d) Obtain the Fourier expansion of the given waveform.

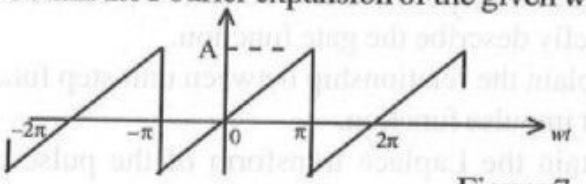

Figure 7

OR

Find the line spectrum of the following waveform using Fourier analysis.

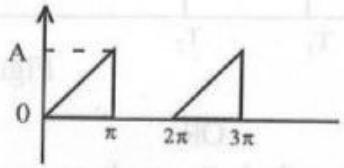

Figure 8

5. a) Write short note on network functions.
   b) How to determine the Y-parameters from two ports network.
   c) What's the relationship between Z and Y parameters. Convert the Z parameter to Y parameter.
   d) The h parameters of a certain two part network are $h_{11} = 1\Omega, h_{12} = 2, h_{21} = -2, h_{22} = 1\Omega$. Find
      i) Z- parameters
      ii) Y- Parameters
      iii) ABCD parameters

OR

Obtain Z parameter for following figure 9.

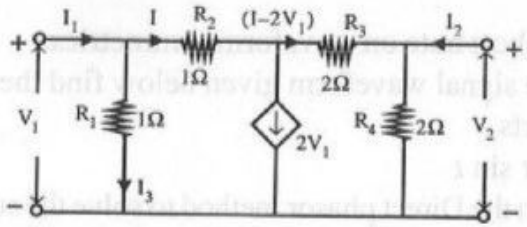

Figure 9

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Roll No .....

EE/EI/EX - 305

B.E. III Semester

Examination, December 2015

Network Analysis

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 question 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.

1. a) Enlist the properties of RLC parallel resonance network.
   b) Write down the various properties of complete incidence matrix.
   c) Explain voltage source to current source transformation.
   d) Using mesh analysis, obtain the current through the 10V battery for the circuit shown in figure 1 below.

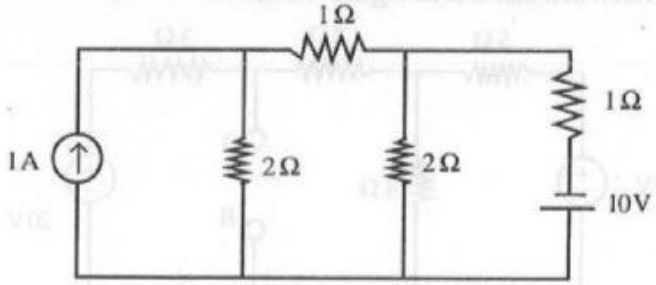

Figure 1

OR

For the resistive network shown in figure below draw the graph and tree of the network. Also develop the fundamental cut set matrix.

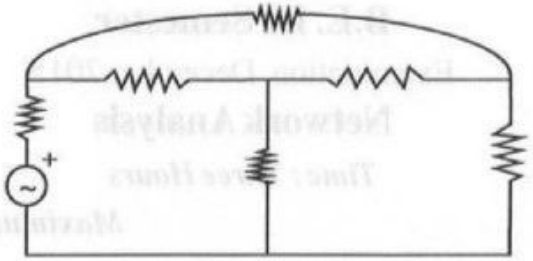

Figure 2

2. a) Why are use network theorems.
   b) State the maximum power transfer theorem.
   c) State and explain substitution theorem.
   d) Verify substitution theorem for the 2Ω resistor in the network shown in figure 3 below.

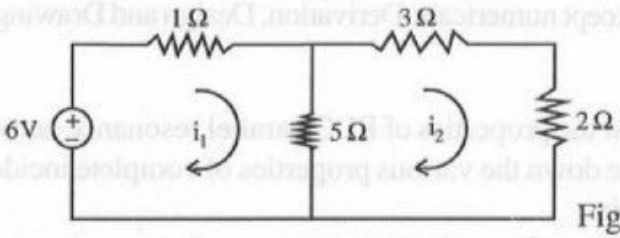

Figure 3

OR

Obtain Norton's equivalent circuit at terminal AB of the network shown in figure 4 below.

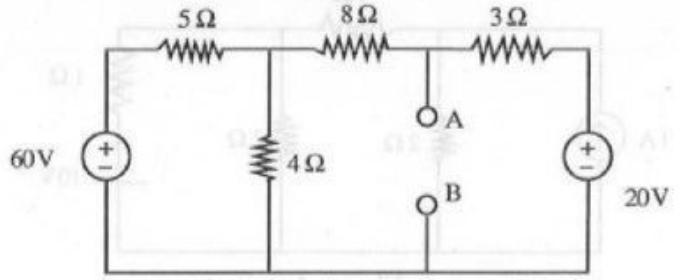

Figure 4

3. a) Write the response to shifted unit step function.
   b) Briefly describe the gate function.
   c) Explain the relationship between unit step function and unit impulse function.
   d) Obtain the Laplace transform of the pulse shown in figure 5 below.

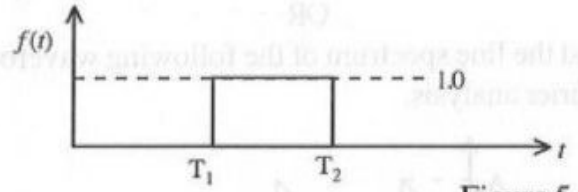

Figure 5

OR

In figure 6 below the battery voltage is applied for a steady state period. Obtain the complete expression for the current after closing the switch K. Assume $R_1 = 1\Omega$, $R_2 = 2\Omega$, L = 1H, E = 10V.

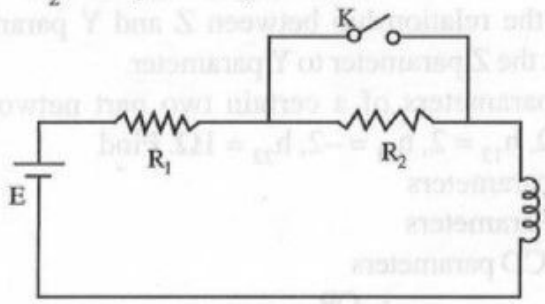

Figure 6

4. a) Write short note on waveform symmetries.
   b) For the signal waveform given below find the even and odd parts
   $f_2(t) = t \sin t$
   c) Explain the Direct phasor method to solve the steady state response to a given periodic signal input.