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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 :07/11/2009   Session :AN

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PART - A   (10 x 2 = 20)
Answer ALL the Questions

1. Draw the pole zero plot for the following network function

    $N(S) = \dfrac{(s+1)(s+5)}{(s+4)(s+6)}$

2. Write the basic 'Y' parameter equations and draw its equivalent circuit.

3. Draw the block diagram of the two port network.

4. Define Barlett Bisection theorem.

5. When will you call a function to be a positive real function?

6. Check the positive realness of the function
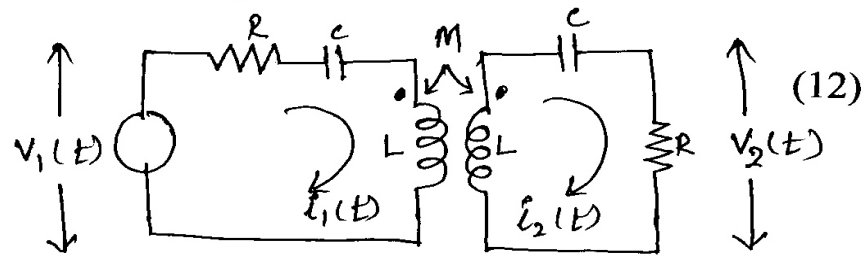
    $N(S) = \dfrac{(s+4)}{s^2+2s+1}$

7. What are the disadvantages of constant K filter?

8. What are the salient features of Butterworth filter?

9. List out the basic components used in designing attenuators?

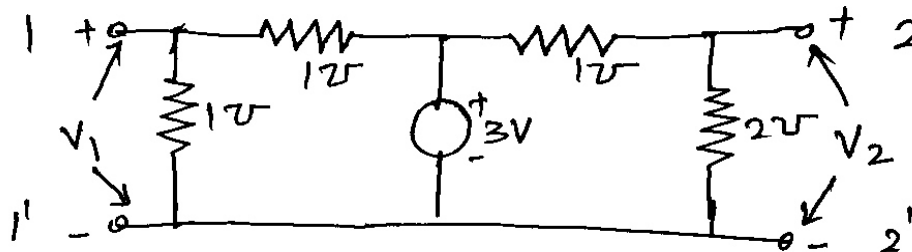10. What are the characteristics of equalizers?

<div align="center">

PART – B   (5 x 12 = 60)

Answer ALL the Questions

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11. Find the voltage transfer function
G_{21} (S) = V_2 (S) / V_1 (S) for the network shown

(12)

<div align="center">(or)</div>

12. Find the Z-parameter of the network

13. Synthesis lattice network terminated in 1 ohm resistor if its transfer impedance is
Z_{12} = (-S+1) / $4S^2$+3S+1)

<div align="center">(or)</div>

14. Explain interconnection of two port networks through cascade connection and series connection

15. Test whether the following polynomials are Hurwitz polynomials'
(a) $f(s) = s^4 + 3s^3 + 4s^2 + 3s +1$
(b) $f(s) = s^3 + 2s^2+s+2$

<div align="center">(or)</div>

16. Find the first foster form and second cauer form of the given impedance function

$$Z(S) = \frac{2(S+1)\ (S+3)}{(S+2)\ (S+6)}$$

17. The specification of a band pass filter are

$\alpha_P \leq 30$ db 50Krad<W<72Krad

$\alpha_S \geq 40$ db W<30Krad, W>120Krad

Find its transfer function.

18. The specification of a LPF are

$\alpha \leq 1$ db for $f \leq 4$Mhz

$\alpha \geq 60$db for $f \geq 8$Mhz

Find its transfer function of Chebyshev filter.

19. How attenuation is represented mathematically?
Derive the expression for attenuation and phase constant for a
T-network

(or)

20. Explain equalizers and its types in detail