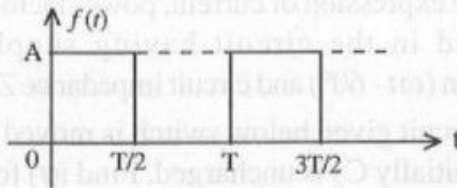


[4]

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

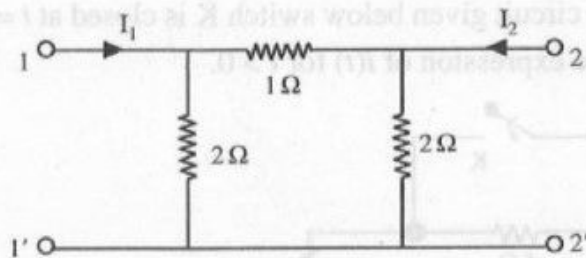
OR

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

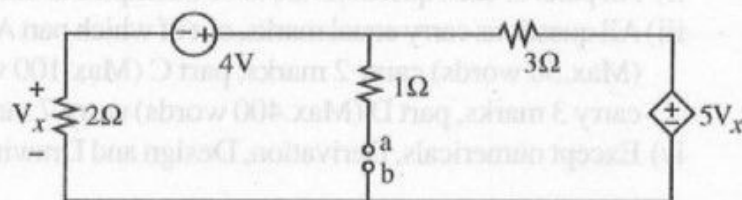
OR

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 $20 \sin(6.28 \times 10^3 t)$.

[2]

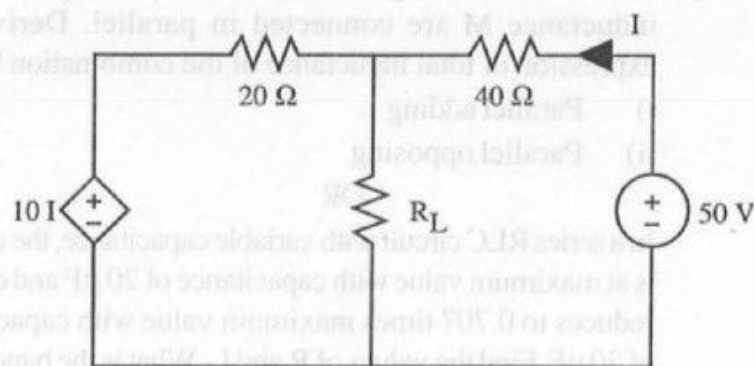
Unit - II

- 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

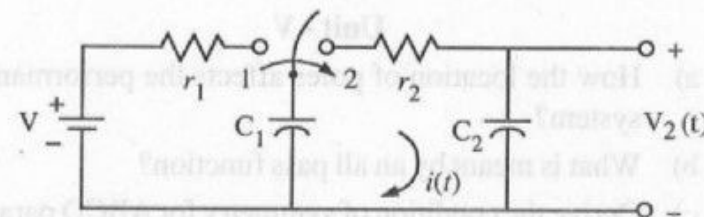
For the circuit given below determine the value of R_L for maximum power transfer.



[3]

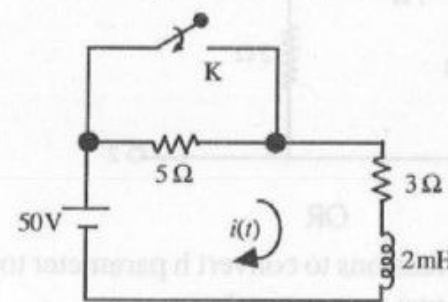
Unit - III

- 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 $f(t)$.