

(2) Attempt any four questions out of remaining six questions.

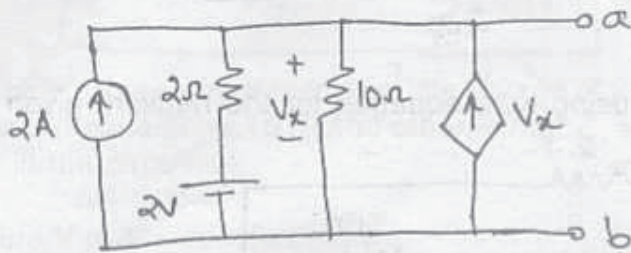
(3) Figures to the right indicate full marks.

(4) Assume suitable and state them.

S. S. W. Old Electrical Networks 31/6/09

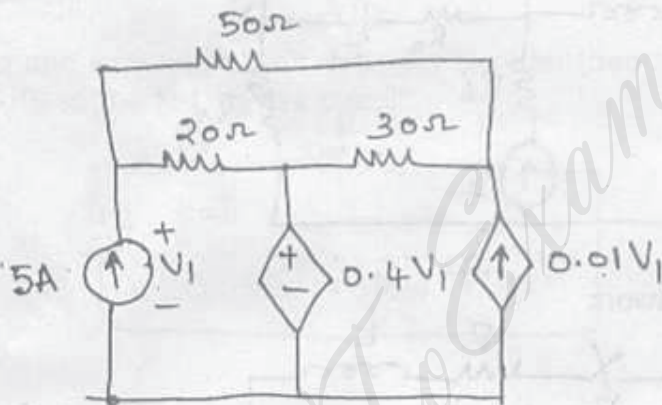
10 MASTER

1. (a) Find the Thevenin's equivalent across a and b.

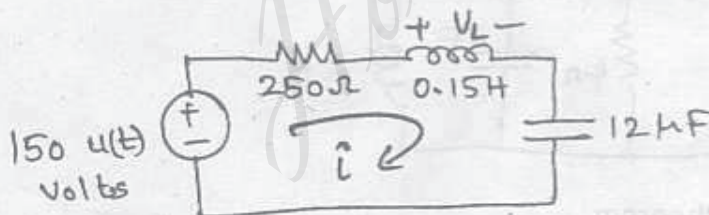


- (b) (i) Write short note on initial conditions. 5
 (ii) Find the current in a series RL circuit, having $R = 2 \Omega$, $L = 10H$, while a dc voltage of 100 V is applied. Find the value of current after 5 seconds of switching on. 5

2. (a) Use mesh analysis to find power supplied by dependent voltage source. 10

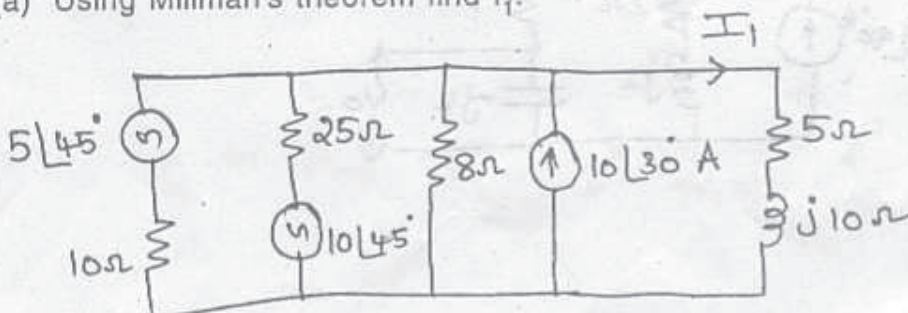


- (b) Determine whether the RLC series circuit is underdamped, overdamped or critically damped. Also find $V_L(0^+)$, $\frac{di}{dt}(0^+)$, $i(0^+)$ 10



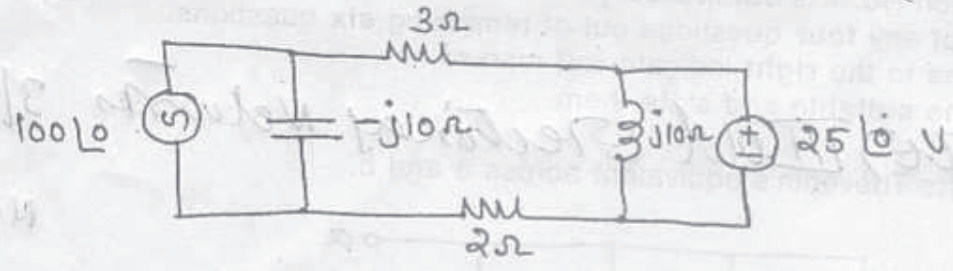
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3. (a) Using Millman's theorem find I_1 .

