

Final Term Exam

Date: Saturday 05/05/2018

Subject: <u>CCE201</u> Duration: 2 hours

• No. of questions: 3 + 1 bonus

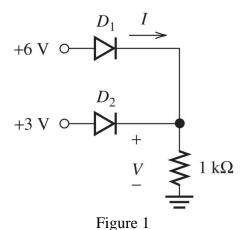
• Total Mark: 40 Marks

• Answer all the following questions

• Illustrate your answers with sketches when necessary

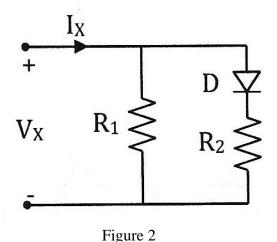
Question 1 15 marks

- a. Find the values of I and V for the circuit of Fig. 1, assuming that $V_{D1} = V_{D2} = 0.7 V$.
- b. Draw the voltage doubler circuit and mention in 4 lines the theory of operation. In the same manner, suggest the circuit diagram of the voltage tripler circuit.



Question 2 5 marks

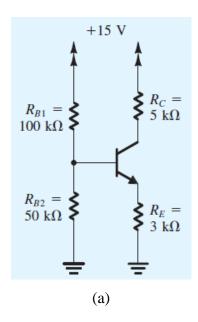
Consider the diode circuit in Fig. 2. Obtain and plot the I_X - V_X characteristics of the circuit given below. Assume the diode is ideal and $R_1 = R_2 = 25k$



Page 1 of 2

Question 3 20 marks

- a) Analyze the circuit, shown in Fig.3(a), determine the voltages at all nodes and the currents through all branches. Assume $\beta = 100$.
- b) Analyze the transistor amplifier, shown in Fig.3(b), to determine its voltage gain v_o/v_i . Assume $\beta = 100$.



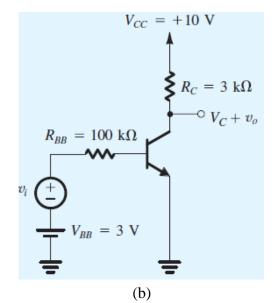
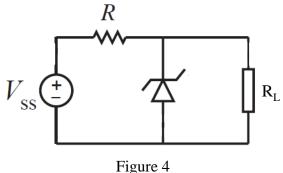


Figure 3

Bonus Question (5 degrees)

The voltage-regulator circuit, shown in Fig. 4 is designed to provide a constant voltage of 5V to a load from a variable supply voltage. The load current varies from 0 to 100mA and the source voltage varies from 8 to 10V. If the Zener diode is ideal, specify the value of the resistance R.



Good Luck

Dr. Sherif Hekal