Reg. No. :

Question Paper Code: 31232

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2016

Second Semester

Computer Science and Engineering

01UEE207 - ELECTRIC CIRCUITS

(Common to EEE, ECE, EIE, ICE and IT)

(Regulation 2013)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Define Kirchhoff's law.

2. What is an ideal source?

3. State maximum power transfer theorem.

4. Write some applications of maximum power transfer theorem.

5. Define Q-factor of a coil.

6. What is co-efficient of coupling?

7. Define time constant for RL transient circuit.

8. Distinguish steady state and transient state.

9. When a three phase supply system is called balanced supply system?

10. What are the advantages of 3-phase system over 1-phase system?
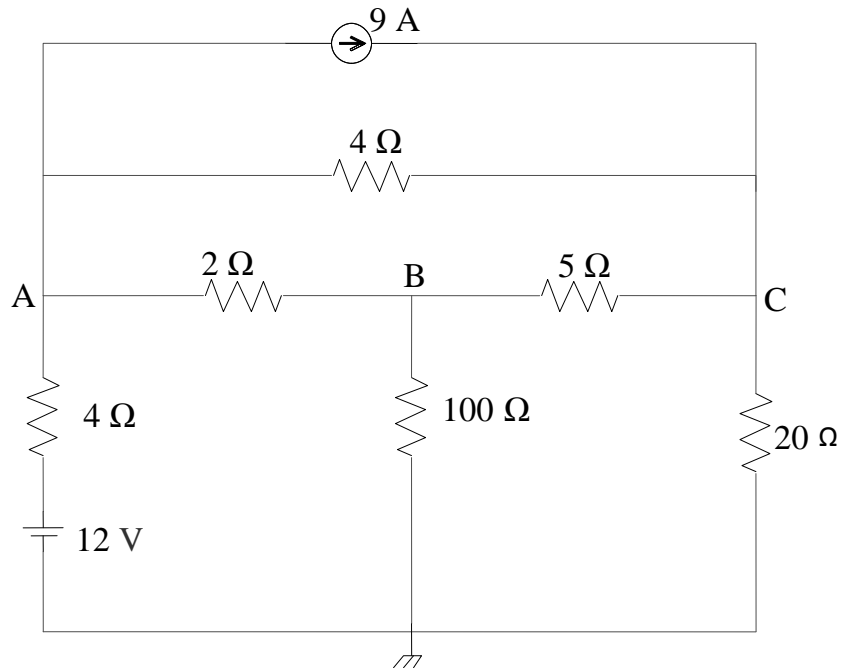
PART - B (5 x 16 = 80 Marks)

11. (a) Use mesh analysis to determine the current in 8Ω resistor as shown in the circuit diagram. (16)
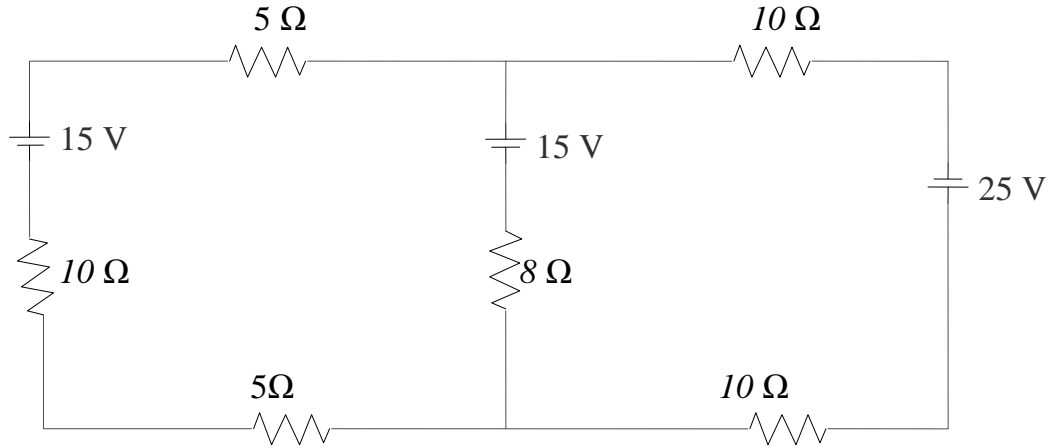
Or

