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: 02-05-2008	Session: FN

PART – A (10 x 2 = 20)

Answer All the Questions

1. For the given network obtain the driving point impedance:

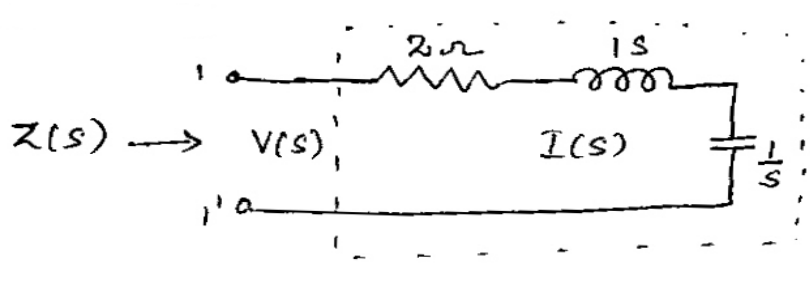

Fig. 1

2. Write the transmission parameters in terms of impedance parameters.
3. What are symmetrical networks?
4. Define iterative impedance.
5. What is the significance of positive real function?
6. Test whether the polynomial $s^3 + 2s^2 + 3s + 6$ is Hurwitz.
7. Draw the frequency response of a band stop filter.
8. Why constant K filters are known as prototype filters?
9. What is a pad?
10. Why there is a need for an equalizer?

PART – B (5 x 12 = 60)

Answer All the Questions

11. For the two port network shown in figure, determine the driving point impedance Z_{11} (s), transfer impedance Z_{21} (s) and the voltage transfer ratio G_{21} (s).

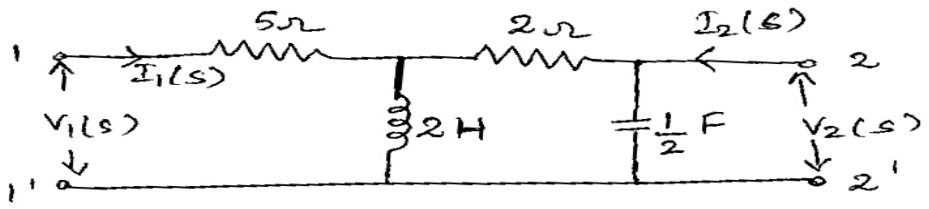

Fig. 2

(or)

12. Find the Z parameters for the given circuit.

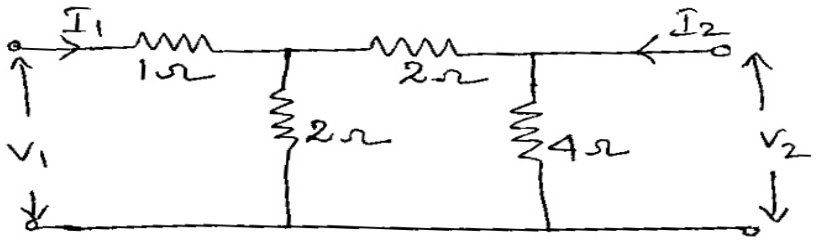

Fig. 3

13. Obtain the Z parameters for a symmetrical lattice network.

(or)

14. Determine the image parameters of the T network shown in fig.4.

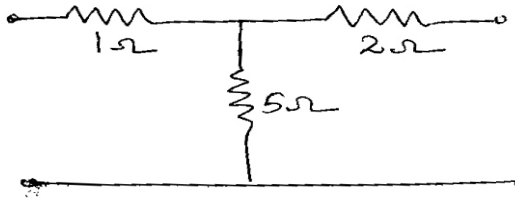

Fig. 4

15. Find the first and second cauer forms of the given function:

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

(or)

16. Synthesize the transfer impedance $Z_{21} = \frac{1}{s^3 + 3s^2 + 3s + 2}$ with 1Ω termination.

17. Design m derived (T and Π section) low pass filters having cutoff frequency 1KHz, design impedance of 400 Ω and the resonant frequency 1100 Hz.

(or)

18. Design a composite high pass filter comprising a prototype section, an m derived section and suitable terminating half section to operate into a load of 600 Ω, cut off frequency of 1.2 KHz and frequency of infinite attenuation f∞ = 1.1 KHz.

19. (a) Design a T pad attenuator to give an attenuation of 60db and to work into a line of 500Ω impedance.
(b) Design a symmetrical lattice attenuator to have characteristic impedance of 800 Ω and attenuation of 20db.

(or)

20. Design a full shunt equalizer with capacitor in series arm for design impedance of 600 Ω and attenuation of 10db at 600 Hz. Calculate attenuation at 1500 Hz and 3000 Hz.