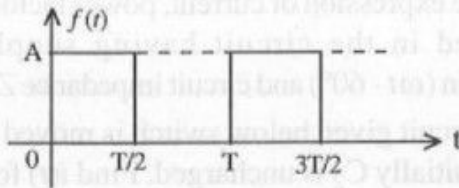


[4]

- c) Explain the time scaling property of Fourier transform.
- d) Obtain the Fourier transform of a unit impulse function.

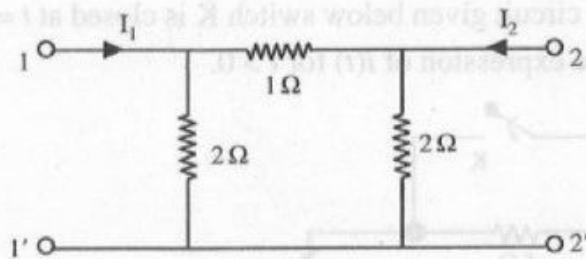
OR

Obtain the Fourier series expansion of the waveform given below.



Unit - V

- 5. a) How the location of poles affects the performance of a system?
- b) What is meant by an all pass function?
- c) Derive the condition of symmetry for ABCD parameters.
- d) Determine the ABCD parameters of the network given below.



OR

Derive the expressions to convert h parameter to ABCD parameter in a two port network.

Total No. of Questions : 5]

[Total No. of Printed Pages : 4

Roll No

EC-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 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

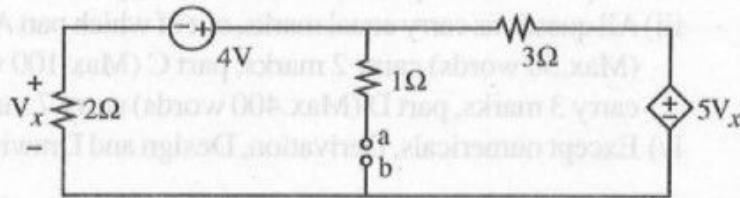
- 1. a) Define lumped and distributed networks.
- b) Write a short note on controlled sources.
- c) Derive the expression of coupling coefficient for two magnetically coupled coils.
- d) Two inductors having self inductances L_1 and L_2 and mutual inductance M are connected in parallel. Derive the expression of total inductance of the combination for :
 - i) Parallel adding
 - ii) Parallel opposing

OR

In a series RLC circuit with variable capacitance, the current is at maximum value with capacitance of $20 \mu\text{F}$ and current reduces to 0.707 times maximum value with capacitance of $30 \mu\text{F}$. Find the values of R and L . What is the bandwidth of current if supply voltage is $20 \sin(6.28 \times 10^3 t)$.

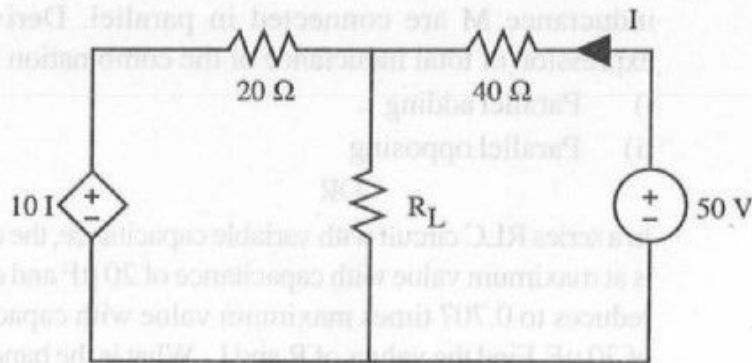
Unit - II

- Explain duality of a network.
- Explain following terms with reference to network topology:
 - Tree and Co-tree
 - Node and Branch
 - Twig and Link
- State and explain the Millman's theorem.
- Find the Thevenin's equivalent across a-b terminals of the circuit given below.



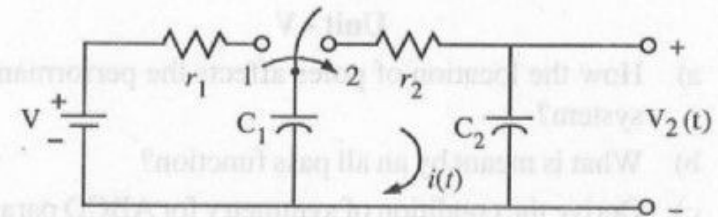
OR

For the circuit given below determine the value of R_L for maximum power transfer.



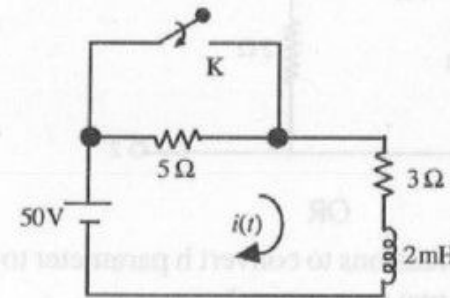
Unit - III

- Discuss the initial conditions of voltage and current in inductor and capacitor.
 - Explain the effect of the time constant on current $i(t)$ in a RC series circuit.
 - Obtain the expression of current, power factor and power consumed in the circuit having supply voltage $V = 100 \sin(\omega t - 60^\circ)$ and circuit impedance $Z = 20 + j35$.
 - For the circuit given below switch is moved from 1 to 2 at $t = 0$. Initially C_2 is uncharged. Find $i(t)$ for $t > 0$.



OR

For the circuit given below switch K is closed at $t = 0$. Find the expression of $i(t)$ for $t > 0$.



Unit - IV

- Define even and odd function.
 - Write short note on quarter wave symmetry of a function $f(t)$.