(b) Using nodal analysis determine the voltage across 5Ω resistor and current in 12V source of the figure shown below. (16)
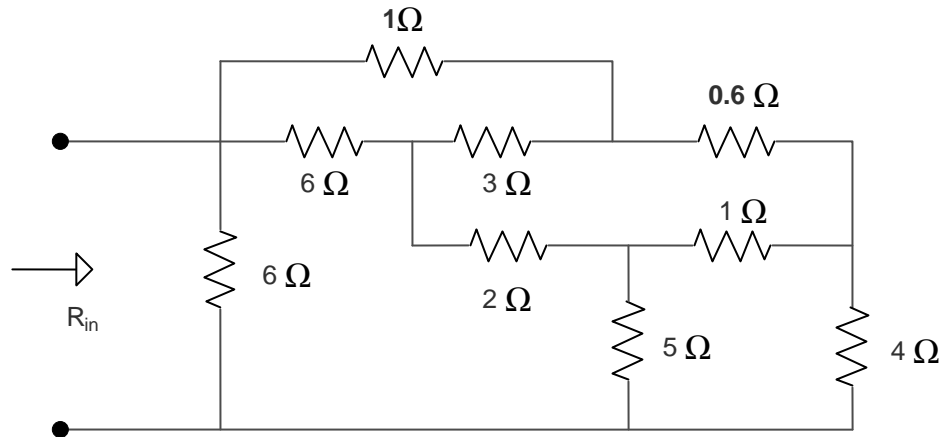

12. (a) (i) State and explain Reciprocity and superposition theorems. (8)

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(ii) Use Thevenin's theorem to find the current through the 2Ω resistor in the circuit shown in figure. (8)
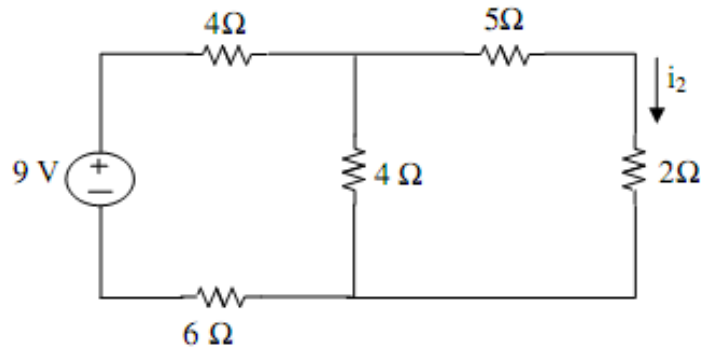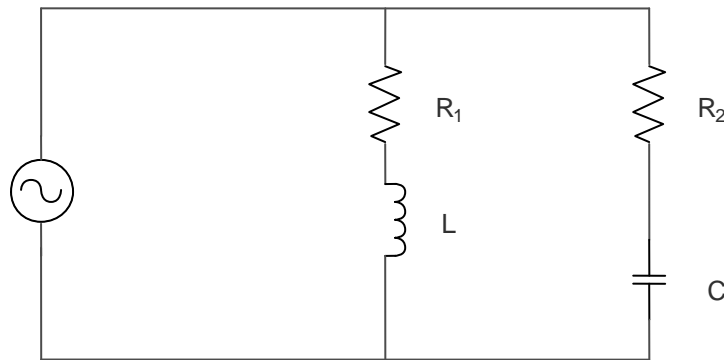

Or

(b) Find R_{in} for the network shown in figure, by using Y - Δ and Δ - Y transformations. (16)

13. (a) For the parallel circuit shown in figure, find the Resonance frequency f. (16)

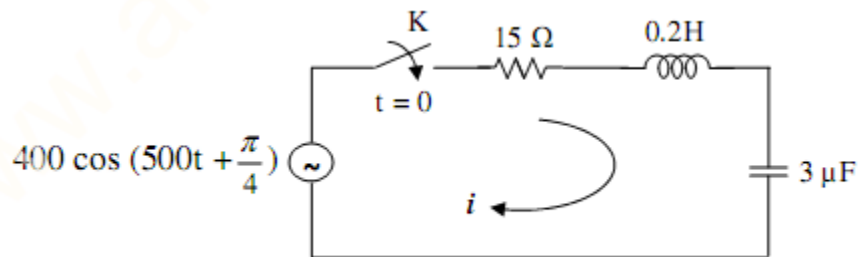
Or

(b) Discuss about Single tuned and Double tuned circuits. (16)

14. (a) Derive the expression for transient response in series R-L-C circuit for DC excitation. Obtain the solution using Laplace transforms. (16)

Or

(b) Determine complete solution for current, when switch K is closed at $t = 0$ for applied voltage $v(t) = 400cos(500t + \pi/4)$. Derive the expression for the current. (16)

15. (a) (i) Derive the formula for total power consumed in unbalanced Y connected load. (8)

(ii) Explain a method to determine power factor in 3-phase system. (8)

Or

(b) A balanced three phase system supplies an unbalanced delta connected load made of two resistors of 100 Ω and 200 Ω and a coil having an inductance of 0.3 H with negligible resistance. The line to line voltage is 100 V and the supply frequency is 50 Hz. Calculate

(i) The total power in the system

(ii) The total reactive power. (16)

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