RGPV BASED ASSIGNMET QUESTION.

SUBJECT- CNTL (EC-505)

BRANCH- EC 5TH SEM

INTRUCTIONS. 1. All questions with their solution are submitted till 27 October 2014.

Q 1 Design an asymmetrical T-attenuator to produce attenuation of 20 db and to work between source impedance of 200 ohm and load impedance of 800 ohm.

Q 2 Design a m-derive t-section low pass filter having cut off frequency fc=1000Hz,design impedance $R_{k=}$600 Ω and frequency of infinite attenuation f_{∞}=1050 Hz.

Q 3 Find the network for the impedance function using foster-1 form:

$$Z(s)=\frac{(s+1)(s+3)}{S(s+2)}$$

Q 4 Find the network in each case using the given method:

(1) $Z(s)=\frac{2s^2+s+1}{S^3+s^2+s+1}$ [using foster 1 form]

(2) $Z(s)=\frac{6+8s^2+2s^4}{2s+s^3}$ [using Cauer-2 form]

Q 5 Calculate the iterative and image impedance of a T- network with series and shunt impedance arm impedance Z_1 and Z_2 and Z_3 , Z_1 = 30+j7.5 Ω, Z_2 =50+j10 Ω, and Z_3 =-j3.229 Ω.

Q 6 What do you mean by SWR? A loss line with Z_o=70Ω is terminated in an impedance Z_r =115-J80 Ω. The wavelength of the transmission is 2.5 m using the given smith chart find the following :

a) Standing wave ratio
b) Maximum and minimum lins impedance.
c) Distance between the load and first voltage maxima.

Q 7 A transmission line has a characteristic impedance of 600 Ω.determine the magnitude of the reflection coefficient if the reciving end impedance is 650-j475 Ω

Q8 Design constant- K bandstop filters(both T and π section) for the cut off frequency of 2 khz and 6 khz . the impedance is 500 Ω

Q 9 Design an m-derive low pass filter with a cut off frequency of 2 khz . design impedance 500 and m=0.4 consider a π section for your coluction.

Q 10 The constant of a Transmission Line are R=6Ω/km ,L =202Mh/km ,C=0.005μF/Km and G=0.25*10^{-3}mhos/km. calculate the attenuation constant and phase constant at 1000Hz

Q 11 A single stub is to match a 300 Ω line to a load of (180+j120) Ω the wavelength is 2m. Determine the shortest distance from the load to the stub location and proper length of the short circuited stub using relevant forumala.

Q 12 To driving point impedance of an LC network is given by

$$Z(s) = \frac{10s^3 + 4s}{15s^4 + 10s^2 + 1}$$

Q 13 At a point on a transmission line the line impedance is (75+j75)Ω and the characteristic impedance of line is 75Ω. Use a smith chart to find the line admittance at a point. Check the answer by direct calculation

Q 14 Design a band elimination filter having a design impedance of 500Ω and cut-off frequency 1kHZ and 10 kHz.