SATHYABAMA UNIVERSITY
(Established under section 3 of UGC Act, 1956)

Course & Branch: B.E.– ECE/E&C/ETCE
Title of the paper: Circuit Theory
Semester: III   Max. Marks: 80
Sub.Code: 513302/517303/525302   Time: 3 Hours
Date: 16-04-2007   Session: AN

PART – A   (10 x 2 = 20)
Answer ALL the Questions

1.   Define Voltage, Current, Power, Energy.
2.   Define ideal and practical voltage source.
3.   What is meant by resonant frequency?
4.   Define Quality factor.
5.   State Thevenin's Theorem.
6.   What is maximum power transfer theorem?
7.   What are the advantages of Laplace Transformation Technique?
8.   What is meant by natural response?
9.   What is meant by balanced and unbalanced load?
10. Define Self inductance.
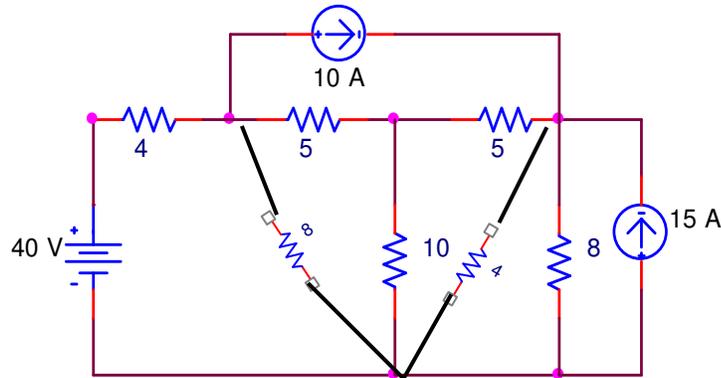
PART – B   (5 x 12 = 60)
Answer All the Questions

11. Find V2 which results in zero current through 4 ohm resistor.
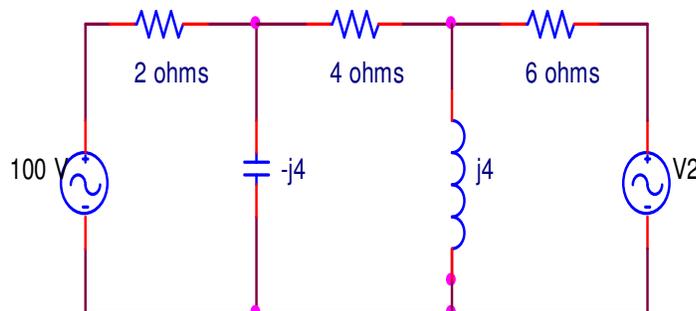

(or)

12. Compute the power dissipated in 10 ohm resistor using Nodal method.

13. Explain in detail series and parallel Resonance circuits.

(or)

14. A coil of inductance 9 H and resistance 50 ohms in series with a condenser is supplied at a constant voltage from variable frequency source. If the maximum current is 1 A at 75 Hz, find the frequency when the current is 0.5 A.

15. Find the current through 2 ohm resistor for the given network using superposition theorem.


(or)
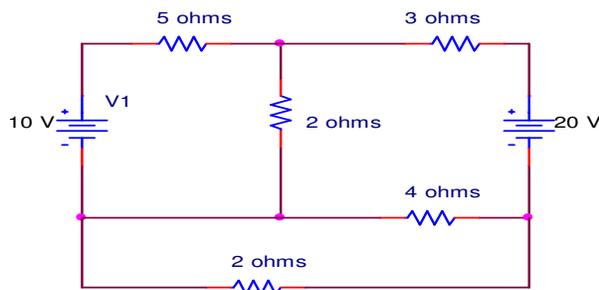
16. Find the Nortan's equivalent circuit across AB for the network given below.
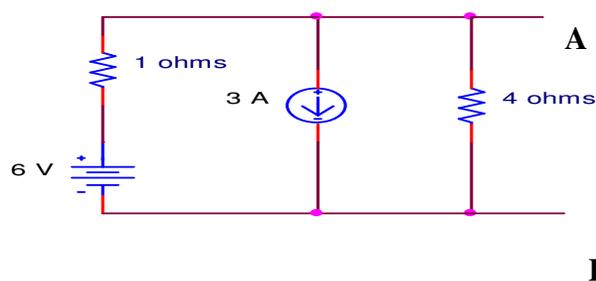
17. Determine the value of undamped natural frequency of oscillations of a RLC circuit with R = 10 ohms, L = 4 H, C = 6 F. Also find the damping ratio.

(or)

18. A series RLC circuit with R = 5 ohms, L = 0.1 H, C = 500 microFarad has a dc voltage of 100 V applied at t = 0 through a switch. Find the resulting current transient.
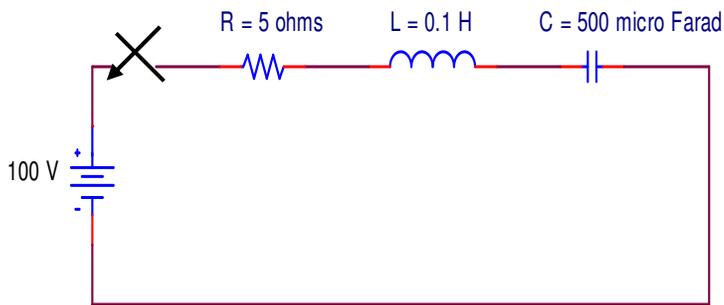
19. Explain power measurements in 3 phase balanced and unbalanced load conditions.

(or)

20. Obtain the expression for coefficient of coupling.