

# 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

Time: 3 Hours

Date: 05-11-2008

Session: AN

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PART – A

(10 x 2 = 20)

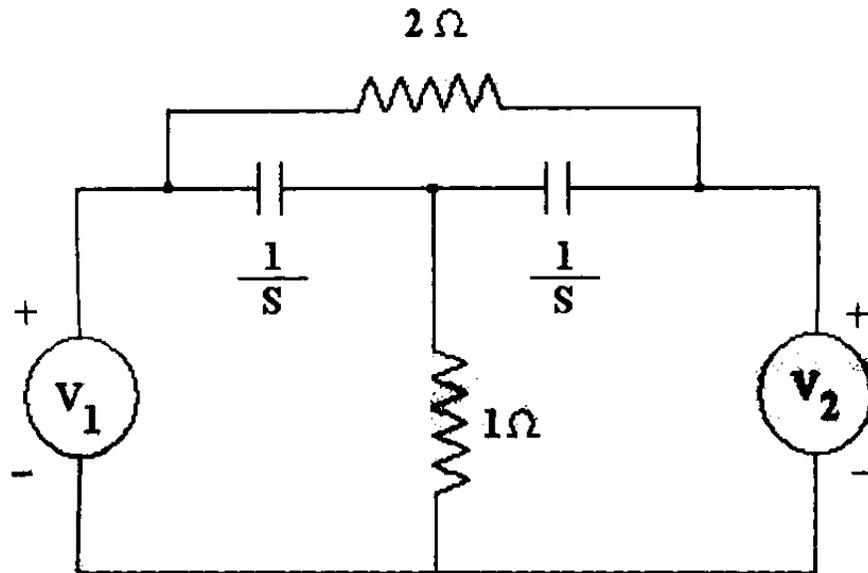
Answer All the Questions

1. Explain: Reciprocal Networks, Symmetrical Networks.
2. Distinguish between Active and Passive networks.
3. Give examples for balanced networks. Why are they called so?
4. Explain: Image impedance, Iterative impedance
5. What are the conditions to be satisfied for a polynomial  $P(s)$  to be Hurwitz?
6. Differentiate Foster form from Cauer form.
7. Mention the salient features of Butterworth filter.
8. Draw the frequency characteristics of ideal band pass filter and band elimination filter.
9. Design a  $\pi$ -type attenuator to give 20 db attenuation and to have a characteristic impedance of  $100 \Omega$ .
10. List the characteristics of Equalizers.

PART – B  
Answer All the Questions

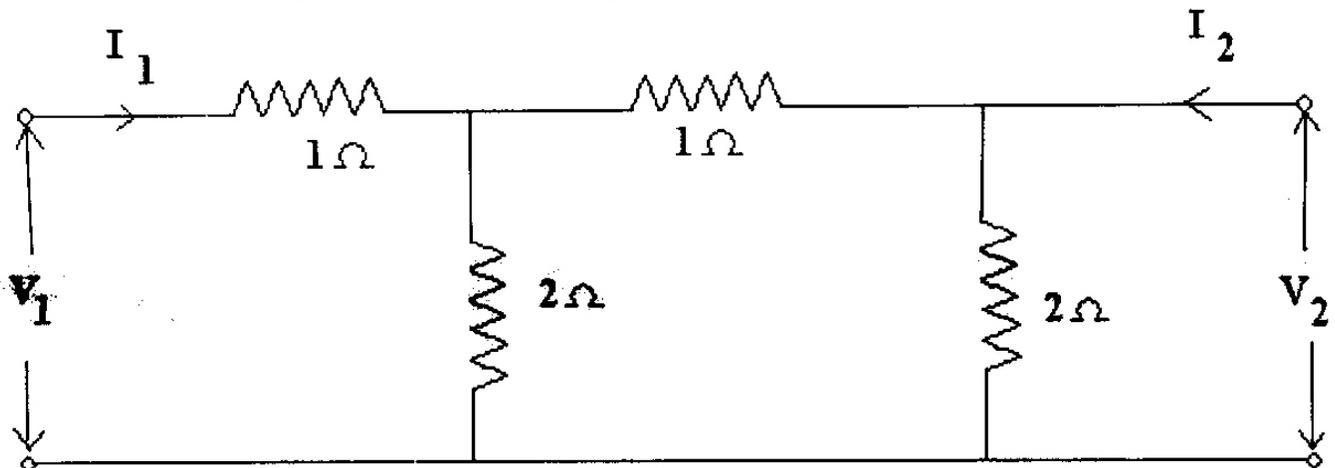
(5 x 12 = 60)

11. Obtain the Y – parameters for the bridged T – network shown



(or)

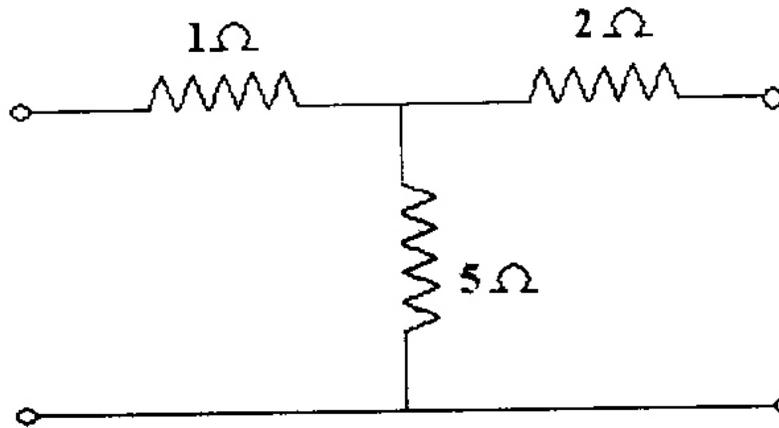
12. Obtain the transmission parameters for the two-port network shown in Fig. Check for reciprocity.



13. Determine the expressions for Z-parameters of Lattice network.

(or)

14. Determine the Image parameters of the T-Network shown.



15. Realize the LC network in Foster form I and II, given that

$$Z(z) = \frac{s(s^2 + 4)}{(s^2 + 1)(s^2 + 9)}$$

(or)

16. Realize the LC network in both Cauer forms given that

$$Z(z) = \frac{s(s^2 + 4)}{(s^2 + 1)(s^2 + 9)}$$

17. Find the transfer function  $H(s)$  which gives Butterworth response of (a)  $n = 2$  (b)  $n = 4$

(or)

18. The specifications of a Chebyshev LPF are:

Pass band ripple = 1 db

Pass band = 0 to 1.75 MHz.

Stop Band Loss = 20 db at 2.5 MHz.

Find  $n$  and  $\epsilon$ .

19. Obtain the design equations of:

a) Bridged T – Attenuator

b) L – Type Attenuator

(or)

20. Discuss the following:

a) Full series equalizer.

b) Full shunt equalizer.