Reg. No. : | | | | | | | | | | |

Question Paper Code: 31433

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2017

Third Semester

Electronics and Communication Engineering

01UEC303 - CIRCUIT THEORY

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

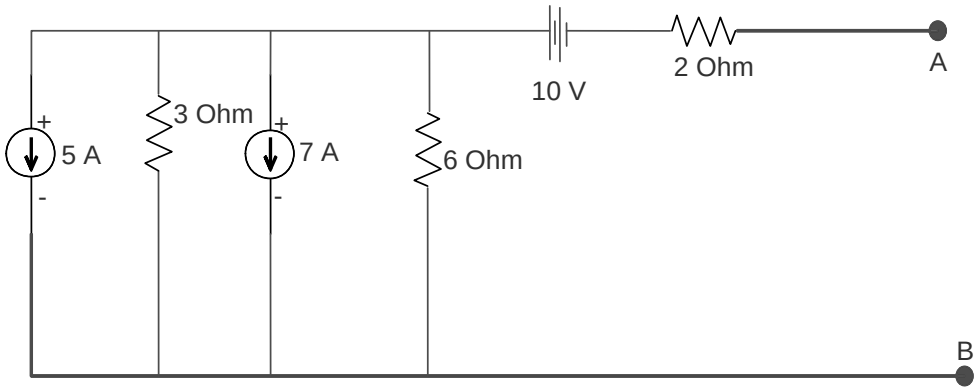
1. Define Kirchoff's current law.
2. Give the properties of tree in a graph.
3. List the applications of Thevenin's theorem.
4. State Norton's theorem.
5. List the characteristics of series resonance.
6. Write the properties of a parallel RLC circuit.
7. List the methods for unbalanced star connected load.
8. Give the line and phase values in delta connection?
9. List the characteristics of ideal filter.
10. Give the details of impedance parameters of two port networks.

PART - B (5 x 16 = 80 Marks)

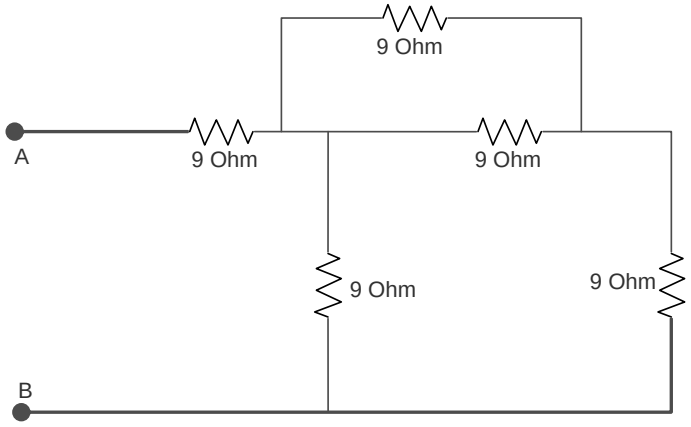
11. (a) Derive expressions for star connected arms in terms of delta connected arms and delta Connected arms in terms of star connected arms. (16)

Or

(b) (i) Reduce the following to a single source equivalent. (8)

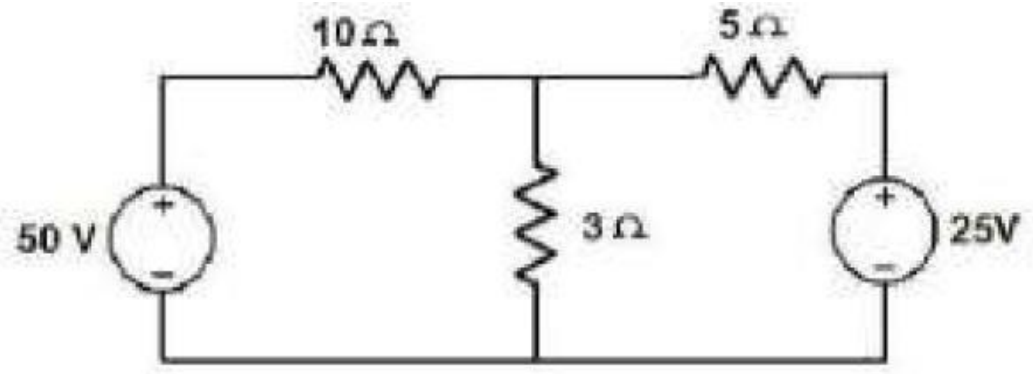


(ii) Determine the equivalent resistance between A and B. (8)



