SATHYABAMA UNIVERSITY

(Established under section 3 of UGC Act,1956)

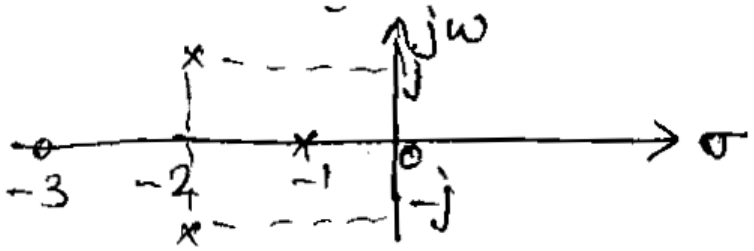
Course & Branch :B.E - ECE
Title of the Paper :Network Analysis and Synthesis Max. Marks :80
Sub. Code :6C0053 Time : 3 Hours
Date :28/04/2010 Session :FN

PART - A (10 x 2 = 20)

Answer ALL the Questions

1. Define Driving point impedance.

2. Determine the system function if the d.c gain of the system is 10 and pole zero plot is as shown in figure.



3. State Bartlett bisection theorem.

4. Express y parameters in terms of z parameters and h parameters.

5. Test whether the polynomial is Hurwitz. $P(s) = s^3 + 2s^2 + 4s + 2$.

6. Test whether $F(s) = \dfrac{3s^2 + 5}{s(s^2 + 1)}$ is positive real.

7. Compare Butterworth and Chebyshev filters.

8. List out Classical Filters.

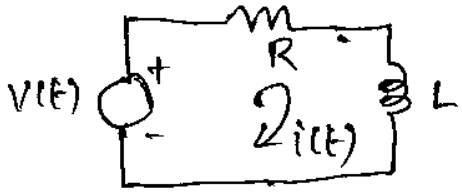
9. List out the Characteristics of Equalizers.

10. Compare series and shunt equalizers.

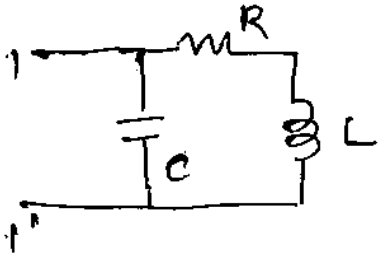
PART – B (5 x 12 = 60)

Answer All the Questions

11. (a) Find the impulse response of the network shown in figure. The excitation is the Voltage v(t) while the response is i(t).

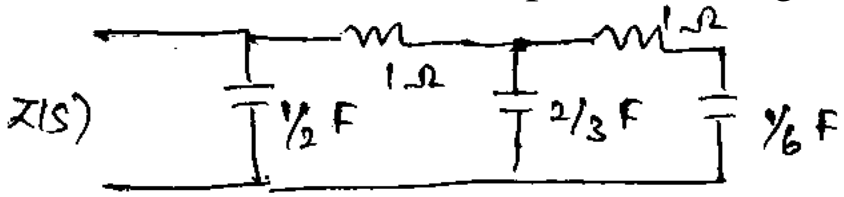


(b) For a given one port network shown in figure, find driving point impedance function Z(s).

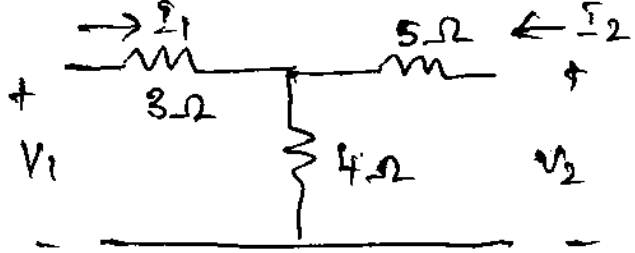


(or)

12. For the network shown, find z(s) and pole zero diagram.

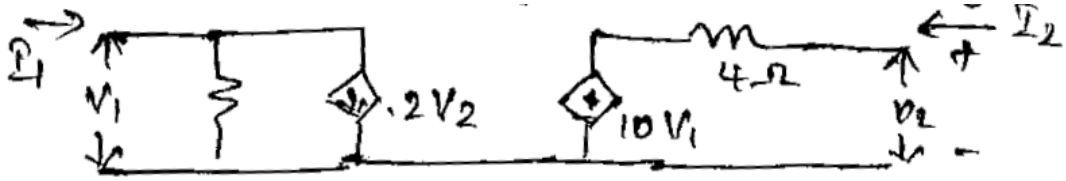


13. Find the Z Matrix for the two port network shown below.



(or)

14. Find y parameters of the two port network shown in figure.



15. Realize the given RC network impedance function using foster form I. $Z(s) = \dfrac{(s+1)(s+4)}{S(s+2)}$.

(or)

16. Realize the given RL network impedance function using Cauer Form I. $Z(s) = \dfrac{(s+1)(s+3)}{(s+2)(s+4)}$.

17. Design a first order low pass butterworth filter with a cut off frequency of 15.9KHz with a pass band gain of 1.5. Obtain its frequency response,

(or)

18. Design a wide band pass filter having fL = 400Hz and fH = 2kHz and pass band gain of 4. Draw the frequency response of the filter and also calculate the Q value of the filter.

19. Design a T Pad attenuator to give attenuation of 50Db and to operate into a line of resistance 600Ω.

(or)

20. Explain in detail about T and Lattice equalizers.