Code.No: R05010401 | R05 | SET-1

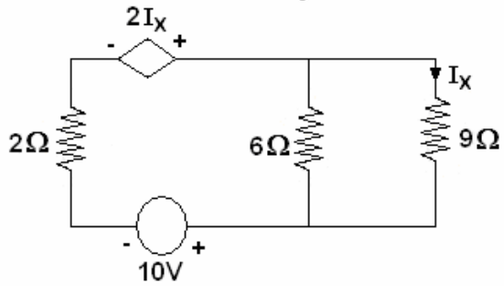
I B.TECH – EXAMINATIONS, JUNE - 2011
NETWORK ANALYSIS
(COMMON TO ECE, ECOMPE, EIE, BME)

Time: 3hours **Max.Marks:80**

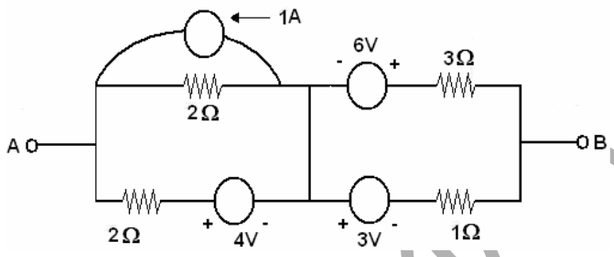
Answer any FIVE questions
All questions carry equal marks
- - -

1.a) "The voltage across capacitor can not change instanteously". Explain why.

b) Find the current in the 6 ohms resistor using Kirchoff's laws.



c) Using source transformation, reduce the network between A and B into an equivalent voltage source. [4+6+6]



2.a) Define self inductance, Mutual inductance and coefficient of coupling with regard to a pair of magnetically coupled coils. State the relationship among the above quantities.

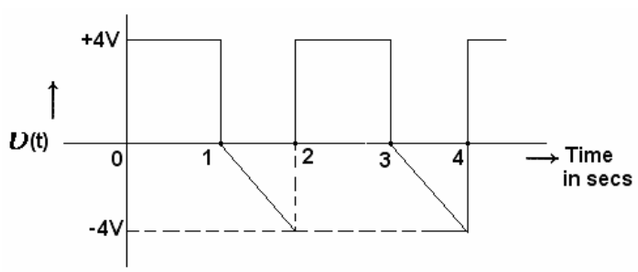
b) Two identical coils with $L = 0.02H$ and are having a coefficient of coupling of 0.8. Find the mutual inductance and the equivalent inductances with the two coils connected in:
i) Series aiding and
ii) Series opposing.
Derive the equations employed.

c) Clearly explain what you understand by impedance transformation. [4+8+4]

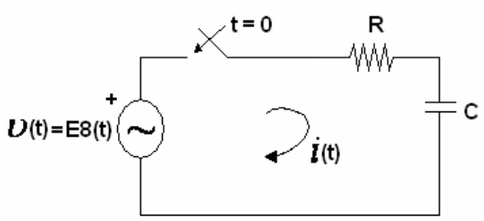
3.a) Clearly explain the terms resonance frequency, half power frequencies and Band width of a Resonant circuit.

b) A Two element series circuit is connected across a voltage $\upsilon(t) = 200\sqrt{2}\sin\left(314t + 20^0\right)$.The current in the circuit $i(t) = 10\sqrt{2}\sin\left(314t - 25^0\right)$ Determine the parameters of the circuit. Also determine the power factor, Real power and Reactive power taken by the circuit. [6+10]

4.a) Determine the RMS value, Average value and form factor of the waveform shown in figure.



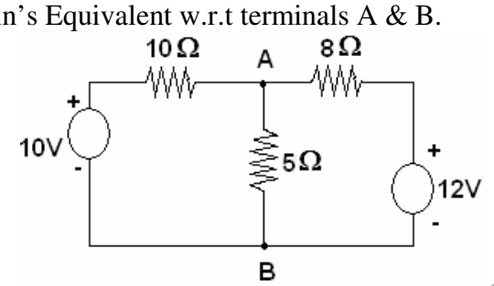
b) Obtain the impulse response of a series R-C circuit excited by $\upsilon(t) = E8(t)$ at t = 0. Use Laplace Transform method. [8+8]



5.a) State and explain Reciprocity Theorem.

