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جامعة بيرزيت

BIRZEIT UNIVERSITY

Electrical Engineering Department

Electronics – ENEE236

First Exam

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Question 1 (12 points)

Given the Zener voltage regulator of Figure 1, where Vz =10V (measured at Iz=25mA)

1. Find the minimum and maximum possible values of Vi(t) in order to have a load voltage V_L=10V without exceeding the ratings of the zener diode
2. Find the minimum and maximum value of load voltage V_L knowing that Iz(min)=5mA and rz=10 ohm

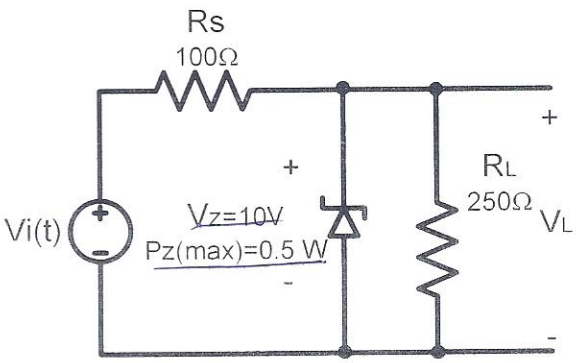
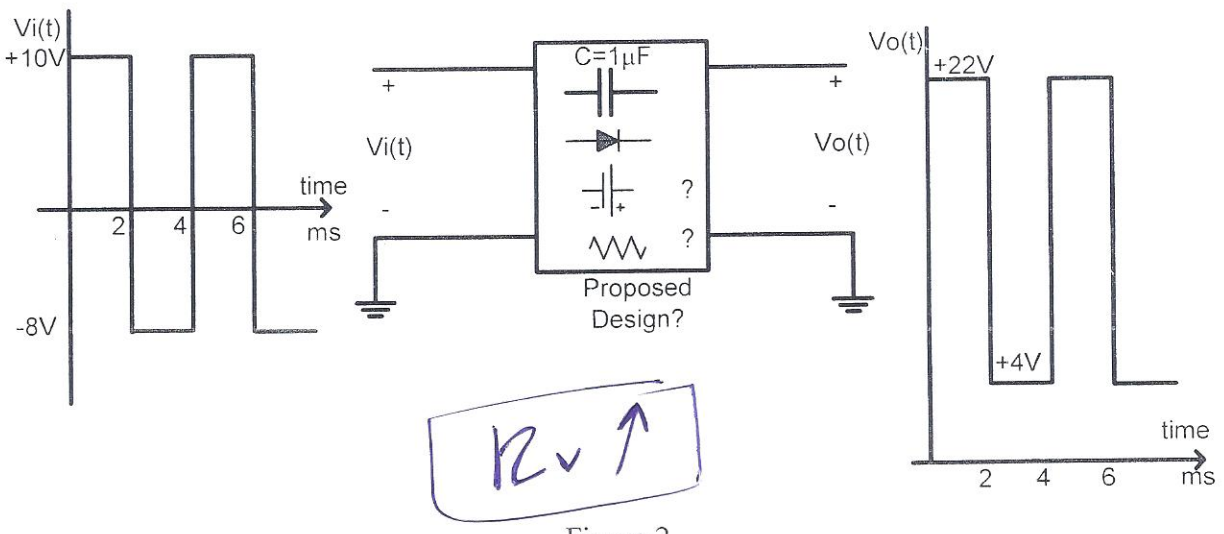


Figure 1

Question 2 (10 points)

Refer to Figure 2 to design **a diode-clamper** circuit that produces the output voltage Vo(t) if the input voltage Vi(t) is given as shown. Analyze your proposed design to make sure it does the job right



Rv ↑

Figure 2

Question 3 (8 points)

Refer to the Common-Base Amplifier circuit of Figure 3 answer the following

1) Find value of **hib** (**assume V_T=26mV, α=0.99)**
2) Draw the ac small signal equivalent circuit and find and expression for the voltage gain Av

