B3B053

Reg. No._____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

THIRD SEMESTER B.TECH DEGREE EXAMINATION, JULY 2017

Course Code**: EC 201**

Course Name**: NETWORK THEORY (AE,EC)**

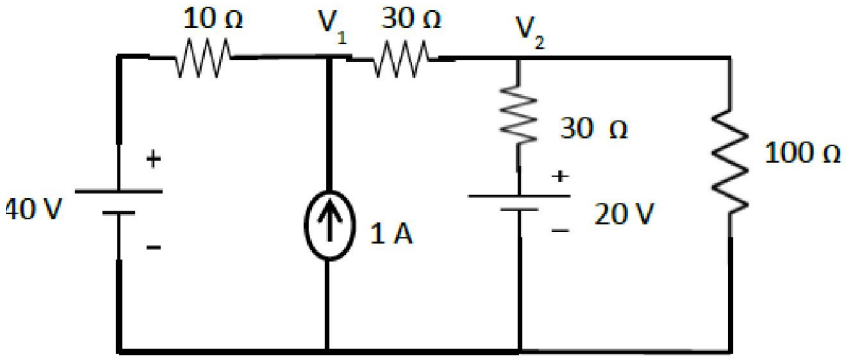
Max. Marks: 100 Duration:3 Hours

PART A

Question No. 1 is compulsory.

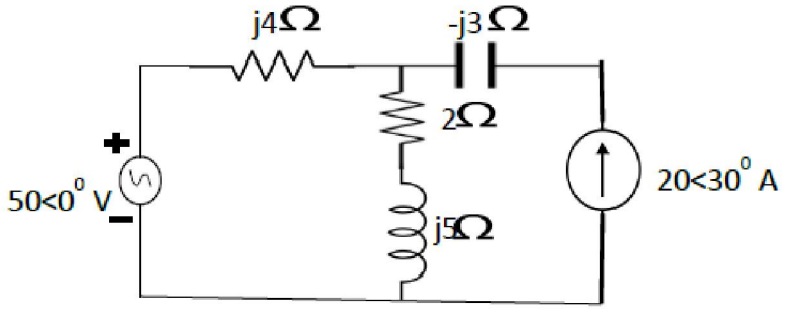
1. a) State Kirchhoff's current law. (2)

   b) Find the current in 100Ω resistor using nodal analysis. (5)



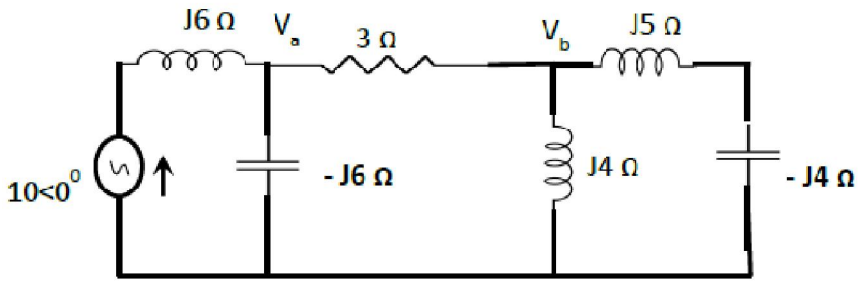
   c) State super position theorem. (2)

   d) Using super position theorem find the voltage across (2+j5)Ω impedance for the network shown. (6)

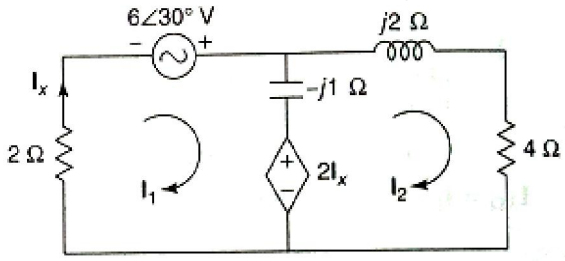


2. a) Differentiate between (i) tree and co tree (ii) links and twigs. (2)

   b) Determine V_a and V_b, from the given circuit. (7)