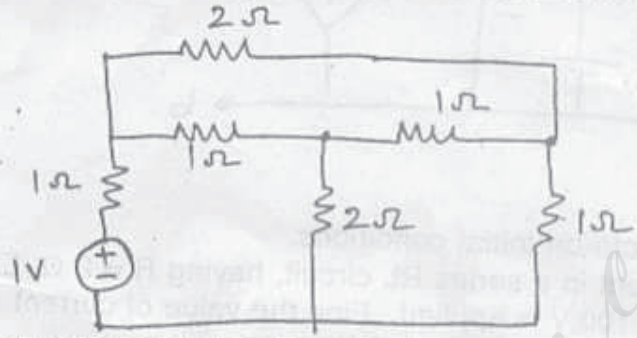


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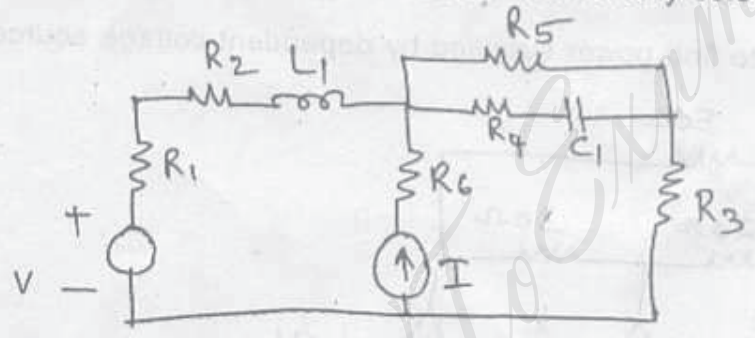
(b) By superposition theorem, determine the current in the $3\ \Omega$ resistor. 10



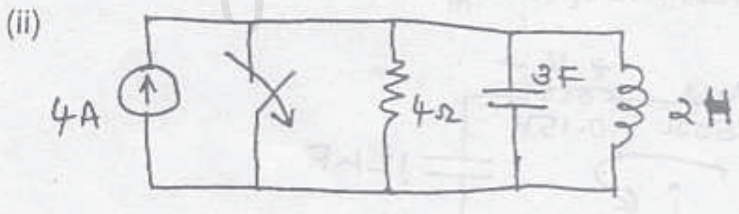
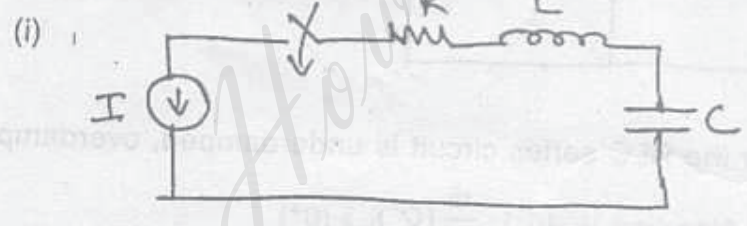
4. (a) Obtain twig voltages using KCL equation for the network given. Choose any tree. 10



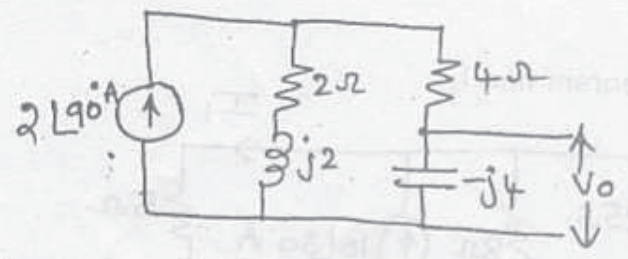
(b) Write cutset matrix and tie set matrix for any selected tree. 10



5. (a) Draw the dual network 10



(b) Find V_0 by reciprocity theorem 10

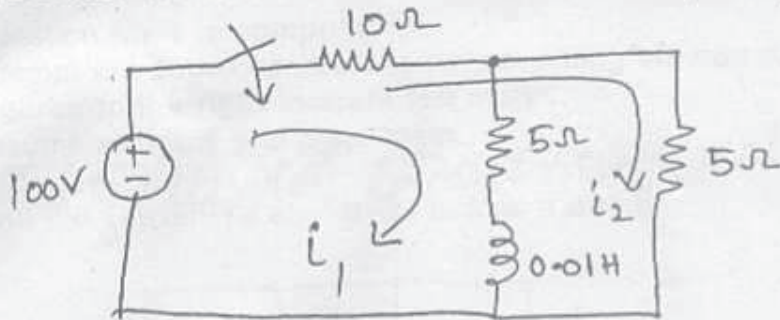


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31/6/08

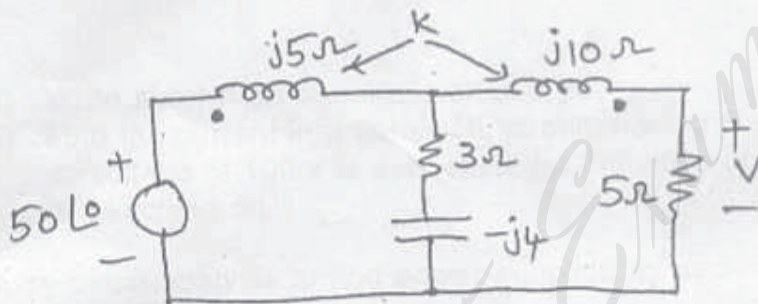
6. (a) The switch is closed at $t = 0$. Find the current i_1 and i_2 .



(b) Three phase three wire system has line voltage of 250 V, supplies two balanced load one in delta $Z_{\Delta} = 15 \angle 0^\circ$ and other in star $Z_Y = 10 \angle 30^\circ$. Obtain the total power in the circuit.

7. (a) Compute V in the coupled circuit.

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$K = 0.8$

(b) (i) State and explain maximum power transfer theorem.
 (ii) Find $i(t)$ in the R-L series circuit.

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