2006-SKR ENGINEERING COLLEGE
B.E/B.TECH MODEL EXAM PAPER
CIRCUIT ANALYSIS
ELECTRICAL AND ELECTRONICS ENGINEERING

JULAY-2006

TIME-3HOUR
MARK-100

PART: A (2×10 = 20)

1.What is an electrical power? State its expression and unit.

2.How to convert 3 star connected resistances to equivalent delta?

3.State Norton's theorem.

4.The internal impedance of a source is (3+j4) O. It is desired that maximum power should be transferred to the load, what should be the load value?

5.If resistance of 20 O and a capacitor of 100 µF are connected in series, find the load impedance in polar form assuming 50 Hz frequency supply.

6.What is transient period? What is transient response of a network?

7.What is the condition of resonance for series and parallel circuits?

8.Give the expression of Q-factor of an inductor and a capacitor.

9.Write the expression for no of possible links in a graph?

10.Write the steps to obtain dual of a network?

PART: B (5×16 = 80)

11.(i) For the network shown, draw the graph, obtain the equation showing the relation ship of loop currents and branch currents.

(ii) Find the value of the effective inductance of the combination. Derive the necessary condition.

12. a) Find the current through the branch a-b using mesh analysis.
                  (OR)
12. b) Calculate the effective resistance between points A and B in the given circuit.

13. a) A series circuit consisting of 25 O resistor, 64 mH inductor and a 80 µF capacitor is connected to a 110 V, 50 Hz Single phase supply. Calculate the current, Voltage across the individual elements and the overall power factor of the circuit. Also draw the neat Phasor diagram showing I, VR, VL, VC and V
                  (OR)
13. b) Determine V2 for the network. Such that current through the 2+j3 O impedance is zero.

14. a) Verify super position theorem for the current through the (3+j4) O branch as shown in fig.
                  (OR)
14. b) Determine the maximum power delivered to the load impedance ZL in the circuit shown in Fig.

15.a) Obtain the step response of a RC circuit.
                  (OR)
15. b) i) A series circuit has R=50 O, L=0.01H, C=0.04 µF. Find the resonance frequency, circuit mpedance and current under resonance condition, Voltage across inductance under resonance for a system voltage of 100 V.

15. b) ii) Define source free and driven circuits.