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Roll No. 50 to 50

EB-13

B. E. (Third Semester) (CGPA) EXAMINATION, 2011-12 (Electronics & Communication Engg. Branch) NETWORK ANALYSIS AND SYNTHESIS (EL-303) Time : Three Hours Maximum Marks : 50

Note : Attempt all questions.

- 1. Explain any four of the following in brief : 3 each (i) Thevenin's theorem (ii) Concept of duality (iii) Loop analysis (iv) Properties of Laplace transform (v) Routh-Hurwitz criterion. 2. State and explain maximum power transfer method. In the network find the value of ZL for maximum power transfer. Find this power. 10

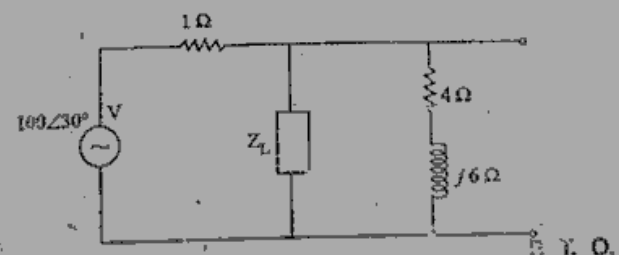


Fig 1

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Or State and explain Norton's theorem. Obtain the Norton's equivalent circuit with respect to the terminal AB for the network shown.

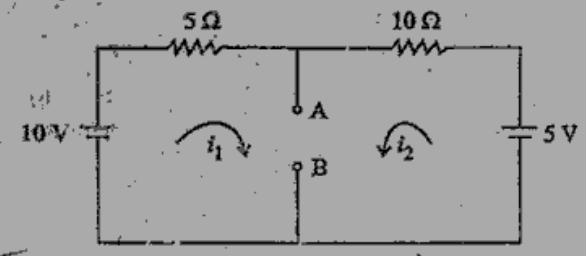


Fig 2

- 3. Explain the concept of dot convention. Also describe the concept of Tie-set matrix and loop current with suitable example. 10

Or Define cut-set and tree. Draw the graph of the network of figure with R2 and R4 branches as chords. Indicate the cut-sets in the graph.

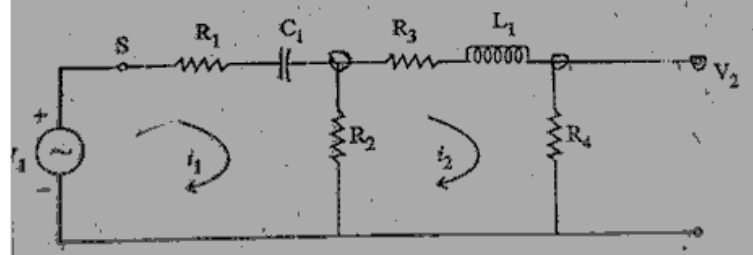


Fig 3

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Discuss the advantages and applications of Laplace transform. Find the Laplace transform of the waveform shown in figure.

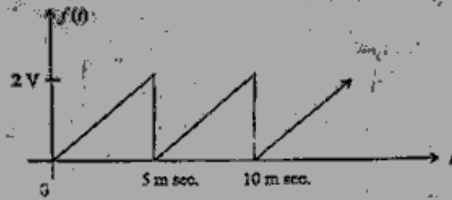


Fig. 4

Or

Explain phase and frequency spectrum.

The waveform in given figure is used as a sweep in radar and television circuits. Find the Fourier series and plot the frequency spectrum.

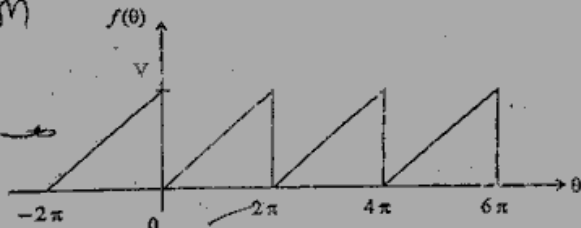


Fig. 5

Explain z-parameter. Find the z-parameter of the circuit. 9

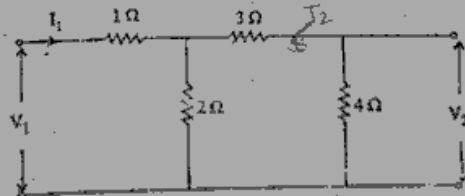


Fig. 6

P. T. O.

*Steele*  
 $\frac{S^2 + 5S + 4}{S^2 + 2S}$  8 ki right - 8

Explain series and shunt resonance. Determine whether each of the following polynomials is Hurwitz :

(i)  $s^4 + 3s^3 + 5s^2 + 2$

(ii)  $s^4 + 4s^3 + 3s^2 + 2s + 1$

Discuss the properties of positive real function. Realize the given impedance function :

*Don't*  
 $Z(s) = \frac{s^2 + 5s + 4}{s^2 + 2s}$  *5/3*

be the first order canonical form of Foster network.

Or

Write a short note on Hurwitz properties of polynomials.

Find the first canonical form of Cauer network of the impedance function :

$Z(s) = \frac{s^4 + 7s^2 + 9}{s(s^2 + 4)}$  *5/3*

*ADARSH LINGAM*