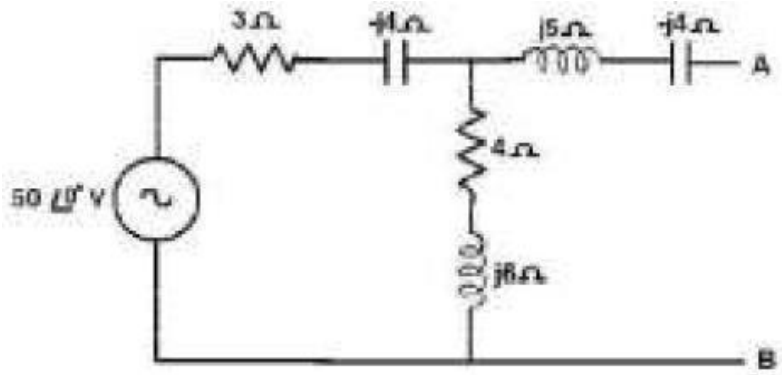
12. (a) (i) State and explain Maximum power transfer theorem. Also give its applications. (8)

(ii) Find the current in each resistor using superposition principle of figure below. (8)



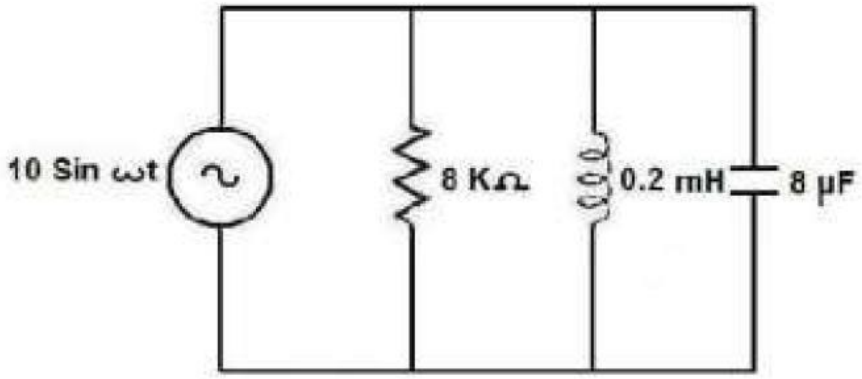
Or

(b) (i) Determine the Thevenin's equivalent for the figure shown below. (10)



(ii) State and prove Norton's theorem. (6)

13. (a) In the parallel RLC circuit, calculate resonant frequency, bandwidth, Q-factor and power dissipated at half power frequencies. (16)



Or

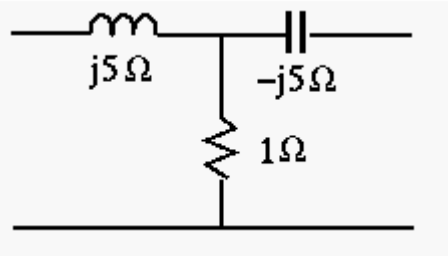
(b) A series RLC circuit consists of R=100 ohm, L = 0.02 H and C = 0.02 microfarad. Calculate frequency of resonance. A variable frequency sinusoidal voltage of constant RMS value of 50V is applied to the circuit. Find the frequency at which voltage across L and C is maximum. Also calculate voltage across L and C is maximum. Also calculate voltages across L and C at frequency of resonance. Find maximum current in the circuit. (16)

14. (a) With a neat circuit and phasor diagram explain the three phase power measurement by two wattmeter methods. (16)

Or

(b) A three phase delta connected load has Zab= (100+j0) ohms, Zbc = (j100) ohms and Zca = (70.7 =j70.7) ohms is connected to a balanced 3 phase 400V supply. Determine the line currents Ia,I_b and Ic. Assume the phase sequence abc. (16)

15. (a) Convert the given T-network to a Π network. (16)



Or

(b) Find transmission parameters for the low pass filter network shown in figure. (16)