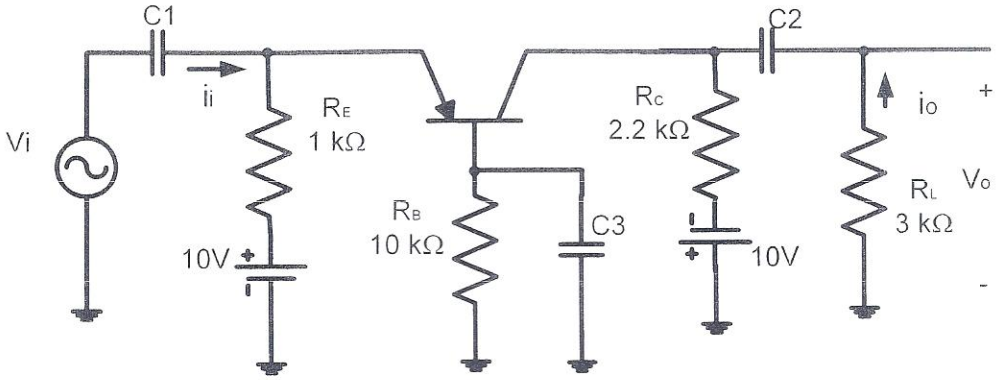


Figure 3

Question 4 (20 points)

The transistor amplifier of Figure 4 has two outputs: Vo1 (CE) and Vo2 (CC) . assuming that **β=120, V_T=26mV**

(a) Calculate the value of hie **(b)** Find **$i_{c(max)}$ and $V_{ce(max)}$** and draw the ac load line

(c) Calculate the voltage gain Av1=Vo1/Vi **(d)** Calculate the current gain **Ai2=io2/ii**

(e) Calculate the input impedance Zi

(f) Calculate the output impedances Zo1 and Zo2

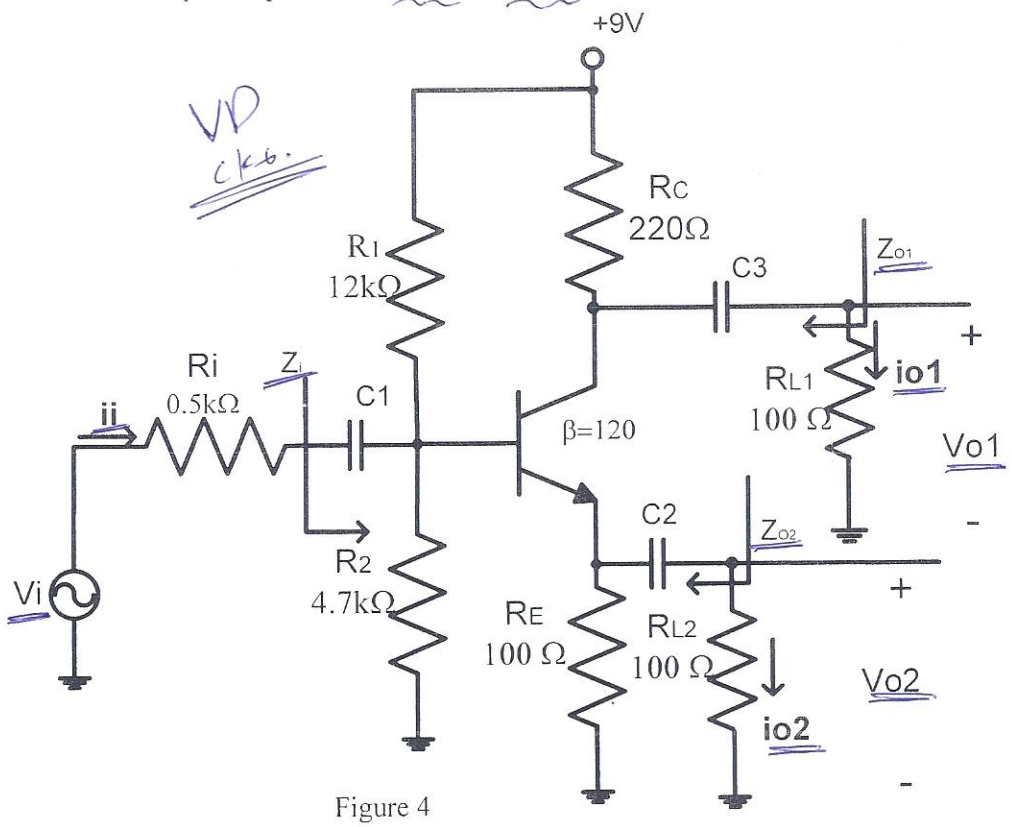


Figure 4

Bon Chance

Nasser Ismail

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