Register Number | | | | | | | |

SATHYABAMA UNIVERSITY

(Established under section 3 of UGC Act, 1956)

Course & Branch: B.E-ECE/EIE/ETCE
Title of the Paper: Circuit Theory — Max. Marks: 80
Sub. Code: 6C0026 — Time: 3 Hours
Date: 24/11/2010 — Session: FN

PART - A (10 X 2 = 20)

Answer ALL the Questions

1. Define maximum power transfer theorem.

2. Mention the applications of Thevenin's theorem.

3. Write initial and final value theorems.

4. Find the poles and zeros of $(s+1)/(s^2+4s+8)$.

5. Explain the effect of resistance on the frequency response curve for series RLC circuit.

6. What is the relationship between coefficient of coupling, mutual inductance and self inductances?

7. Distinguish between planar and non planar graph.

8. Draw the dual of series RLC circuit connected to voltage source.

9. Mention the PSPICE output commands.

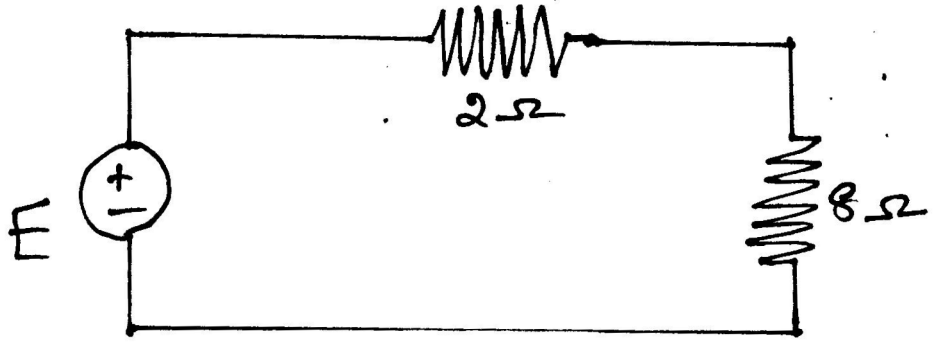
10. What are the submenus of PSPICE A/D?

PART – B (5 x 12 = 60)

Answer All the Questions

11. Consider the circuit shown in Fig-1. Solve it for E = 20V and E = 12V and verify Telegence theorem.

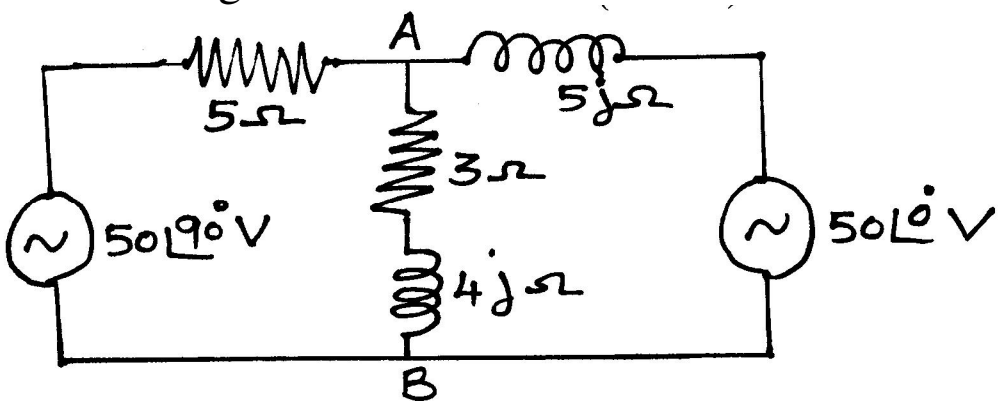
Fig-1



(or)

