

I B. Tech II Semester Supplementary Examinations, July/August - 2021

NETWORK ANALYSIS

(Com. to ECE, EIE)

Time: 3 hours

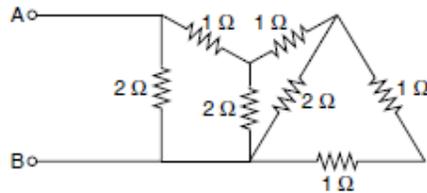
Max. Marks: 75

Answer any five Questions one Question from Each Unit

All Questions Carry Equal Marks

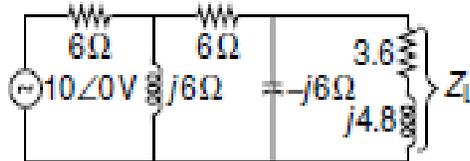
1. a) Explain the following graph terminologies: (7M)
 i) planar Graph ii) Non – planar graph iii) Sub – graph iv) path
 v) Connected Graph vi) tree vii) Co - tree

- b) Calculate the resistance across terminals AB of the network shown below: (8M)

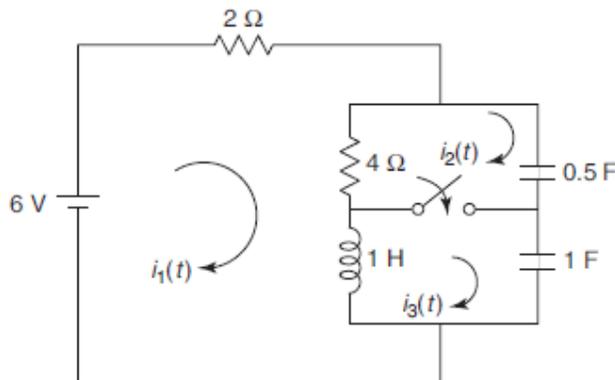


Or

2. a) Explain the principle of Duality with an example (5M)
 b) Find the current through Z_L in the circuit shown below using node Analysis (10M)



3. a) For the following network, a steady state is reached with switch open. At $t = 0$, switch is closed. Find the three loop currents at $t = 0^+$. (10M)



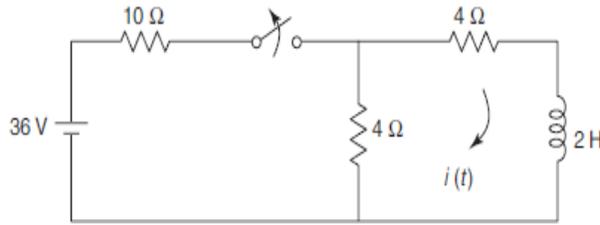
- b) List and explain the various properties of Laplace transform (5M)

Or

4. a) Draw and explain the steady state and transient response of current and voltage for a Series RL circuit. (8M)



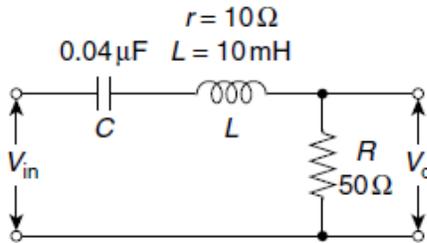
- b) The network shown below has acquired steady state with the switch closed for $t < 0$. At $t = 0$, the switch is opened. Obtain $i(t)$ for $t > 0$. (7M)



5. a) Explain the step-by-step process of converting Delta connected network in to a Star connected network. (8M)
- b) Two impedances Z_1 and Z_2 are connected in parallel across a 230 V, 50 Hz Supply. Impedance Z_1 consists of a resistance of 14 Ω and an inductance of 16 mH. Impedance Z_2 consists of a resistance of 18 Ω and an inductance of 32 mH. Calculate the branch currents, line current, and voltage across inductances. (7M)

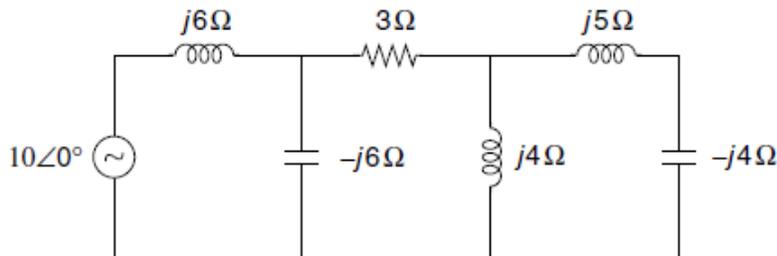
Or

6. a) Explain in detail about Dot convention in the series and parallel magnetic circuits (7M)
- b) Two coils with a coefficient of coupling of 0.75 between them are connected in series so as to magnetise in (i) same direction, and (ii) opposite direction. The total inductance in the same direction is 2.5 H and in the opposite direction is 0.5 H. Find the self-inductance of the coils. (8M)
7. a) Distinguish in detail between series resonance and parallel resonance (7M)
- b) Calculate the Bandwidth (BW) for the following filter circuit (8M)

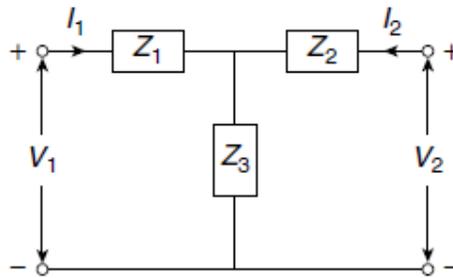


Or

8. a) State Tellegen's theorem and apply the theorem to solve network problem (7M)
- b) Find the current in the 3 Ω resistor for the following circuit using The venin's theorem. (8M)



9. a) Explain the procedure for finding the h – parameters of a two-port network (7M)
 b) For the circuit shown below find Z- parameters and Y – parameters (8M)



Or

10. a) Explain the procedure for conversion of A, B, C, and D parameters to h – parameters. (7M)
 b) Following two networks are connected in series. Determine the Z – parameters of the cascaded network (8M)

