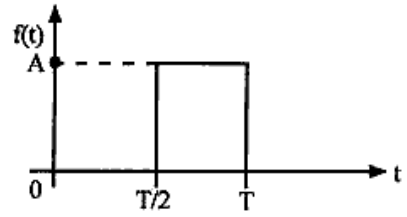
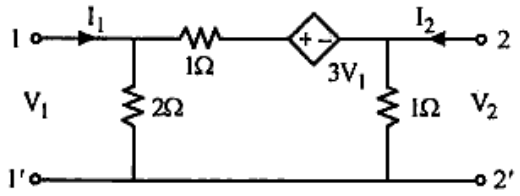
Obtain the Fourier series expansion of the waveform given below.



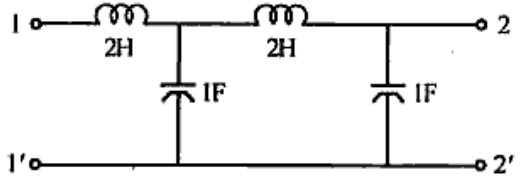
UNIT - V

5. a) Define poles, zeros and pole zero plot.
   b) What is meant by an all pass function?
   c) Derive the condition of reciprocity for h parameters.
   d) Determine the Y parameters of the network given below.



OR

Determine the driving point impedance of the network given below.



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Roll No .....

EC-305

B.E. III Semester

Examination, June 2016

Network Analysis

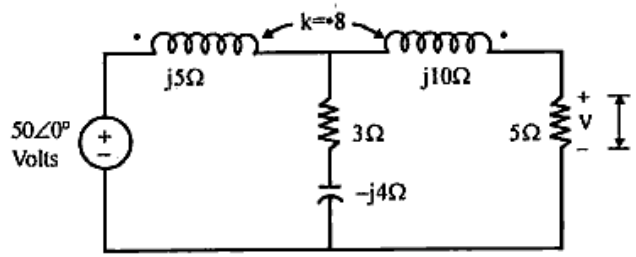
Time : Three Hours

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 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) Explain the current division in a parallel circuit of three unequal impedances.
   b) Write a note on co-efficient of coupling in a magnetic circuit.
   c) Determine the expression for Bandwidth in a series resonance circuit.
   d) Compute the voltage V of the coupled circuit given below.



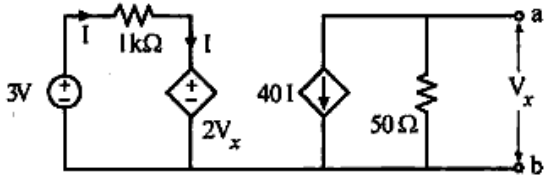
OR

A series RLC circuit consists of a resistance of 1 kΩ and an inductance of 100 mH in series with a capacitance of 10 pF. 100 volts is applied as input across the combination determine :

i) The resonant frequency
ii) Maximum current in the circuit
iii) Q factor of the circuit
iv) The half power frequencies

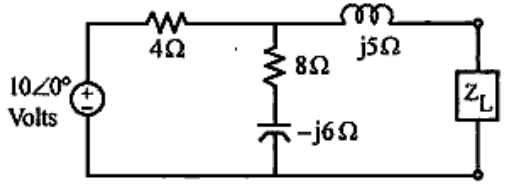
UNIT - II

2. a) What is a sub graph of a graph? How we can obtain the rank of a graph?
   b) Explain following terms with reference to network topology:
      i) Tree and Co-tree
      ii) Node and Branch
      iii) Twig and Link
   c) State and explain the Norton's theorem.
   d) Find the Thevenin's equivalent across a–b terminals of the circuit given below:



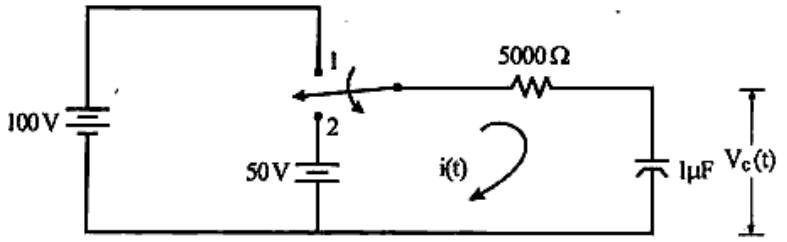
OR

For the circuit given below determine the load impedance Z_L that maximizes the average power drawn from the circuit. Also determine the value of maximum power.



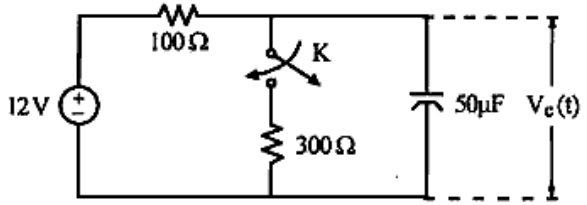
UNIT - III

3. a) Discuss the initial conditions of voltage and current in inductor and capacitor.
   b) Explain the effect of the time constant on the current i(t) in a RL series circuit.
   c) Obtain the RMS voltage of three sources connected in series: $V_1 = 50 \sin \omega t$; $V_2 = 80 \sin(\omega t + 50°)$; $V_3 = 100 \sin(\omega t - 60°)$
   d) For the circuit given below derive the expression for i(t) and $V_C(t)$ when the switch is moved from position 1 to 2 at t = 0.



OR

For the circuit given below initially switch is kept open for a long time and closed at t = 0. Find the expression for $V_C(t)$ and sketch it against t.



UNIT - IV

4. a) Define and explain the unit impulse function.
   b) Write short note on half wave symmetry of a function f(t).
   c) Explain trigonometric form of a Fourier series.
   d) Obtain the Fourier transform of a unit step function.

OR