MANSOURA UNIVERSITY      May 2013      3$^{rd}$. YEAR COMM. ENGINEERING
FACULTY OF ENGINEERING      ELECTRONICS LAB (3)
DEPT. OF ELECTR. & COMM. ENG.      TIME ALLOWED = 2 HRS

Answer ALL Questions ( 10 Marks for each of Q1 & Q2, 15 Marks for each of Q3 & Q4)

I) In the following RC coupled amplifier:

     a) Give possible values for the DC voltages $V_{B1}$, $V_{C1}$, and $V_{E1}$ for this circuit to work as an amplifier (Explain your answer- no detailed mathematical analysis is required)

     b) If R5 is changed from 1K to 4.7K Give possible values for the DC voltages $V_{B1}$, $V_{C1}$, and $V_{E1}$ compared to values of part a  (Explain your answer- no detailed mathematical analysis is required)

     c) What if C2 is reduced 100 times? (Explain your answer- no detailed mathematical analysis is required)

     d) What are the effects of including C4 and R12 in the circuit? (Explain your answer- no detailed mathematical analysis is required)
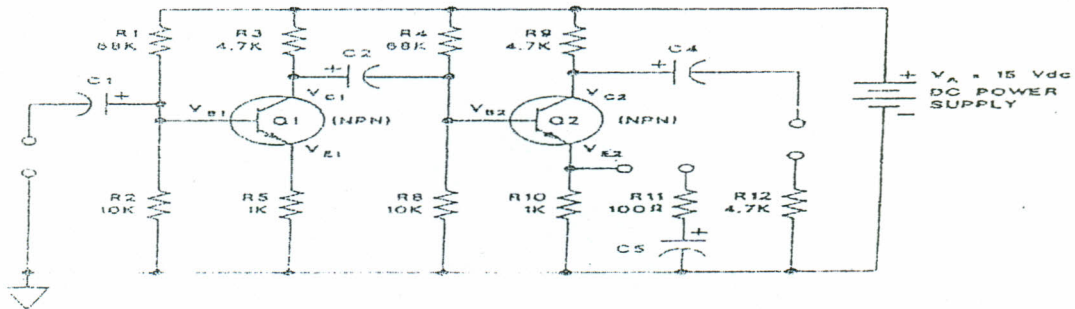


II) In the following circuit: (Use graphs to illustrate your answers as possible)

     a) Draw the waveform at the collector of Q1, Q2, across C1, and across $R_L$ if $R_{B1}$, and $R_{B2}$ are disconnected. Explain your answer

     b) Repeat part (a) if $R_{B1}$, and $R_{B2}$ are connected as shown in the figure. Explain your answer

     c) Explain how this circuit is configuired to use 2 NPN transistors

     d) What are the parameters that affects the circuit efficiency
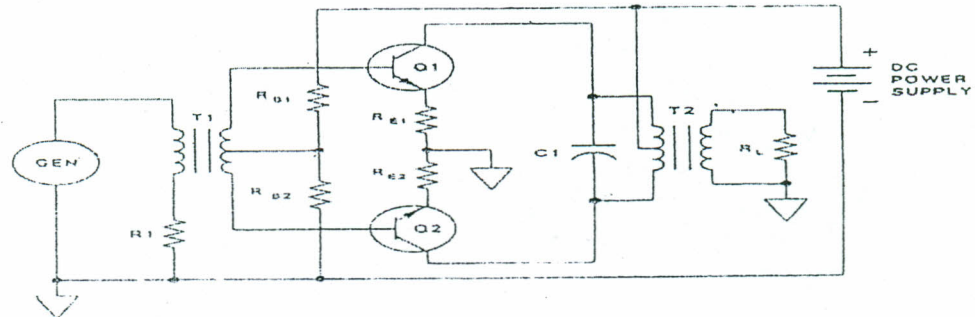


III- a) Define the following terms for microwave transmission line: Characteristic impedance, reflection coefficient, voltage standing wave ratio(VSWR), propagation constant.

     b) Sketch a block diagram of an experimental set-up to measure VSWR in a microwave T.L. and explain the function of each block.

IV-a) Explain why modulation process is used?    b) State at least one linear and one nonlinear modulation schemes and explain on what bases linear and nonlinear is defined?

c) Show a block diagram for set-up to carry on F.M. modulation/demodulation experiments in the lab and explain the function of each block.

d) With the aid of a table , state the main differences between A.M., F.M., and P.M. from the point of view of : Bandwidth, commercial applications, noise , linearity, type of detectors.

<center>GOOD LUCK</center>

<center>Prof. F.W.Zaki, assoc.Prof. M.M. Elzalabani, and Assoc. Prof. Shereef S. Kishk</center>