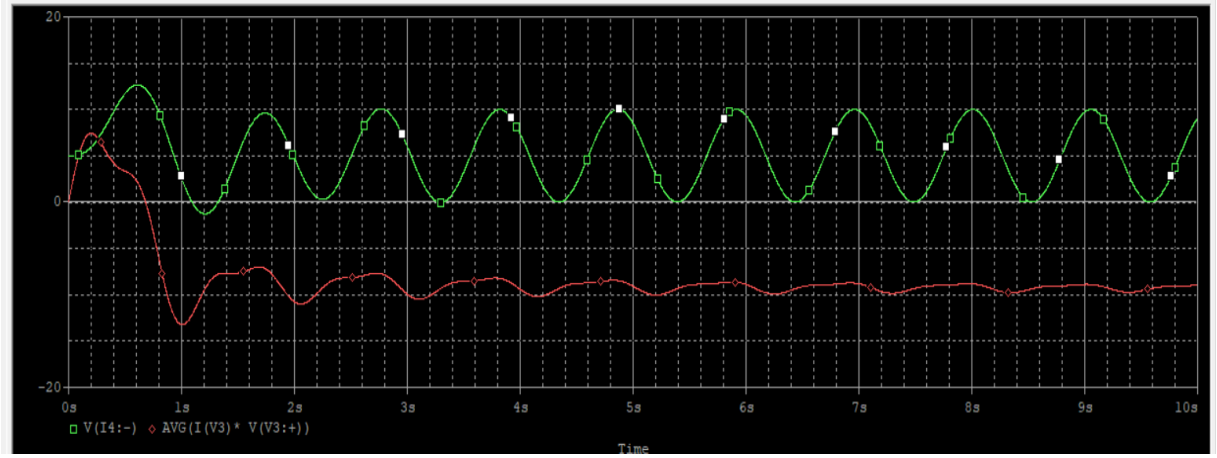


Figure 8:Average power

P = 0.5 Vm Im = 0.5 (12.5) (-1.67) = -10.418 watt (deliver power)