Code No: R21023   **R10**   SET - 1

II B. Tech I Semester Supplementary Examinations, Oct/Nov - 2017
ELECTRICAL CIRCUIT ANALYSIS - I
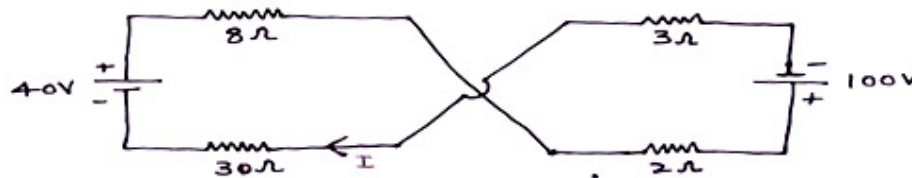(Electrical and Electronics Engineering)
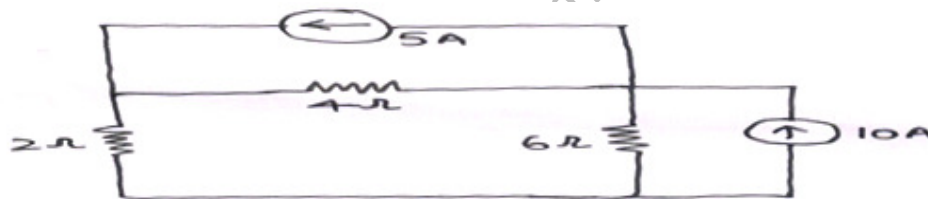
Time: 3 hours   Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1. a) Differentiate between ideal sources and practical sources and also explain about independent and dependent sources.   (8M)
   b) Find the current I, and the voltage across 30 Ω   (7M)

2. a) State and explain Kirchhoff's laws   (7M)
   b) Calculate the current passing through 6Ω resistor for the following circuit using node analysis   (8M)
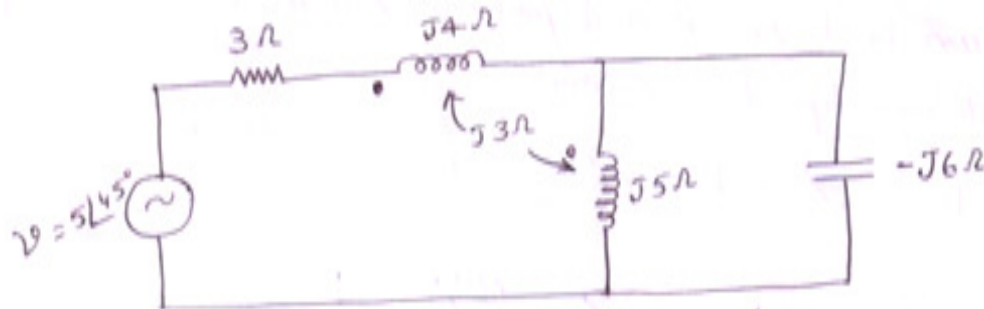

3. a) Explain the response of series RLC circuit for a sinusoidal current source and also draw its phasor diagram   (7M)
   b) In a series RC circuit, the values of R = 10Ω and C = 25nF. A sinusoidal voltage of 50 MHz is applied and the maximum voltage across the capacitance is 2.5 V. Find the maximum voltage across the series combination.   (8M)

4. A choke coil is connected across a 250 V, 50 Hz supply. If the input current is 10 A and power loss in the choke is 1 KW, find the impedance, resistance and inductance of the choke. What is the power factor of the circuit? What would be the value of the input current if a capacitor of C farad is connected in series with the coil such that the power factor of the entire circuit becomes unity?   (15M)
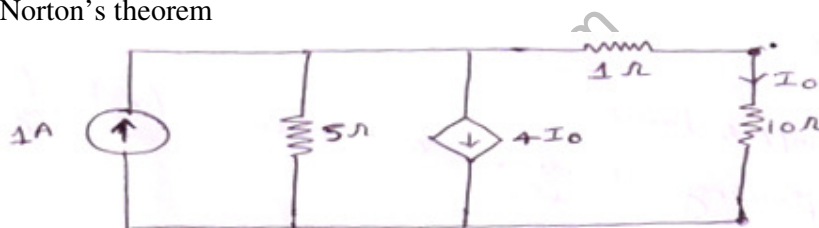
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5. a) List the analogy between Electrical and magnetic circuits. (7M)

   b) For the following figure , find the drop across the capacitor and the resistor (8M)

6. Define the following terms with respect to Graph theory: (15M)
   i) Branch, ii) Tree, iii) Node, iv) Tree link, v) Cut-set, vi) Tie – set,
   and vii) Incidence matrix

7. a) State and explain Superposition theorem (7M)

   b) Find the power loss in the 10Ω resistor for the circuit shown below using Norton's theorem (8M)

8. Using Thevinin's theorem find the power in $(4 +j6)$ Ω impedance connected across terminals x-y for the figure shown below: (15M)