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**Question Paper Code: 33043**

B.E. / B.Tech. DEGREE EXAMINATION, NOV 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)

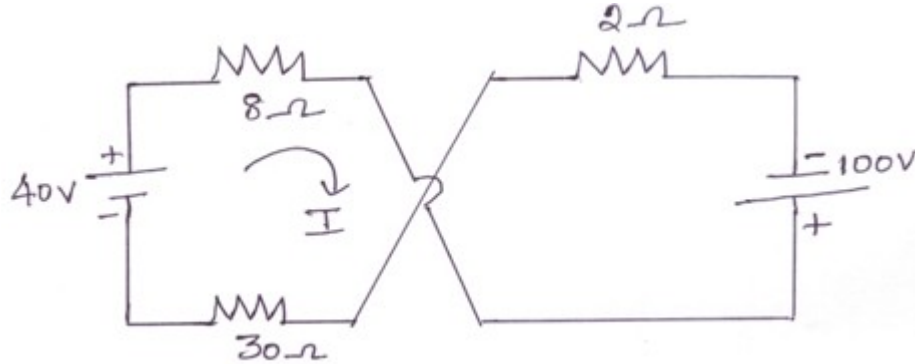
1. State Kirchoff's voltage and current law.
2. Give the properties of tree in a graph.
3. State Tellegen's theorem.
4. State Norton's theorem.
5. When the current is maximum in the series resonance circuit? Why?
6. Write the properties of a parallel RLC circuit.
7. Give the conditions for balanced star connected load.
8. Give the line and phase values in delta connection?
9. What is impedance matching?
10. Define driving point and transfer point impedance.

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

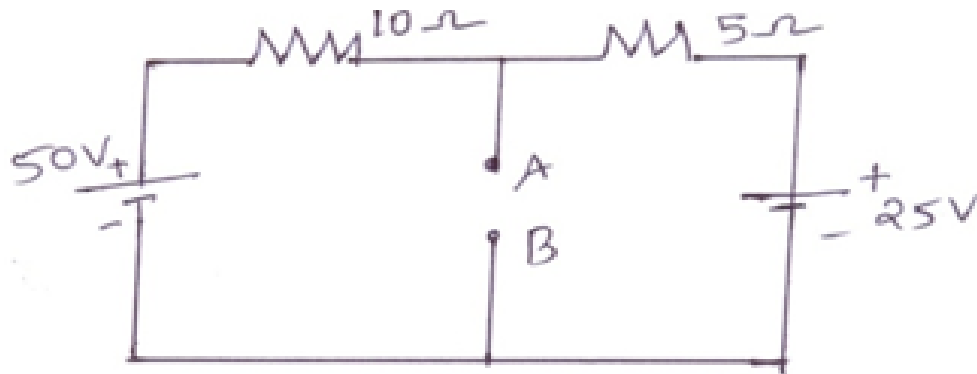
- (b) Find the current  $I$  and voltage across  $30\Omega$  resistor for the circuit shown in fig. (16)



12. (a) State and explain Maximum power transfer theorem. Also give its applications. (16)

Or

- (b) Determine the Thevenin's equivalent circuit across  $AB$  in fig. (16)



13. (a) A voltage  $v(t) = 10 \sin \omega t$  is applied to a series RLC circuit. At the resonant frequency of the circuit, the maximum voltage across the capacitor is found to be  $500V$ . Moreover the bandwidth is known to be  $400 \text{ rad/sec}$  and the impedance at resonance is  $100\Omega$ . Find the resonant frequency. Also find the values of  $L$  and  $C$  of the circuit. (16)

Or

- (b) Discuss the response of circuits for non sinusoidal period inputs with an example. (16)

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

Or

- (b) Explain in detail about single and double tuned circuits. (16)

15. (a) The impedance parameters of a 2 port network are

$$Z_{11} = 6\Omega, Z_{22} = 4\Omega, Z_{12} = Z_{21} = 3\Omega$$

Compute  $Y$  parameters and  $ABCD$  parameters.

(16)

Or

(b) Explain the characteristics of ideal filter. Define high pass filter and passive filter.

(16)

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