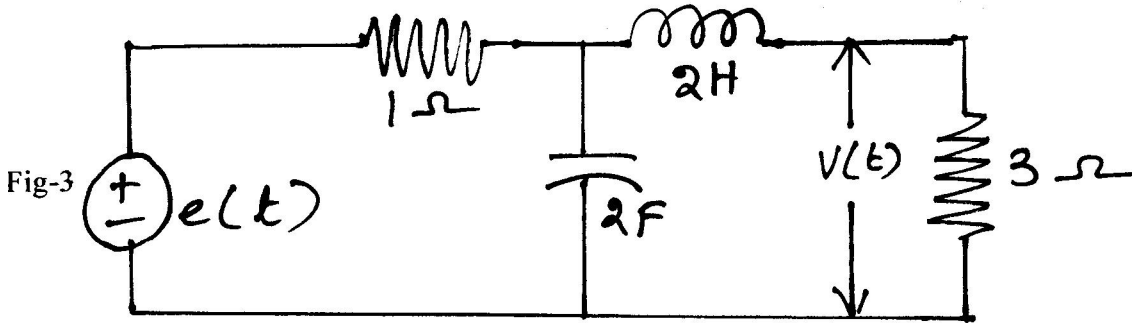
12. Apply super position theorem and find the current in (3+4j) ohm impedance in Fig.2.

Fig-2



13. For the network shown in Fig-3 find the response V(t) when the input is unit step voltage.

Fig-3



(or)

14. Obtain the pole zero plot of the network function.

$$N(S)=\frac{\left(S^3+6S^2+11.25S+6.25\right)}{\left(S^5+8S^4+37S^3+50S^2\right)}$$

15. A variable frequency $200\angle 0°$ A supply is connected to a RLC parallel circuit with R = 0.1 ohm; L = 1μH and C = 10mF. For the resonance condition calculate the voltage and currents through R,L,C. Draw the phasor diagram.

(or)

16. Determine the voltage across the capacitor in the network shown in Fig-4.

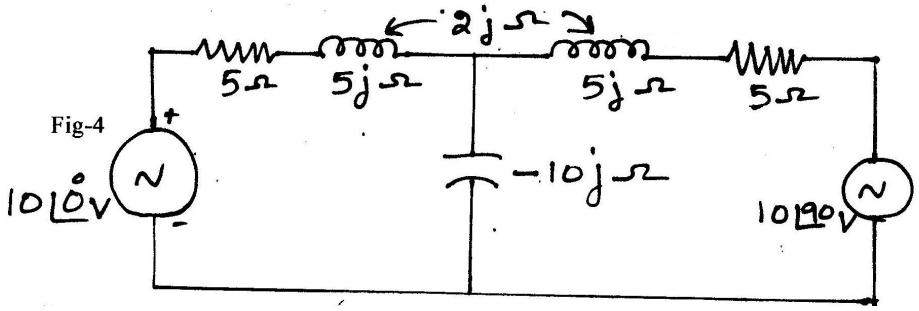


Fig-4

17. (a) Obtain dual network for Fig-5. (4)

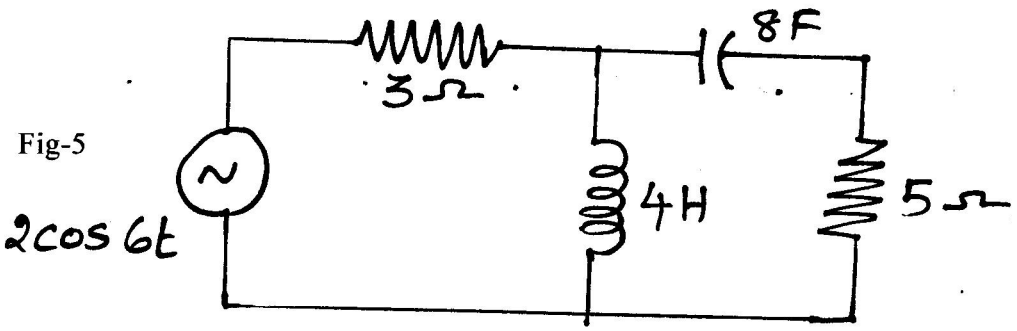


Fig-5

(b) Draw the oriented graph for the circuit given in Fig-6 and write tie set matrix. (8)

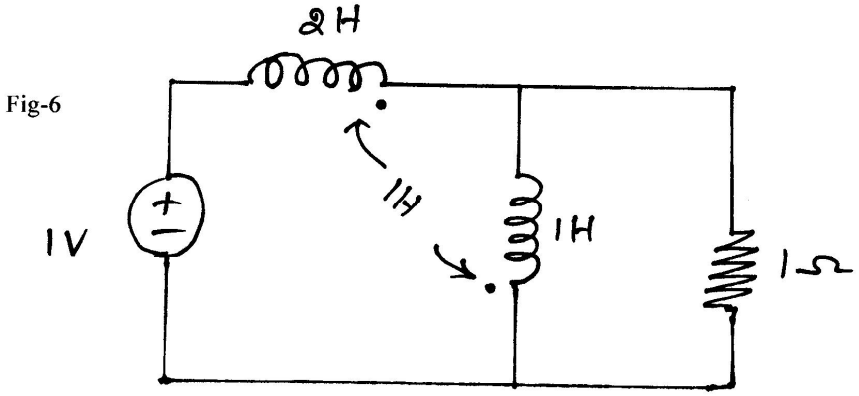


Fig-6

(or)

