TEE-301-B **1064** Printed Pages: 4

Paper Code & Roll No. to be filled in your Answer Book

Roll No. | | | | | | | | | | |

B.Tech. II Year III Sem.

Even End Semester Examination-2015

NETWORK ANALYSES AND SYNTHESIS

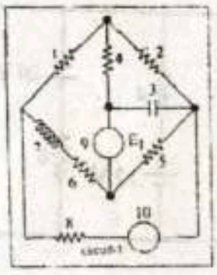
Time : 3 Hours] *[Maximum Marks :100*

Answer Any Four: (4x5=20)

1. Draw an oriented graph from the complete incidence matrix given below:

1	2	3	4	5	6
-1	0	0	1	-1	0
1	-1	0	0	0	-1
0	1	-1	0	1	0
0	0	1	-1	0	1

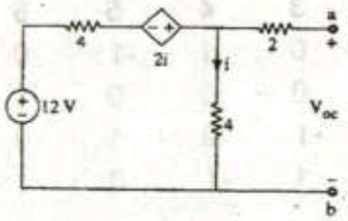
2. Draw the graph of the circuit-1 shown below and draw all its possible trees.



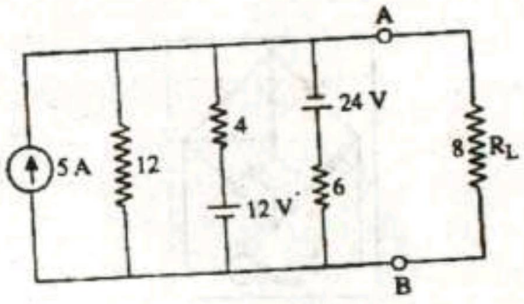
3. Define the following terms:
   (i) Tree
   (ii) Co-tree
   (iii) Connected & Unconnected Graph
   (iv) Planar & non-planar Graph
   (v) Cut-set matrix
4. Differentiate between loop analysis and nodal analysis.
5. List four important properties of a driving point impedance function of an RC network.

Answer Any Four: (4x5=20)

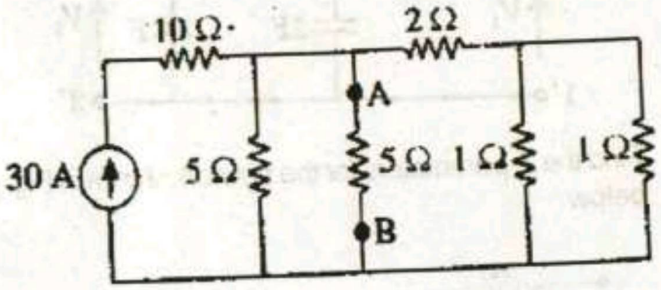
1. Find Thevenin's equivalent circuit for the network shown in Fig. which contains a current controlled voltage source (CCVS).



2. Use Millman's theorem, to find the voltage across and current through the load resistor R_L in the circuit of Fig.



3. Determine the current flowing through the 5&! resistor in the circuit shown in Fig. by using Norton's theorem.



4. State and explain Millmans theorem with suitable example

5. Derive maximum power theorem for DC as well as AC network.

Answer Any Two: (2x10=20)

1. Determine the stability of the systems whose characteristic equations are

   (i) $s^4+8s^3+18s^2+16s+5=0$.

   (ii) $s^4+2s^3+3s^2+4s+5=0$.

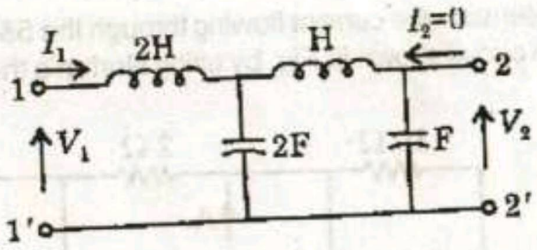
2. Design a constant k - type band pass filter section to be terminated in 600 ohm resistance having cut off frequencies of 2kTlz and 5kHz

3. Draw the pole zero diagram for the given network function and obtain the time domain response i(t)=

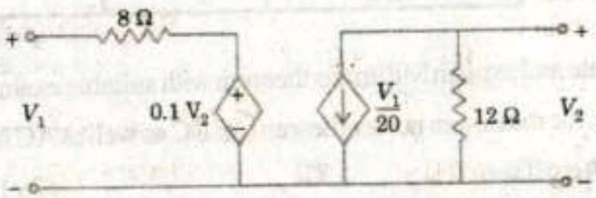
$$\frac{(5s)}{(s+1)(s^2+4s+8)}$$

Answer Any Two: (2x10=20)

1. Find open circuit transfer impedance V_2/I_1 and open circuit voltage ratio V_2/V_1 for the ladder network shown in Fig.



2. Find the Z-parameters for the network shown in Fig. given below



3. Determine the expression for z-parameters of Lattice network.

Answer Any Two: (2x10=20)

1. Synthesize the given function $F(s) = \frac{3(s+2)(s+4)}{s(s+3)}$ in a Foster and a Cauer forms, if
   (i) If F(s) is an impedance function.
   (ii) If F(s) is an admittance function.
2. Design a Constant-K band pass filter with cut-off frequency of 3kHz and 7.5 kHz & nomial characteristic impedance or R_0=900Ω.
3. Synthesize in Foster II form $Z(s) = \frac{(s+5)(s+7)}{(s+1)(s+6)(s+8)}$

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