Register Number | | | | | | | |

SATHYABAMA UNIVERSITY

(Established under section 3 of UGC Act, 1956)

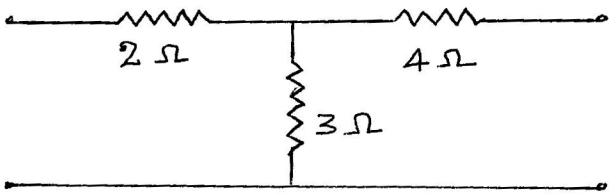
Course & Branch: B.E-ECE
Title of the Paper: Network Analysis and Synthesis Max. Marks: 80
Sub. Code: 6C0053 Time: 3 Hours
Date: 11/11/2010 Session: AN

PART - A (10 X 2 = 20)

Answer ALL the Questions

1. What is transfer function?

2. Find the Z parameters for the given circuit.



3. What are reciprocal networks?

4. State the bisection theorem.

5. What are the properties of positive real functions?

6. State the properties of RC driving point impedance function.

7. Define attenuation constant and phase constant.

8. What are the advantages of m derived filters?

9. Define Neper and Decibel units for attenuation and give their interrelationship.

10. Write short notes on characteristics of equalizers.

PART – B (5 x 12 = 60)

Answer All the Questions

11. For the given network function, draw the pole-zero diagram and hence obtain the time domain response i(t).

$$I(S) = \frac{5S}{(S+1)(S^2+4S+8)}$$

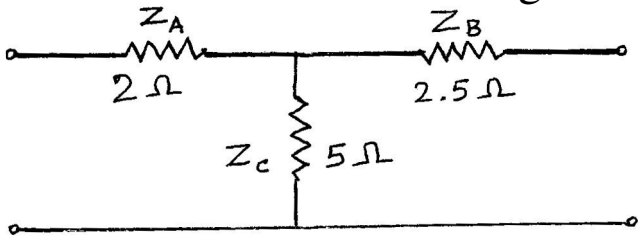
(or)

12. The impedance parameters of a two-port network are $Z_{11} = 6\Omega, Z_{22} = 4\Omega$, $Z_{12} = Z_{21} = 3\Omega$. Compute the Y and ABCD parameters.

13. Derive the relation between the open circuit impedance parameters and the short circuit admittance parameters.

(or)

14. Obtain the equivalent Π network for the given T network.



15. Test whether the given polynomial $P(S) = S^5 + 3S^3 + 2S$ is Hurwitz.

(or)

16. Find the first and second Cauer forms of the given function

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

17. Design a second order Butterworth low pass filter having upper cut off frequency 1 KHz. Determine its frequency response.

(or)

18. Synthesize a Chebyshev LPF for the following specifications.
    (a) Load resistance $R_L = 600\Omega$.
    (b) ½ dB ripple within passband.
    (c) Cut-off frequency, $w_c = 5 \text{ X } 10^5$ rad/sec.
    (d) At $1.5 \text{ X } 10^6$ rad/sec, the magnitude must be down by 30 dB.

19. Derive the design equations for the lattice attenuator.

(or)

20. Design T type, Π type and bridged T attenuators, if the characteristic resistance is 200Ω and attenuation is 20 dB.