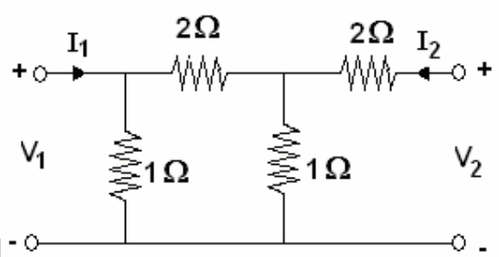
b) There are two separate coils and when a voltage of 30V D.C. is applied to each of the coils the currents taken are 4A and 5A, when an A.C. voltage of 30V is applied to each of the coils they take 1A and 2A. If both the coils are connected in series and a 100V A.C. is applied across the combination, determine the current and power consumed by the circuit.

c) Draw the Thevinin's Equivalent w.r.t terminals A & B. [4+8+4]



6.a) Define short circuit admittance Parameters (y) of a two port network. Obtain (y) parameters in terms of (z) parameters.

b) Obtain ABCD parameters of the network shown in figure. [8+8]



7.a) Clearly explain what you understand by an Alternator. Explain clearly the different types of Alternators.

b) Design an asymmetrical L-alternator with image impedances of 600 Ω and 400 Ω. [10+6]

8.a) Distinguish between a low pass, a High pass and a Band pass filter. Clearly explain the draw backs of constant K filters.

b) Design a constant-K high pass filter having a cut off frequency of 10 KHz and characteristic impedance of 600 Ω. Show both T & π configurations. [8+8]

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Code.No: R05010401 | R05 | SET-2

I B.TECH – EXAMINATIONS, JUNE - 2011
NETWORK ANALYSIS
(COMMON TO ECE, ECOMPE, EIE, BME)

Time: 3hours **Max.Marks:80**

Answer any FIVE questions
All questions carry equal marks

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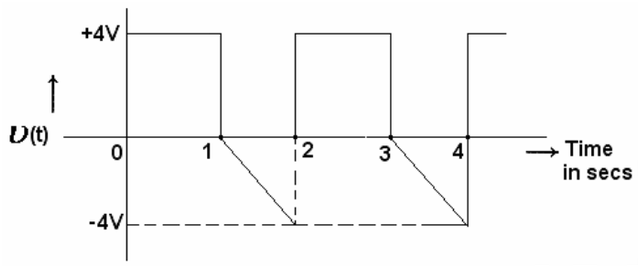
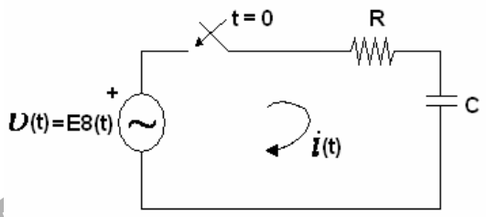
1.a) Clearly explain the terms resonance frequency, half power frequencies and Band width of a Resonant circuit.

b) A Two element series circuit is connected across a voltage $\upsilon(t) = 200\sqrt{2}\sin\left(314t + 20^0\right)$. The current in the circuit $i(t) = 10\sqrt{2}\sin\left(314t - 25^0\right)$ Determine the parameters of the circuit. Also determine the power factor, Real power and Reactive power taken by the circuit. [6+10]

2.a) Determine the RMS value, Average value and form factor of the waveform shown in figure.



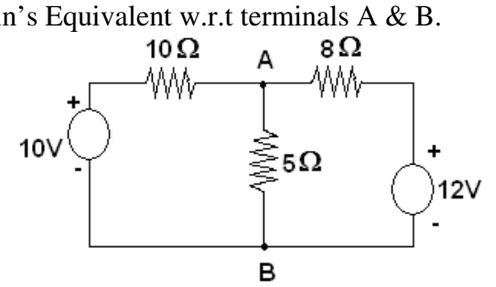
b) Obtain the impulse response of a series R-C circuit excited by $\upsilon(t) = E8(t)$ at t = 0. Use Laplace Transform method. [8+8]



3.a) State and explain Reciprocity Theorem.

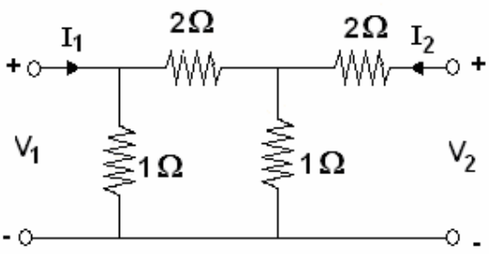
b) There are two separate coils and when a voltage of 30V D.C. is applied to each of the coils the currents taken are 4A and 5A, when an A.C. voltage of 30V is applied to each of the coils they take 1A and 2A. If both the coils are connected in series and a 100V A.C. is applied across the combination, determine the current and power consumed by the circuit.

c) Draw the Thevinin's Equivalent w.r.t terminals A & B. [4+8+4]



4.a) Define short circuit admittance Parameters (y) of a two port network. Obtain (y) parameters in terms of (z) parameters.

b) Obtain ABCD parameters of the network shown in figure. [8+8]



5.a) Clearly explain what you understand by an Alternator. Explain clearly the different types of Alternators.