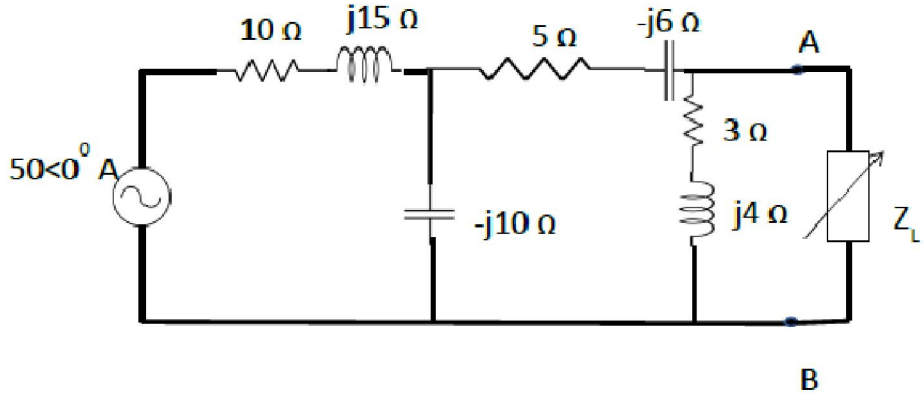


c) In the network find the voltage across the 4Ω resistor. (6)



OR

3. a) State and Prove maximum Power transfer theorem. (3)
   b) Determine the maximum power delivered to the load. (4)

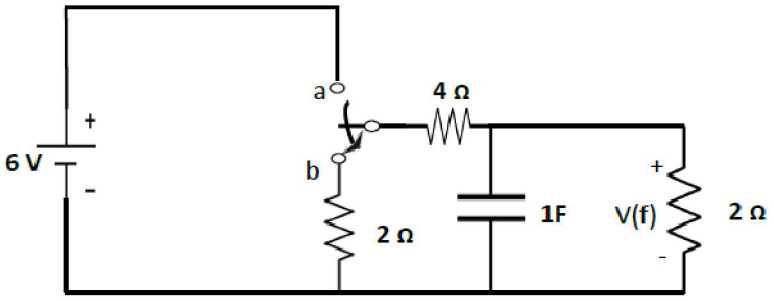


c) State and prove time integration theorem. (4)
d) Find Lapalce transform of (i)$(1-e^{-t})/t$ (ii)$(t+1)^2e^t$ (4)

PART B

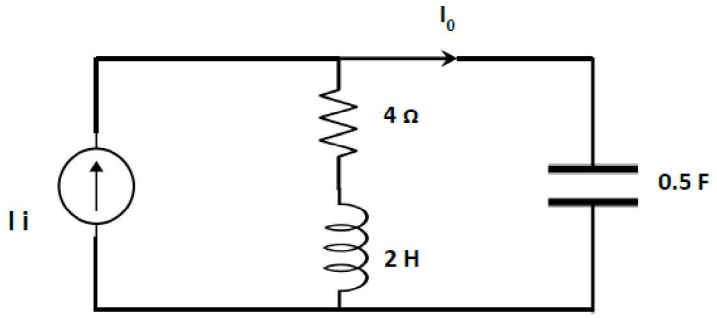
Question No. 4 is compulsory.

4. a) In the network shown the switch is moved from a to b (steady state was achieved in position a). Find v(f). (6)



b) List any 5 properties of transfer functions. (5)

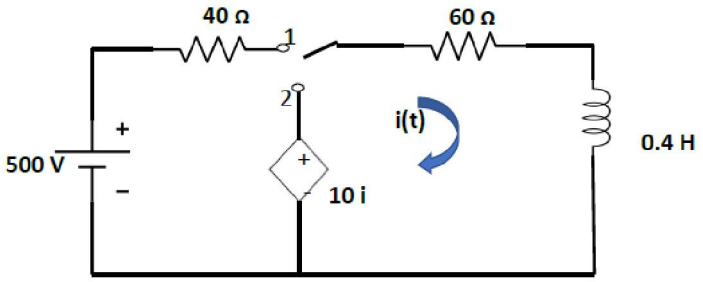
c) In the network shown, plot poles and zeros function of (I_0/I_i) (4)



5. a) Find inverse Laplace transform of $(2s+1)/(s^2+2)(s+1)$. (4)

b) Solvey"-y= t, y(0)=1, y'(0)=0 (5)

