

Code No: R21042

R10

SET - 1

II B. Tech I Semester Supplementary Examinations, Dec - 2015

NETWORK ANALYSIS

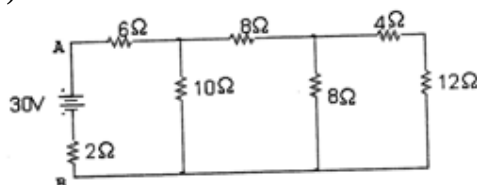
(Com. to ECE, EIE, ECC)

Time: 3 hours

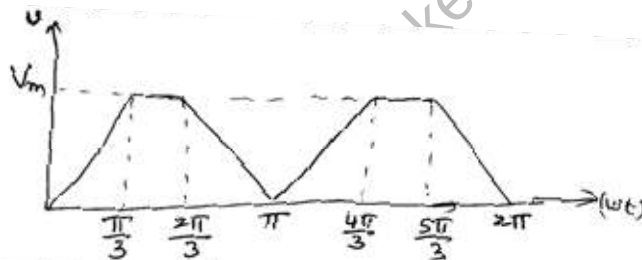
Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks

1. a) Explain the source transformation technique with a suitable example
- b) Six resistors are connected as shown in figure below. If a battery having an emf 30V and an internal resistance of 2Ω is connected to terminals A and B. Find
 - i) Current supplied from battery
 - ii) Potential difference across 8 ohms resistance.



2. For the wave form as shown in below figure, calculate the RMS value and Average value: and the form factor.



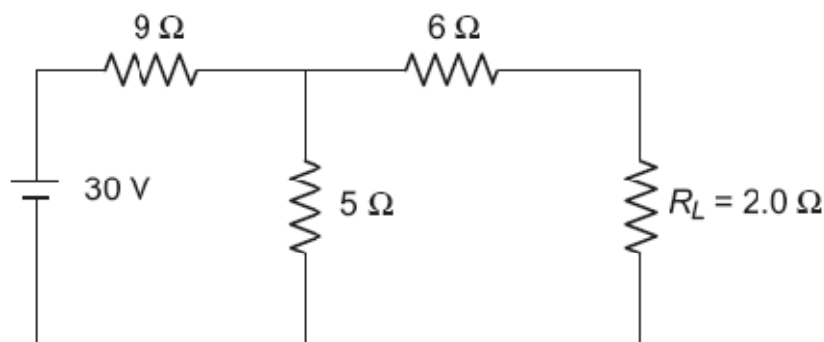
3. A resistance of 20 ohms, an inductive reactance of 5 ohms, and a capacitive reactance of 10 ohms are connected in parallel with each other across a supply of $200 \angle 45^\circ$ Volts. Calculate
 - i) Impedance and admittance of each branch
 - ii) Current in each branch
 - iii) Total current drawn from the supply
 - iv) Draw the phasor diagram.
4. a) Define and obtain the expressions for the following to the RLC series circuit
 - (i) Bandwidth , (ii) Sensitivity and (iii) Q factor
- b) Self-inductance of two coupled coils are $L_1 = 10\text{mH}$ and $L_2 = 20\text{mH}$. The coefficient of coupling being 0.75 in the air, find voltage in the second coil, and the flux of first coil, provided the second coil has 500 turns and the circuit current is $I_1 = 2 \sin 314t$ A. 1 of 2

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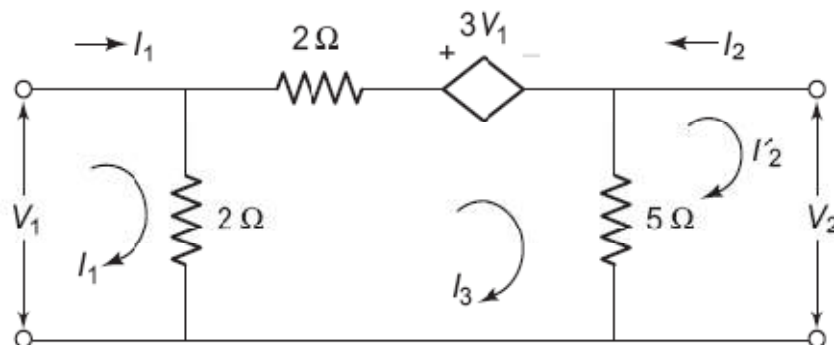
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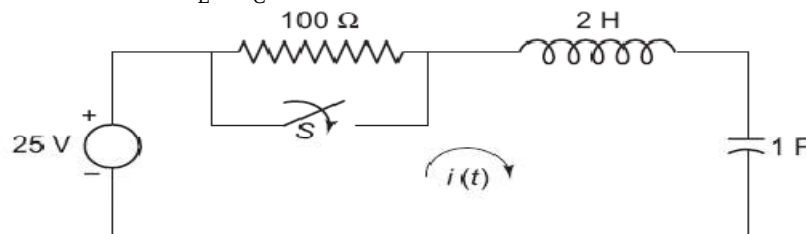
5. a) State and explain the Maximum Power Transfer theorem
b) Calculate the change in current of the network given below using compensation theorem when the load resistor changes to 8 ohms



6. a) Explain the method for determining the transmission parameters
b) Find the Z-parameters of the circuit shown in below Figure



7. a) Explain the importance of time constant of R-L circuit? What are the different ways of defining it.
b) Find the transition current $i(t)$ for the network shown in below Figure. At $t = 0$, the switch is closed. Find the voltage across inductor and capacitor and also find time taken at which $V_L = V_C$?



8. a) Explain the constant K -band pass filter
b) Design a band-pass filter having a design impedance of 500 ohm and cut-off frequencies of 3 kHz and 10 kHz.