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

Course & Branch: B.E /B.Tech – CSE/IT/ECE/EEE/E&C/EIE/ETCE
Title of the paper: Circuit Theory
Semester: II   Max. Marks: 80
Sub.Code: 6C0026   Time: 3 Hours
Date: 26-05-2008   Session: FN

<div align="center">

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

</div>

1.   State and explain superposition theorem.

2.   What are the limitations of Thevinin's theorem.

3.   What is the significance of initial conditions? Write a note on initial conditions in basic circuit elements.

4.   Define the term rise time and time delay.

5.   What do you mean by resonance and anti-resonance?

6.   What is the Q-factor? Find the value of Q-factor for an inductor and capacitor.

7.   Differentiate between planar and non-planar graph.

8.   What is graph of a network? Give different types of graph.

9.   What are the advantages of Pspice software.

10. List the steps involved to run a program written in Pspice.
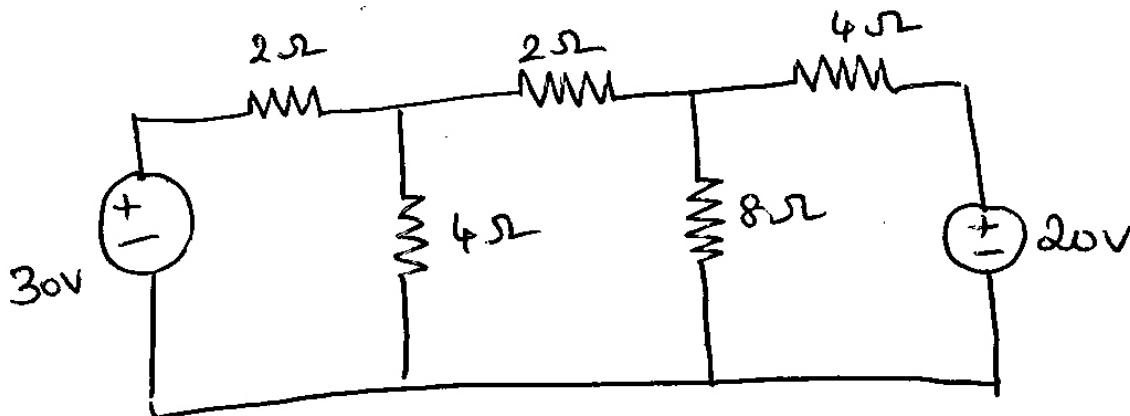
11. Determine the value of R_L so as to have maximum power transfer to R_L in the circuit shown below.
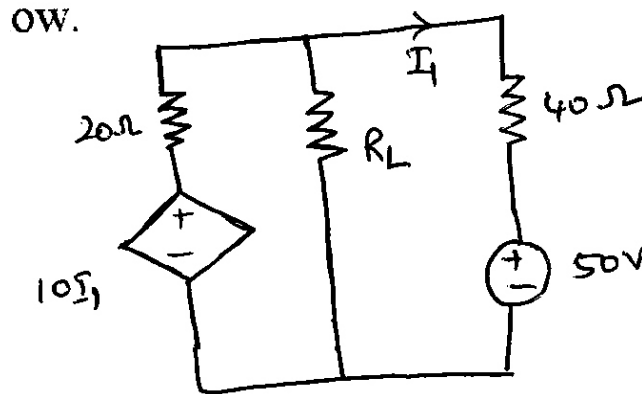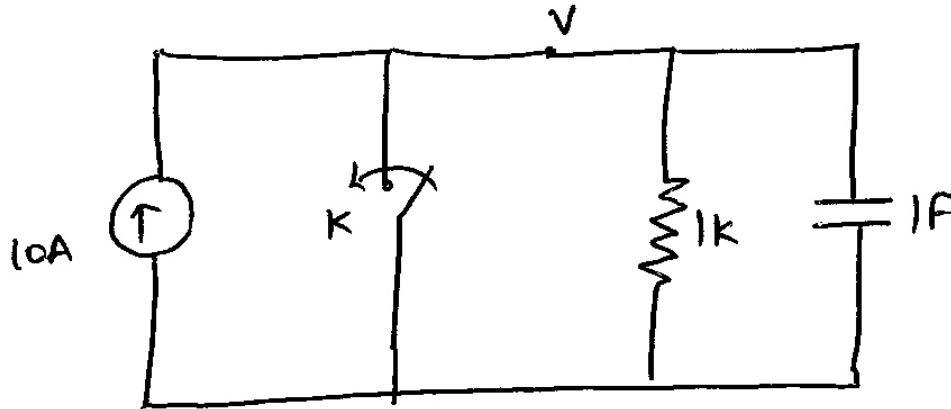

(or)

12. Verify Tellegen's theorem for the network shown.

3.   Obtain the expression of current it is connected to a dc voltage through switch K instantaneously and having a resistor and capacitor in its series. Assume initial voltage across capacitor is zero.