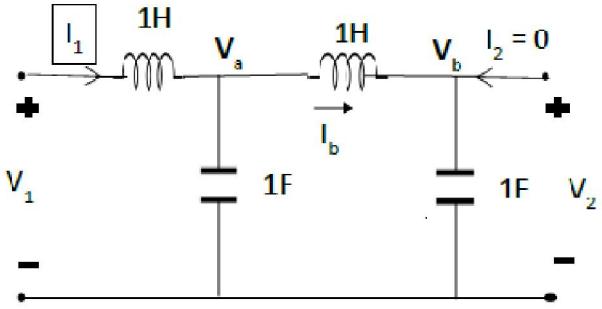
c) For the network shown , find the current i(t) when the switch is changed from position 1 to 2 at t=0



(6)

OR

6. a) Obtain the Z_{11} , V_2/I_1,$V_2/V_1$of the following network. (10)

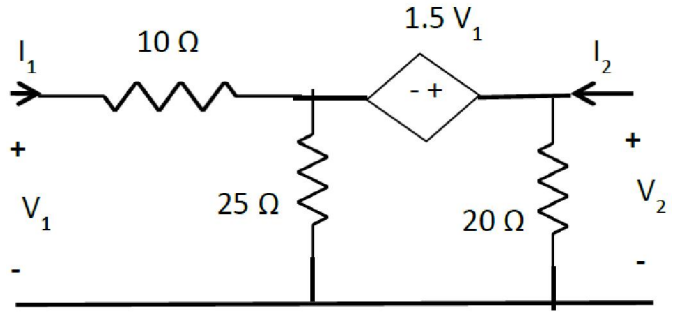


b) Plot the magnitude and phase response for the transfer function, V_2/V_1 of an RC two port network (Integrator) (5)

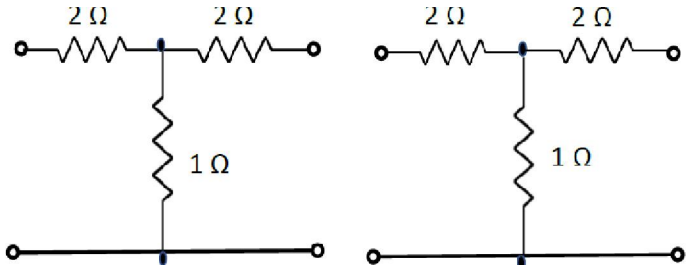
PART C

Question No. 7 is compulsory.

7. a) Find the transmission parameters for the two port network shown. (8)

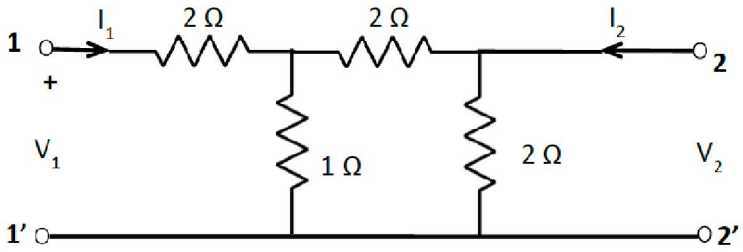


b) Two identical sections of a network shown in the figure are connected in series. obtain the Z parameters of the combination and verify by direct calculation (8)



c) Define resonance. Find the condition for resonance in a series RLC circuit (4)

8. a) For the network shown ,derive the open circuit admittance parameters and draw its equivalent circuit (10)



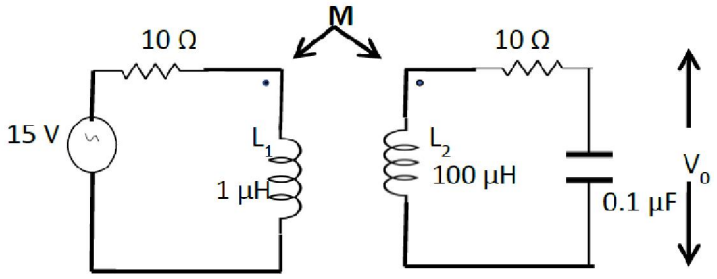
b)Express Z parameters in terms of hybrid and inverse hybrid parameters. (10)

OR

9. a) A series RLC circuit has R=25Ω, L=0.41H, C=0.01μF. calculate the resonant frequency.If 1V source of the same frequency as the resonant resonant frequency is

applied to this circuit, calculate the frequencies at which the voltage across L and Cis maximum. Calculate the voltages. (8)

b) Consider a single tuned circuit. Determine the resonant frequency, the output voltage at resonance and the maximum output voltage. Assume $Rs>>\omega_r L_1$ and K=0.9 (12)



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