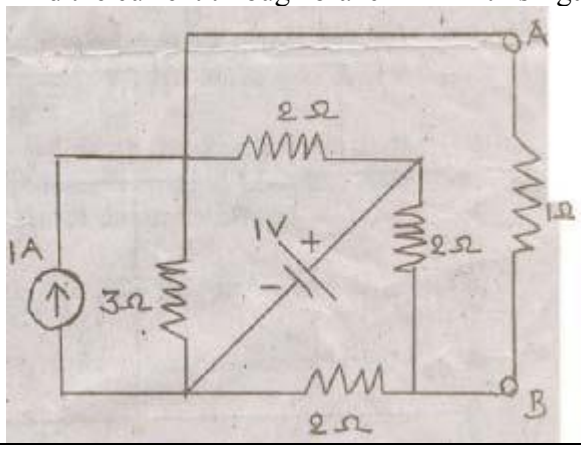
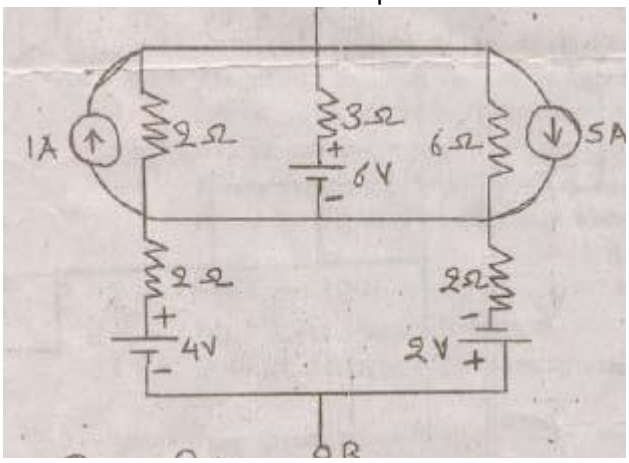
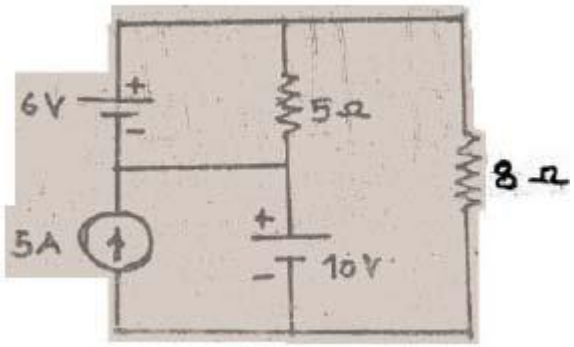
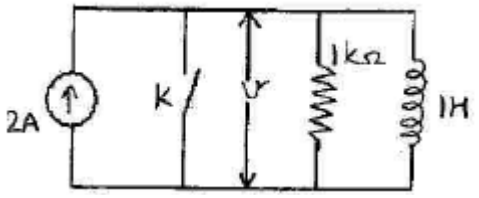
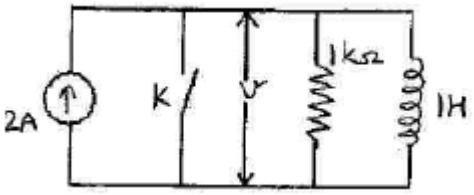
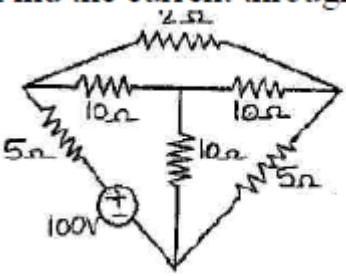
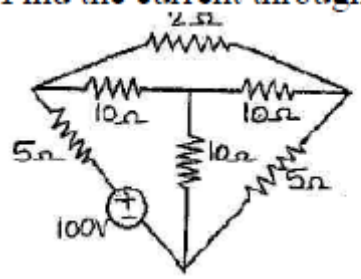
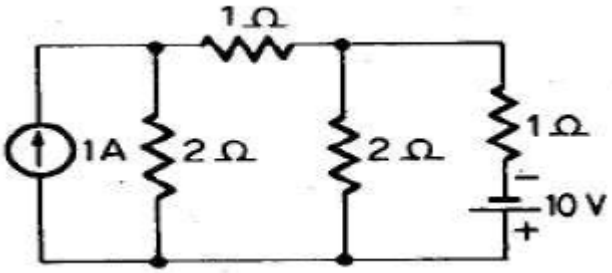
BE Semester-III (Electrical) Question Bank

