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CHERUTHURUTHY

42032

Name:

Reg.No.

THIRD SEMESTER B.TECH. DEGREE EXAMINATION, DECEMBER 2007

CS.04.306 Electric Circuits and Systems
(2004 Admission)

Time: 3 hours **Maximum: 100 Marks**

(Answer all questions)

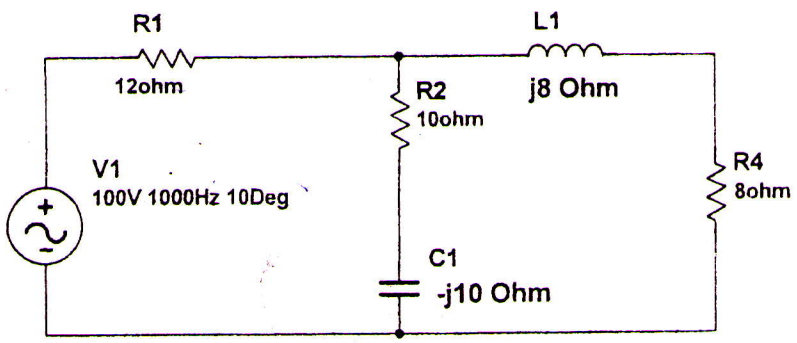
Part A

1. State and explain dot rule for coupled circuits with suitable example.
2. Explain tie set schedule, tie set and cut set matrices in detail.
3. State and prove maximum power transfer theorem.
4. Two coils of $Z_1=(5+j12)\Omega$ and $Z2=(6+j10)\ \Omega$ are connected in parallel across 210V 50Hz supply. Calculate the total current and current in each coil. Also draw the phasor diagram.
5. In a series RLC circuit, the input is an ac voltage labeled V_i. The output is the voltage taken across the inductor. Derive the transfer function of the system.
6. Draw the circuit of Maxwell's bridge. Discuss one application of it.
7. Explain any five rules in the block diagram reduction.
8. Derive the step response of a first order system.

(8×5=40 marks)

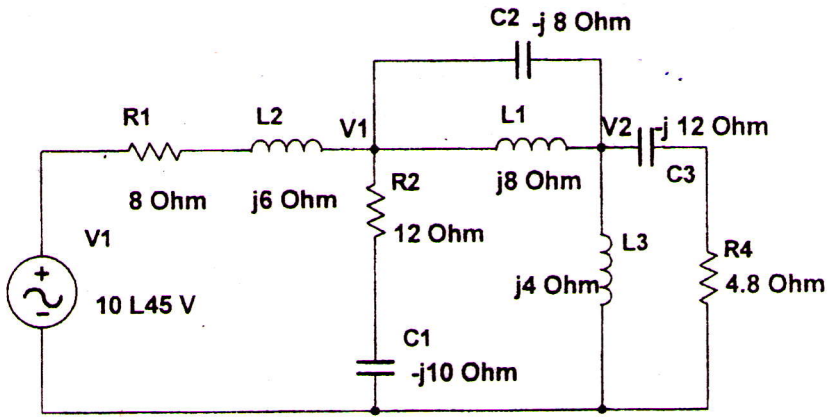
Part-B

9. Using mesh analysis, determine the power output of the voltage source in the given network. Also determine the power dissipated in the circuit elements.

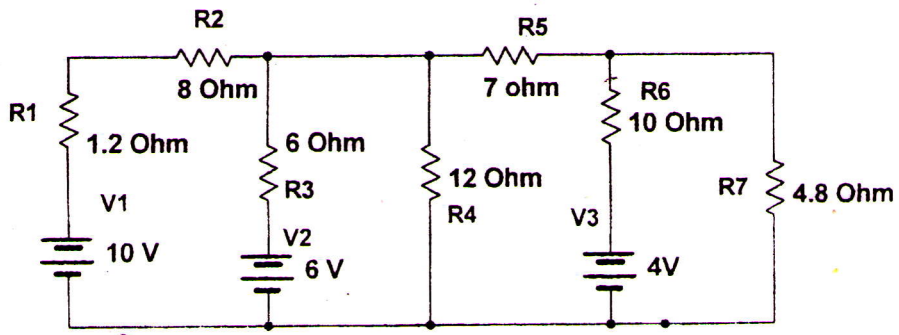


Or

10. For the given network, determine the node voltages V_1 and V_2.



11. Use Thevenin theorem to find the current through R4 in the network.



Or

12. A 3-phase 3-wire 220V system supplies a star connected load Z_{ab}=j 20Ω, Z_{bc}=-j22Ω, Z_{ca}=22Ω. Find phase currents, line currents and power. Also draw phasor diagram.

13. Draw the circuit diagram and phasor diagram for Anderson's bridge. Derive the condition for balance. What are the advantages and disadvantages? Mention its typical application.

Or

14. Determine the admittance and hybrid parameters of the given 2-port network.