SATHYABAMA UNIVERSITY

(Established under section 3 of UGC Act, 1956)

Course & Branch: B.E - ECE/EIE/ETCE
Title of the paper: Circuit Theory

Semester: III   Max. Marks: 80
Sub.Code: 6C0026(2006/2007)   Time: 3 Hours
Date: 17-11-2008   Session: FN

<div align="center">

PART – A   (10 x 2 = 20)

Answer All the Questions
</div>

1. State Norton's theorem.
2. State maximum power transfer theorem.
3. Draw the transient response of a first order system when subjected to a unit step input.
4. Define Poles and Zeros.
5. What is Critical coupling?
6. Define Q factor and Bandwidth of resonant circuit.
7. What is the difference between a Tree and a Co-Tree?
8. What is meant by Duality?
9. What is Pspice concept?
10. What is meant by transient analysis using Pspice?

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PART – B   (5 x 12 = 60)
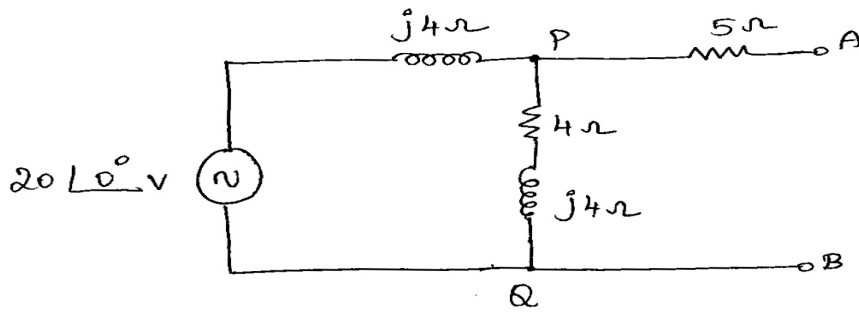
Answer All the Questions
</div>

11. Compute the current I for the given circuit using Superposition theorem.
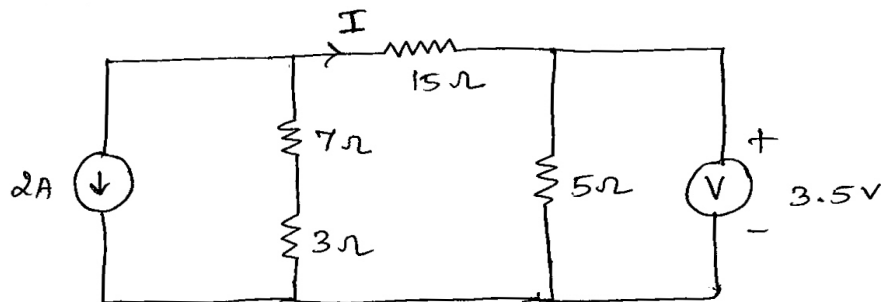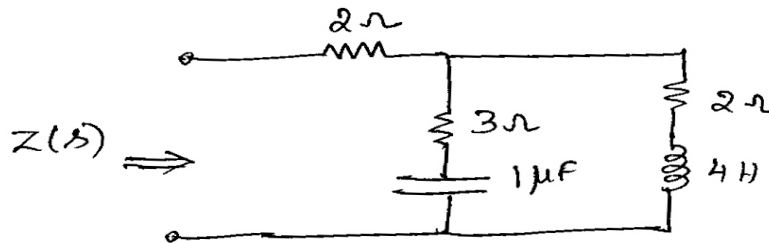

<div align="center">(or)</div>

12. Obtain the Thevenin and Norton equivalent circuit.

13. Explain the solution methodology of calculating the transient response of RLC series circuit with step input.

(or)

14. Find the driving point impedance of the network shown in figure and also obtain the pole-zero plot for the function.

15. Derive an expression for coefficient of coupling between two magnetically coupled coils, in terms of self inductance and mutual inductance.

(or)

16. In an RLC series circuit, if $\omega1$ & $\omega2$ are two frequencies at which the magnitude of the current is the same and if ωr is the resonance frequency, prove that $\omega r2 = \omega1 \, \omega2$.

17. Explain the procedure for obtaining dual network for the given circuit.

(or)

18. Discuss in detail about the primitive Impedance and admittance matrices for networks.

19. Explain AC and DC Network analysis using Pspice concept?

(or)

20. Write short notes on
    (a) Resonant circuit analysis using Pspice.
    (b) Fourier Analysis using Pspice.