Network Analysis

All questions carry equal marks (10 marks)

Q.1	Explain Dot convention with suitable Example
Q.2	Derive the inter-relationship between incidence matrix, Tie-set matrix and cut-set matrix.
Q.3	Give the difference between mesh and node.
Q.4	Find the current through branch AB in this figure given below by Thevenin's theorem. 
Q.5	Derive the equivalent circuit with voltage source in series with resistance by using source transformation technique. 
Q.6	Find all mesh currents by using mesh analysis method. 
Q.7	State Millman's theorem.

Q.8	Explain the concept of Super-mesh and Super-node with one suitable example for each.
Q.9	Write the property of laplace transform 1) Unit impulse 2) Unit step and 3) Unit ramp function
Q.10	Explain the concept of complex frequency.
Q.11	Derive the symmetry and reciprocity condition for transmission parameter
Q.12	Give the application of h-parameter and also state the relation between h-parameter with transmission parameter
Q.13	What is network function? Define the terms “Driving point impedance” and “driving point admittance” of a one port network.
Q.14	Derive the condition for a maximum power transfer
Q.15	In the given figure below switch K is opened at t = 0. Find the v, dv/dt and d^2v/dt^2 at t =0+. 
Q.16	State and Explain Thevenin’s Theorem and Norton’s Theorem with suitable Example.
Q.17	Explain the following, **(I)** Linear Network **(II)** Passive Network **(III)** Active network **(IV)** Bilateral and Unilateral Element **(V)** Node and Mesh **(VI)** Ideal Voltage Source
Q.18	How inductor and Capacitor will have at t=0 and t=□ .Draw equivalent networks. 
Q.19	State and Explain Kirchoff’s current Law and Kirchoff’s voltage law.
Q.20	Explain the rules for source transformation technique.
Q.21	What are Y-Parameters and Z-Parameters? Derive the Expression for ZParameters in terms of Y-parameters and vice – versa.
Q.22	Explain the concept of the complex frequency.
Q.23	Explain in brief the concept of initial conditions.
Q.24	What is network function? Define the terms “Driving point impedance” and “driving point admittance” of a one port network.
Q.25	Draw the dual network of given network. 

Q.26	Draw the graph, tree and co-tree for the figure given. 
Q.27	Define the following terms, (I) Link (II) Graph (III) Tree (IV) Node (V) Branch
Q.28	Define and Prove the Initial value and Final value Theorem.
Q.29	Explain dot conversion rules for coupled circuits.
Q.30	Poles and Zeros of network functions
Q.31	Prove AB-BC=1.
Q.32	Explain: (i) Ideal Sources (ii) Controlled Sources.
Q.33	Explain: (i) Unilateral and Bilateral Networks (ii) Active and Passive Networks.
Q.34	Explain the advantages of Laplace transformation.
Q.35	Explain: (i) Inductance parameter (ii) Capacitance parameter.
Q.36	Determine the value of the current through the 10 V battery in the following network using Mesh analysis. 
Q.37	How inductor and Capacitor will have at t=0 and t=□ .Draw equivalent networks.
Q.38	A series RLC circuit with R = 2 ohm, L = 1 H and C = 0.5 Farad with the applied voltage V (t) = sint. Find i(t) if the switch is closed at t= 0. Use Laplace transform method.
Q.39	What is time constant? Explain its significance through one suitable example.
Q.40	Obtain the transform representation of an inductor with initial current i(0-) in term of (i) Impedance (II) Admittance.