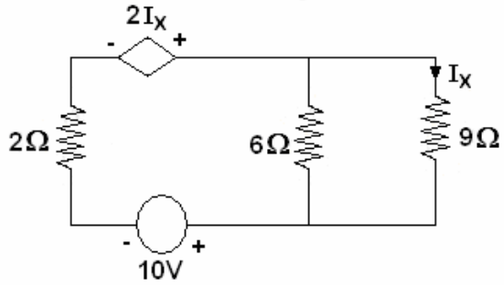
b) Design an asymmetrical L-alternator with image impedances of $600\,\Omega$ and 400 Ω. [10+6]

6.a) Distinguish between a low pass, a High pass and a Band pass filter. Clearly explain the draw backs of constant K filters.

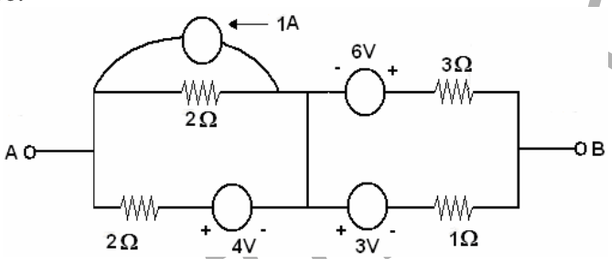
b) Design a constant-K high pass filter having a cut off frequency of 10 KHz and characteristic impedance of $600\,\Omega$. Show both T & π configurations. [8+8]

7.a) "The voltage across capacitor can not change instanteously". Explain why.

b) Find the current in the 6 ohms resistor using Kirchoff's laws.



c) Using source transformation, reduce the network between A and B into an equivalent voltage source. [4+6+6]



8.a) Define self inductance, Mutual inductance and coefficient of coupling with regard to a pair of magnetically coupled coils. State the relationship among the above quantities.

b) Two identical coils with $L = 0.02H$ and are having a coefficient of coupling of 0.8. Find the mutual inductance and the equivalent inductances with the two coils connected in:

i) Series aiding and

ii) Series opposing.

Derive the equations employed.

c) Clearly explain what you understand by impedance transformation. [4+8+4]

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Code.No: R05010401 | R05 | SET-3

I B.TECH – EXAMINATIONS, JUNE - 2011
NETWORK ANALYSIS
(COMMON TO ECE, ECOMPE, EIE, BME)

Time: 3hours **Max.Marks:80**

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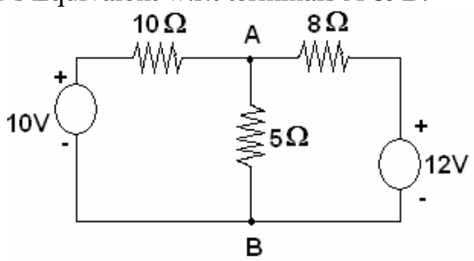
b) There are two separate coils and when a voltage of 30V D.C. is applied to each of the coils the currents taken are 4A and 5A, when an A.C. voltage of 30V is applied to each of the coils they take 1A and 2A. If both the coils are connected in series and a 100V A.C. is applied across the combination, determine the current and power consumed by the circuit.
c) Draw the Thevinin's Equivalent w.r.t terminals A & B. [4+8+4]



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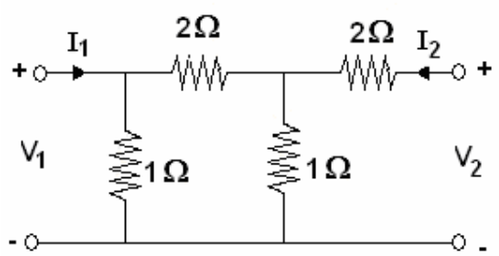

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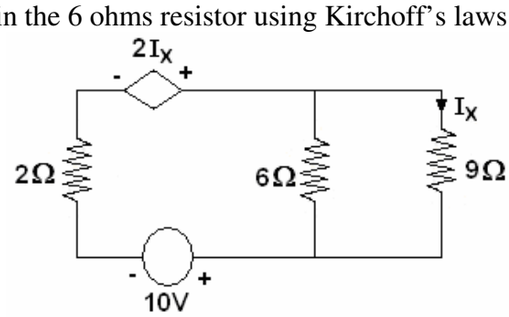
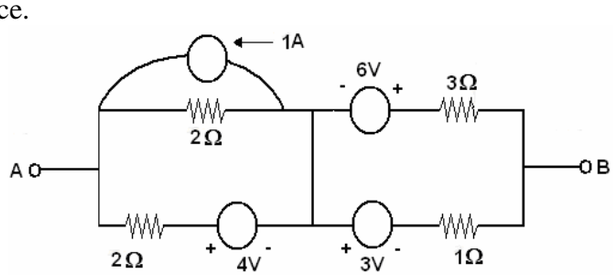


c) Using source transformation, reduce the network between A and B into an equivalent voltage source. [4+6+6]



