Roll No ....

EC - 505

B.E. V Semester

Examination, December 2014

Communication Network And Transmission Lines

Time : Three Hours

Maximum Marks : 70

Note: i)   Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.

ii)   All parts of each questions are to be attempted at one place.

iii) All questions carry equal marks, out of which part A and B (Max.50 words) carry 2 marks, part C (Max.100 words) carry 3 marks, part D (Max.400 words) carry 7 marks.

iv) Except numericals, Derivation, Design and Drawing etc.

Unit - I

1. a)   For symmetrical T network, show that $Z_0 = \sqrt{Z_\propto \cdot Z_{SC}}$.

   b)   For symmetrical network, define the propagation constant.

   c)   Design L type attenuator to operate in to a resistance of 500 Ω and to provide an attenuation of 12 dB.

   d)   A lattice network has series arm equal to Z_a and diagonal arm equal to Z_b. Find the expression for characteristics impedance and propagation constant of the lattice network.

OR

What is attenuator? Derive design equations for a T-type attenuator.

Unit - II

2. a)   List the drawbacks of prototype filter.

   b)   Explain the importance of terminating half sections in short.

   c)   Design m-derived high pass filter. π-section to work into load of 600 Ω with cut-off frequency of $\left(\dfrac{1000}{\pi}\right)$ Hz and peak attenuation frequency at 300 Hz.

   d)   Discuss chebyshev approximation for low pass filter.

OR

Describe low pass to high pass frequency transformation.

Unit - III

3. a)   State the properties of Hurwitz polynomials.

   b)   State the properties of positive real function.

   c)   Test, whether the polynomial $s^4+7s^3+6s^2+21s+8$ is Hurwitz.

   d)   Realize the given function in cauer II form.
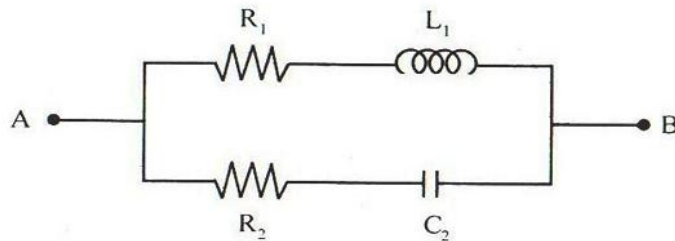
$$Z(s) = \frac{6 + 8s^2 + 2s^4}{s^3 + 2s}$$

[3]

OR

Realize the given function in foster I form

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

Unit - IV

4. a) State the important properties of the infinite line.

   b) Obtain inverse network of the network shown in figure.

   c) Derive the relationship between γ, Zoc and Zsc.

   d) Derive design equations for full series equalizer.

Or

Derive expression for reflection coefficient and transmission coefficient. **RGPVONLINE.COM**

Unit - V

5. a) What are the standing waves?

   b) What is double stub matching?

   c) Derive the relationship between standing wave ratio and the magnitude of reflection coefficient.

[4]

d) Explain method of measurement of power and SWR of a transmission line.

OR

Find the expression of Input impedance of the dissipationless line.

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