18. Explain cutest matrix using your own graph having 7 branches.

19. Write step by step procedure to plot transient response of a RC circuit with switch normally open and set the closing time.

(or)

20. Explain how to use PSPICE simulator to obtain mesh currents in the circuit of Fig-7.

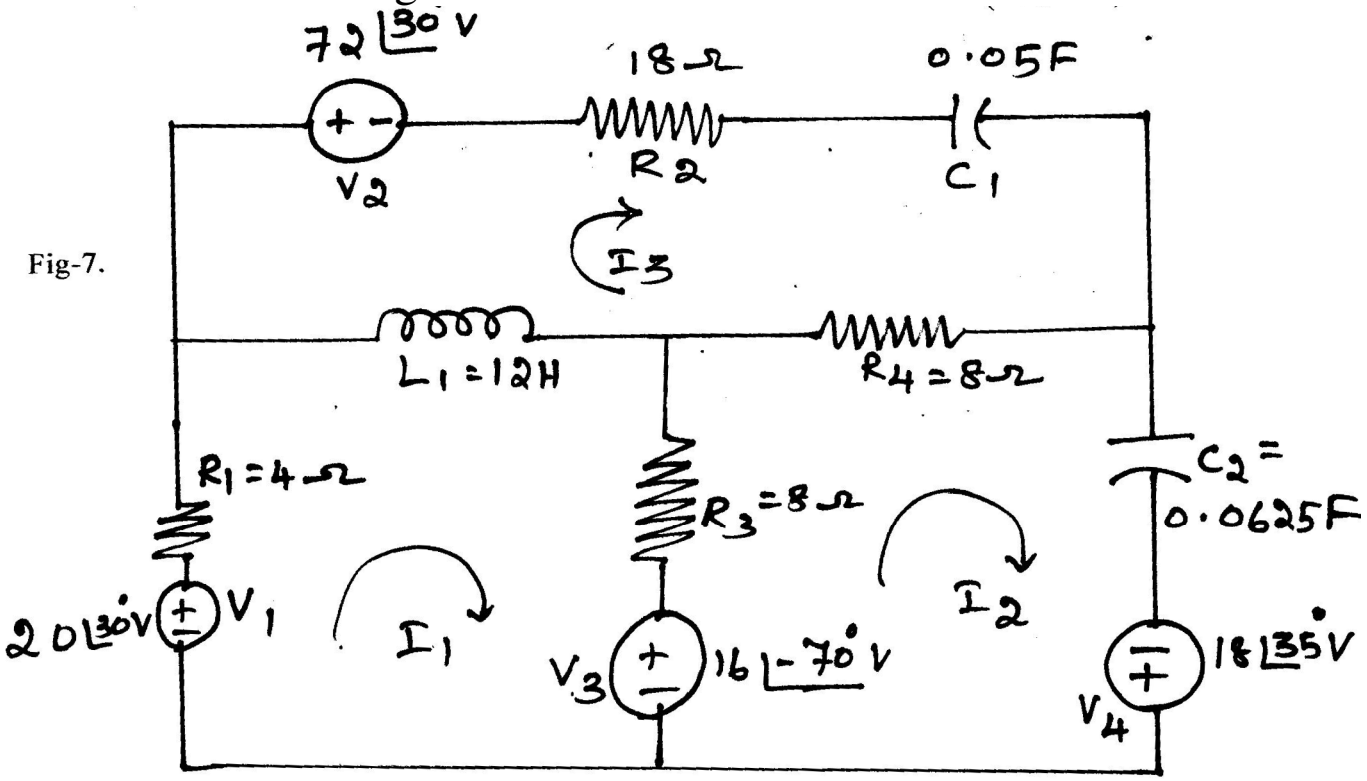


Fig-7.