SATHYABAMA UNIVERSITY

(Established under section 3 of UGC Act, 1956)

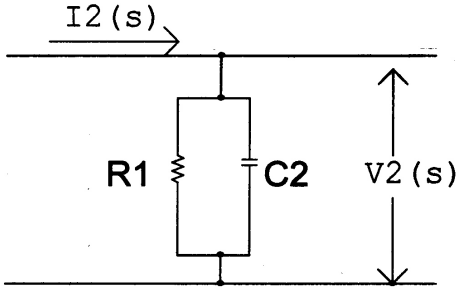
Course & Branch: B.E – ECE
Title of the paper: Network Analysis and Synthesis
Semester: IV — Max.Marks: 80
Sub.Code: 6C0053(2006-2007) — Time: 3 Hours
Date: 29-04-2009 — Session: FN

PART – A (10 x 2 = 20)

Answer All the Questions

1. Define driving point impedance of a two-port network.

2. For the network shown determine $Z_{12} = V_2(s) / I_1(s)$.



3. What are ABCD parameters?

4. Draw the bridge form of a general lattice network.

5. State the conditions that must be satisfied for a polynomial P(s) to be a Hurwitz polynomial?.

6. What do you understand by the term driving point synthesis?

7. Draw the characteristics of an ideal band pass filter.

8. Write the expression for cutoff frequency of a Low pass filter.

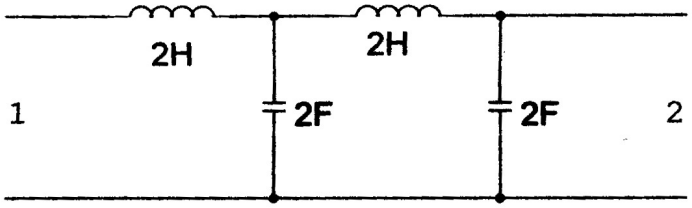
9. What is the function of an attenuator in a transmission network?

10. State the function of an equalizer in a network?

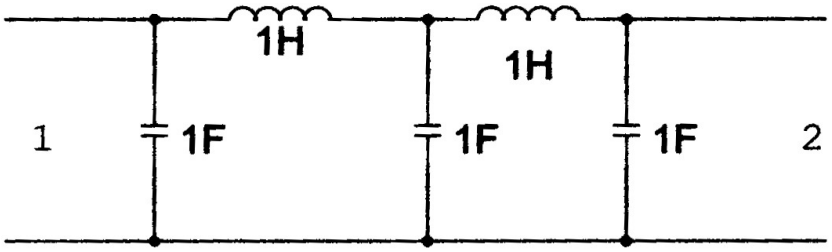
PART – B (5 x 12 = 60)

Answer All the Questions

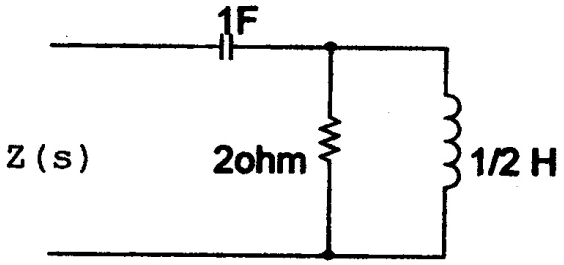
11. For the networks shown determine V_2/V_1 (3)



(b) (4)



(c) For the network shown find the driving point impedance Z(s). Also locate the zeros of this impedance function in s plane. (5)



(or)

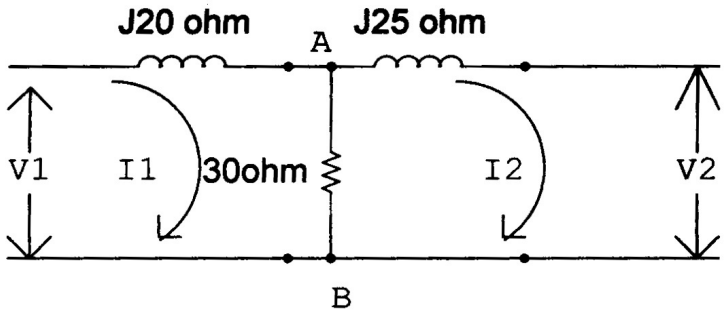
12. Discuss in detail the significance of poles and zeros and the restrictions on the location of poles and zeros in the s-plane with respect to a network.

13. With neat diagrams, for a two port network explain the following interconnections.

(a) Cascade connection. (3)
(b) Series connection. (4)
(c) Series – Parallel connection. (5)

(or)

14. Determine the Z and y parameters of the network shown in figure.



15. Discuss in detail the properties of the driving point impedance of LC network.

(or)

16. Test the following polynomials for Hurwitz property
    (a) $s^6 + 3s^5 + 8s^4 + 15s^3 + 17s^2 + 12s + 4$
    (b) $2s^6 + s^5 + 13s^4 + 9s^3 + 56s^2 + 25s + 25$

17. Describe in detail the basic configuration and properties of Butterworth and Chebyshev filters.

(or)

18. Describe in detail the following filters.
    (i) Band Stop filter.
    (ii) M derived filter.

19. Explain with suitable examples the following.
    (a) Symmetrical and Asymmetrical attenuators.
    (b) T and $\prod$ attenuators.

(or)

20. Write short notes on
    (a) Bridged T equalizer. (3)
    (b) Lattice equalizer. (3)
    (c) Characteristics of equalizers. (6)