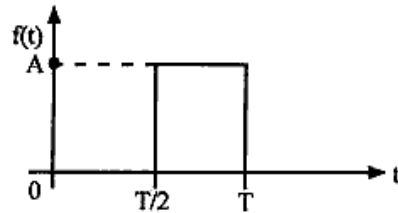


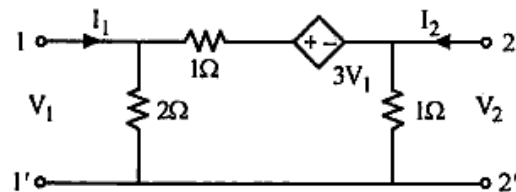
Obtain the Fourier series expansion of the waveform given below.



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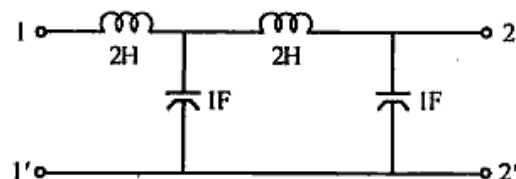
### UNIT - V

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



OR

Determine the driving point impedance of the network given below.



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### EC-305

#### B.E. III Semester

Examination, June 2016

#### Network Analysis

Time : Three Hours

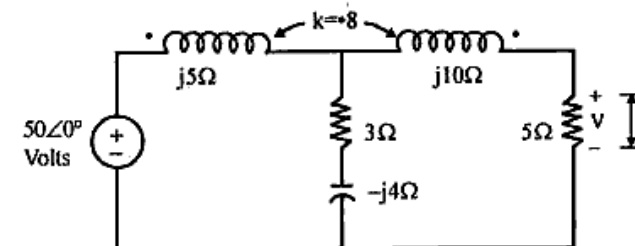
Maximum Marks : 70

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- 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

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



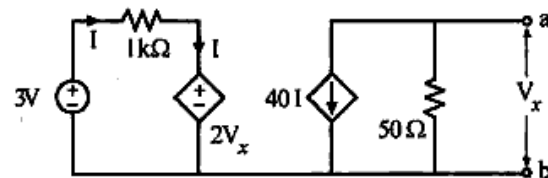
OR

A series RLC circuit consists of a resistance of  $1\text{ k}\Omega$  and an inductance of  $100\text{ mH}$  in series with a capacitance of  $10\text{ pF}$ .  $100\text{ volts}$  is applied as input across the combination determine :

- The resonant frequency
- Maximum current in the circuit
- Q factor of the circuit
- The half power frequencies

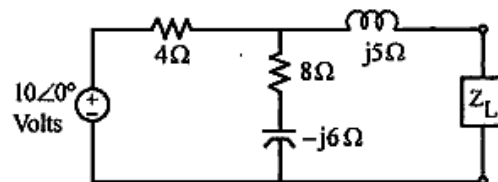
## UNIT -II

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



OR

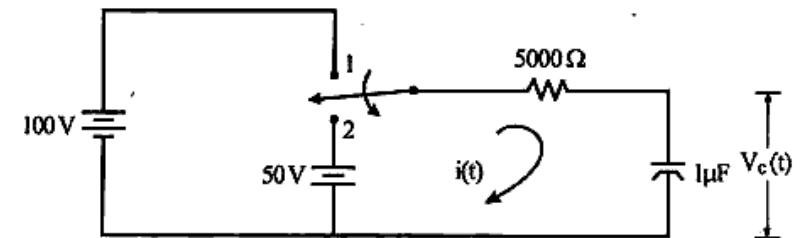
For the circuit given below determine the load impedance  $Z_L$  that maximizes the average power drawn from the circuit. Also determine the value of maximum power.



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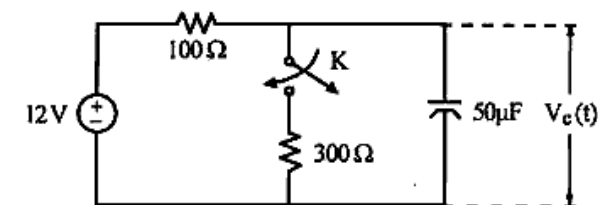
## UNIT - III

- Discuss the initial conditions of voltage and current in inductor and capacitor.
  - Explain the effect of the time constant on the current  $i(t)$  in a RL series circuit.
  - Obtain the RMS voltage of three sources connected in series:  $V_1 = 50 \sin \omega t$ ;  $V_2 = 80 \sin (\omega t + 50^\circ)$ ;  $V_3 = 100 \sin (\omega t - 60^\circ)$
  - 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

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

OR