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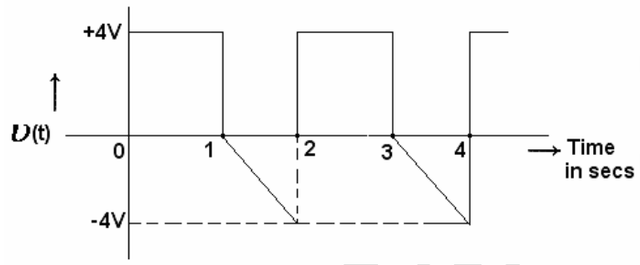

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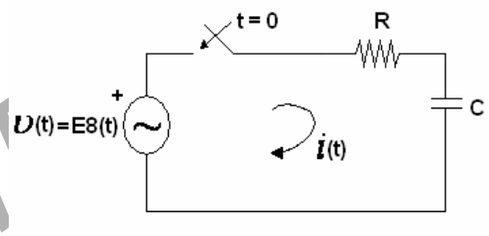

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Code.No: R05010401 | R05 | SET-4

I B.TECH – EXAMINATIONS, JUNE - 2011
NETWORK ANALYSIS
(COMMON TO ECE, ECOMPE, EIE, BME)

Time: 3hours **Max.Marks:80**

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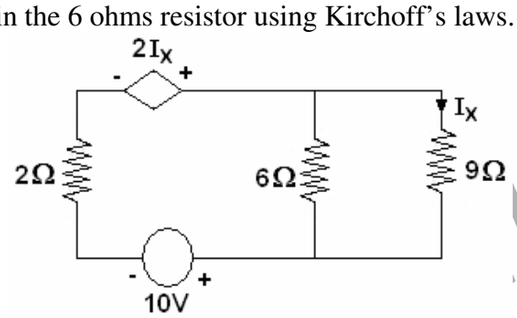

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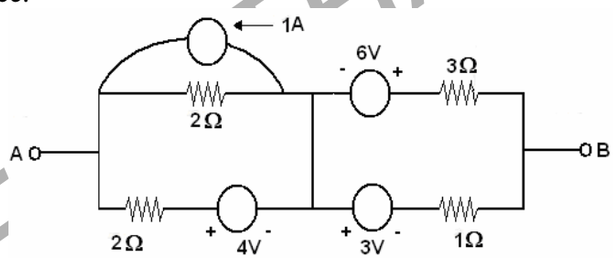

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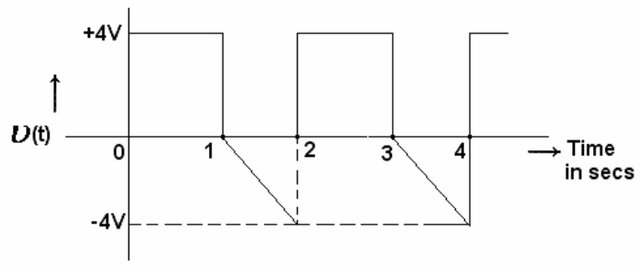

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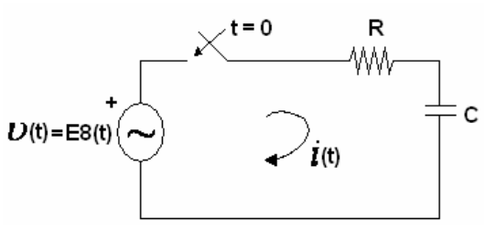

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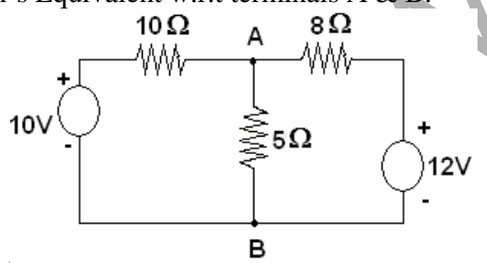

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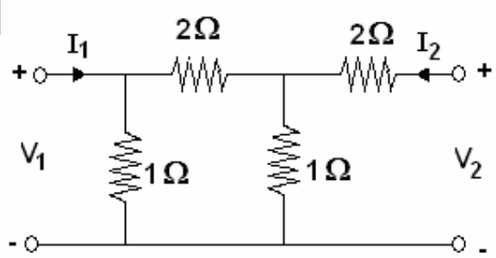

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