

Total No. of Questions :5]

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Roll No

EC - 505

B.E. V Semester

Examination, December 2014

Communication Network And Transmission Lines

Time : Three Hours

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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 $Z_0 = \sqrt{Z_{\alpha} \cdot Z_{SC}}$.
- b) For symmetrical network, define the propagation constant.
- c) Design L type attenuator to operate in to a resistance of 500Ω 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.

[2]

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 600Ω with cut-off frequency of $\left(\frac{1000}{\pi}\right)$ 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. RGPVONLINE.COM
- d) Realize the given function in cauer II form.

$$Z(s) = \frac{6 + 8s^2 + 2s^4}{s^3 + 2s}$$

[3]

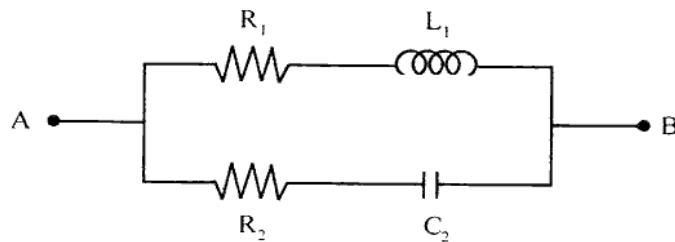
OR

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 , Z_{oc} and Z_{sc} .
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.