(or)

14. In the network shown in figure switch K is opened at t = 0. Solve for V, dv/dt and d^2v/dt at $t=0^+$.

15. A parallel resonant circuit has a coil of 150µH with Q factor of 100 and is resonated at 1 Mhz
    (i) Specify the required value of capacitance
    (ii) What is resistance of the coil
    (iii) What is the resistance of the circuit at parallel resonance.
   (iv) What is absolute bandwidth of resonant circuit.

(or)

16. Explain briefly the following terms
    (i) Self inductance
    (ii) Mutual inductance
    (iii) Coefficient of coupling

17. In the following network the numerical values of resistance also indicate the branch numbers. Write the oriented graph of the network. Select a tree with 1,2,3 as tree branches, write tie-set and cut-set schedule.
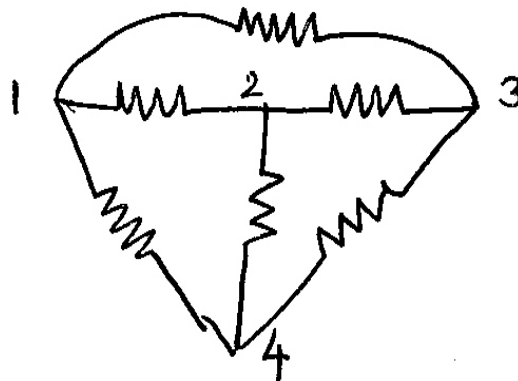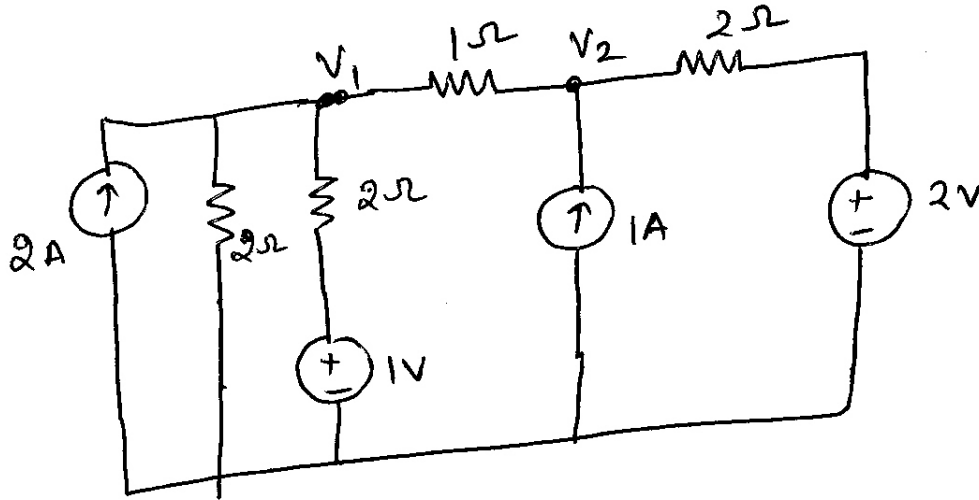
(or)

18. Find dual of the network shown below
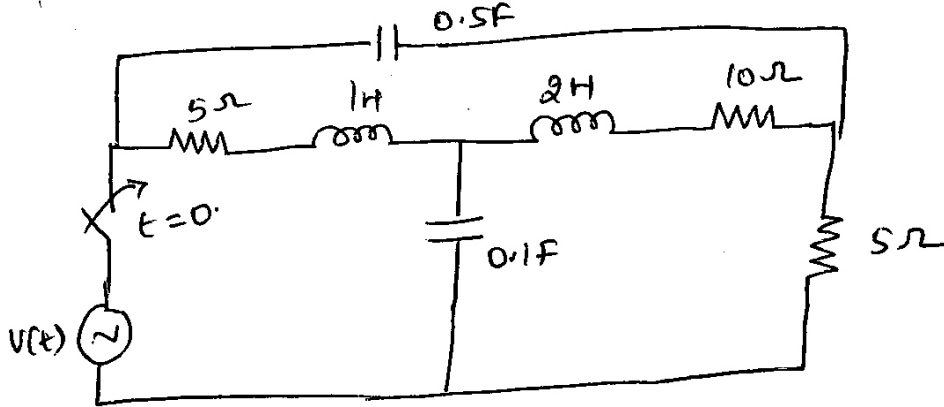
19. Write a Pspice program to find V_1 and V_2 shown in the circuit.

(or)

20. Write a Pspice program for the network shown in figure reaches a steady state with switch K closed. At t=0, the switch is opened find i(t) for t>0.