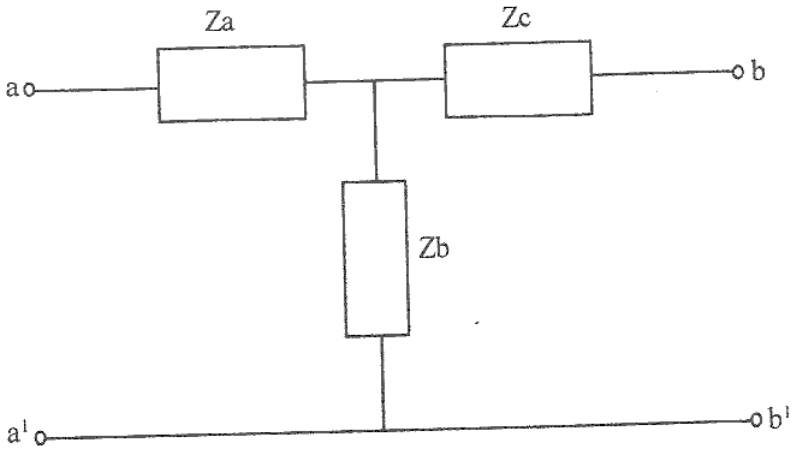
Find the Z parameters for the circuit shown in the following figure: 7



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Roll No .....

EC - 305

B.E. III Semester

Examination, June 2014

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) What do you understand by resonance? 2

b) Define the terms magnetic coupling. 2

c) Discuss the condition of resonance for parallel circuit. 3

d) Find the current $i(t)$ in a series RLC circuit comprising R=3 ohms, L=1 H and C=0.5F, when the ramp voltage of 10 volts is applied. Assume initial condition as zero. 7

OR

Explain in detail the following: 7

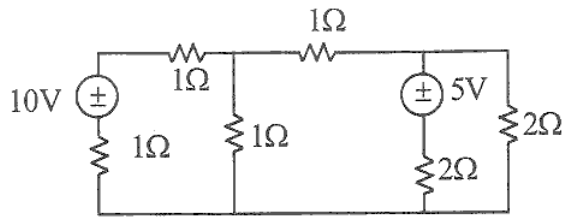
i) Double tuned circuit.

ii) Single tuned air core transformer.

2. a) State Reciprocity theorem. 2
   b) State Millman's theorem. 2
   c) State maximum power transfer theorem. 3
   d) State and prove thevenin's theorem. Show with example, how this theorem can be usefully employed in circuit analysis. 7

OR

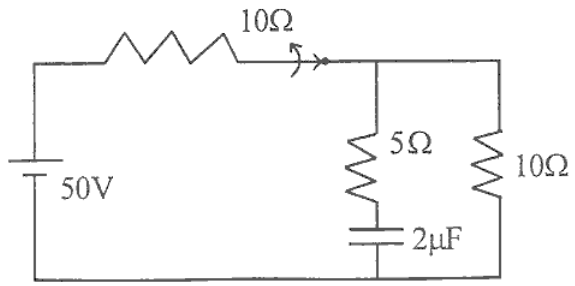
Draw the Thevenin's equivalent of the circuit shown in the following figure. 7



3. a) What is natural response. 2
   b) What do you mean by forced response. 2
   c) Plot the response of RLC circuit to sinusoidal input. 3
   d) Derive equation for decay of current in R-L circuits. Discuss the role of time constant. 7

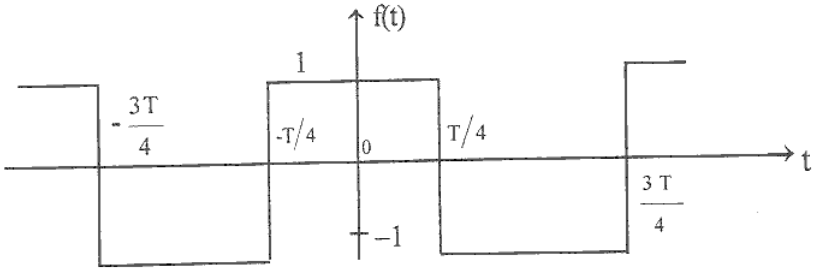
OR

For the circuit shown in the following figure, find the current equation when the switch S is opened at t=0. 7



4. a) What is waveform symmetry? 2

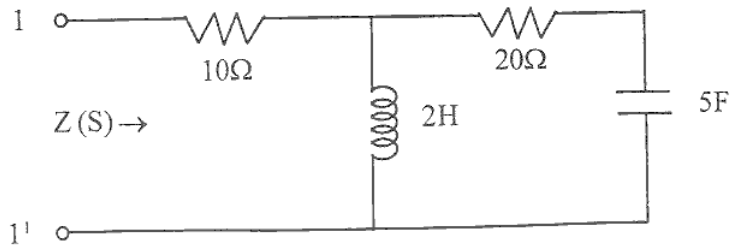
   b) Why do we use Laplace transform in circuit analysis? 2
   c) Derive an expression for the laplace transform of the derivative of a function. 3
   d) Expand the square wave voltage signal, as shown in the following figure into a Fourier series. 7



OR

State and prove initial value and final value theorems. 7

5. a) Define ABCD parameters for a two port network. 2
   b) Give the restrictions on pole and zero location for driving point functions. 2
   c) Define hybrid parameters. 3
   d) For the network shown in the following figure, determine the transfer impedance. 7



OR