Benha University ***Faculty of Engineering- Shoubra*** ***Electrical Engineering Department*** ***First Year communications.***		***2nd semester - Midterm Exam*** ***Date: 23-04-2014*** ***ECE121: Electronics I*** ***Duration : 75mins***
▪ Answer all the following questions ▪ Illustrate your answers with sketches when necessary. ▪ The exam consists of two pages.		▪ No. of questions: 3 ▪ Total marks: 30 ▪ Examiner: Dr. Abdallah Hammad

Question 1

(a) Compare between LM7812, LM7912, LM317, LM337

(b) Determine the minimum and maximum output voltages for the voltage regulator in figure1. Assume I_{ADJ} = 50 mA.

Question 2

(a) What is RGB LED? Explain how you can drive it

(b) If the voltages in figure 2 are applied to **OR gate** and **AND gate.** Sketch the output voltage for each case

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Question 3

(a) Determine v_o for each the network of figure (3)

(b) The Zener diode in the voltage-regulator circuit of figure (4) has a constant reverse breakdown voltage $V_Z = 8.2$ V, for 75 mA $\leq i_Z \leq$ 1 A. If $R_L = 9\ \Omega$, find a range for R_S to maintain regulation while V_b varies by 10% from its value of 12 V.

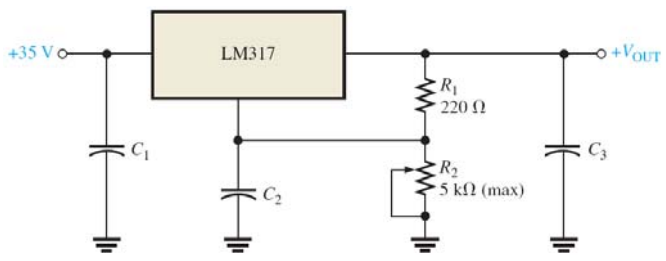
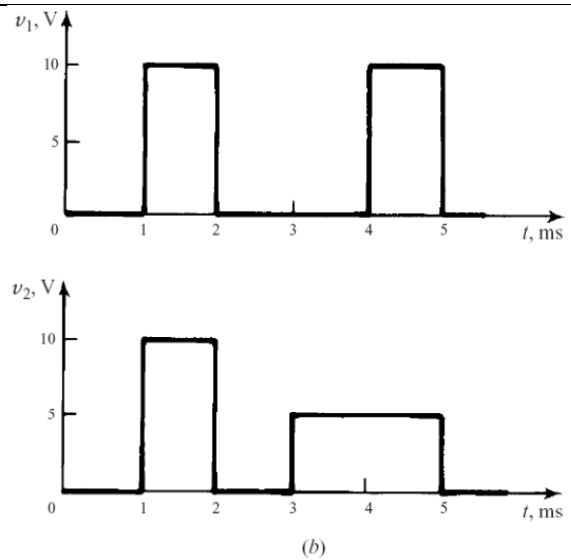
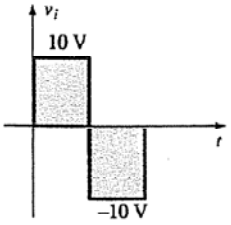


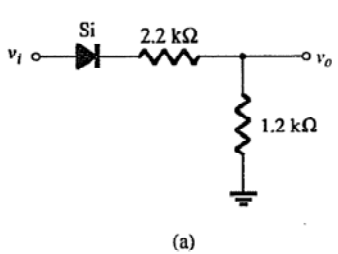
Figure (1)



(b)

Figure (2)





(a)

Figure (3)

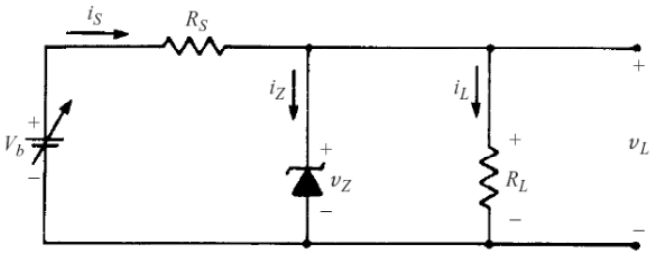


Figure (4)