CODE: 17CA02203

B. Tech I Year II Semester (R17) Regular Examinations, May/June - 2018

NETWORK ANALYSIS

(ECE)

Time: 3 hours Max Marks: 70

PART – A

1. Answer any **TEN** questions (10 x 2 = 20 Marks)

(a) Define faradays law

(b) State the voltage division theorem

(c) Draw power Traingle

(d) Define the statement of thevenin's theorem

(e) What is active power

(f) Define mutual inductance

(g) What is the peak factor

(h) Define quality factor

(i) Find the resonance frequency for Parallel RLC circuits

(j) What is the average value of AC wave

(k) Define the reciprocity theorem

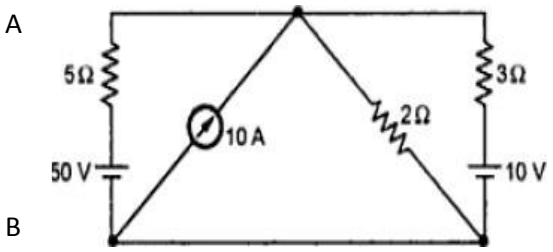
(i) What is kirchoffs voltage law

PART - B

Answer all **FIVE** units (5 x 10 = 50 Marks)

UNIT-I

2. Reduce the network to a single voltage source in series with resistance between terminals A and B Using source transformation technique.



OR

3. (a) A 20 ohm resistance is joined in parallel with a resistance of R ohms. This combination is then joined in series with a piece of apparatus A and the whole circuit connected to 100V mains. What must be the value of R so that A shall dissipate 600W with 10A passing through it.

(b) State and explain ohms law.

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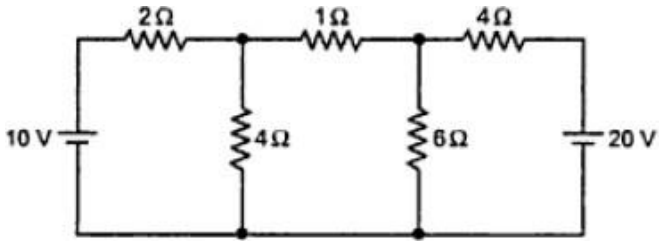
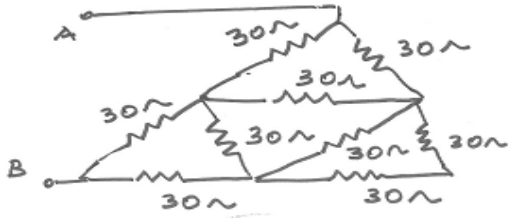
UNIT-II

4. Calculate the current in 6 ohm resistor using super position theorem as shown in figure.



OR

5. Find the resistance between A & B using Star to delta transformation.



UNIT-III

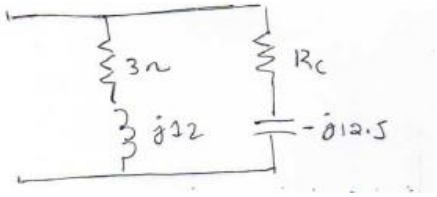
6. A coil having a resistance of 20 ohms ,inductance of 0.15H and capacitor of 100UF is connected in series across 230V,50HZ supply. Calculate the active and reactive components of the current Energy stored in inductor and total Power consumed.

OR

7. Two circuits of impedances Z1 = (10+j15) ohms and Z_2 = (6+j8) ohms are connected in parallel. If the total current is 15 amps, what is the power taken by each branch.

UNIT-IV

8. Determine the value of R for the circuit under resonance condition.



OR

9. (a) Derive the expression for Mutual Inductance.

(b) The winding of an electromagnet is wound with 96 turns and has a resistance of 50 ohms. The exciting voltage is 250V D.C and the flux linking the coil is 5 mWb. Find the self-inductance and energy stored in the magnetic field. What emf is induced in the coil.

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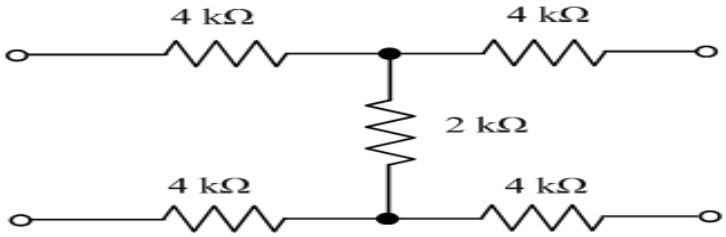
UNIT-V

10. (a) Express Y – parameters in terms of Z -parameters.

(b) Find the Z parameters as shown in figure



OR

11 (a) State and explain the characteristics of passive filter.

(b) Design a T-section constant K-high pass filter having cut-off frequency of 10 kHz and design impedance R0 = 600 Ω. Find its characteristic impedance and phase constant at 25 kHz.

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