2002 SCHEME EE34

Third Semester B.E. Degree Examination, Dec.08 / Jan.09

Network Analysis

Time: 3 hrs. Max. Marks:100

Note : ***Answer any FIVE full questions.***

1 a. Define the following with examples: i) Graph ii) Oriented graph iii) Tree iv) Cut set v) Tie set **(10 Marks)**

b. Write the cut set and tie set schedule for network shown in figure Q1 (b). **(10 Marks)**

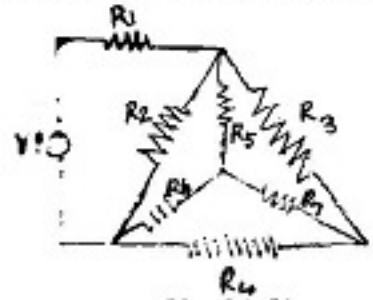

Fig. Q1 (b)

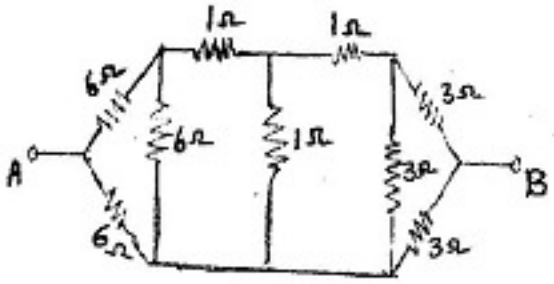

Fig. Q2 (a)

2 a. Find the resistance between point A and B of figure Q2 (a) using star-delta transformation. **(10 Marks)**

b. Find the value of the resistance R_L which receives maximum power of the circuit of Figure Q2 (b) and find this power. **(10 Marks)**

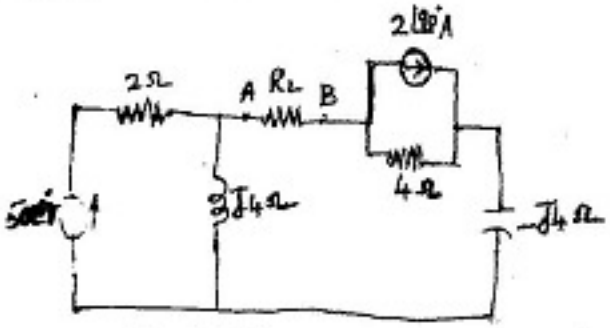

Fig. Q2 (b)

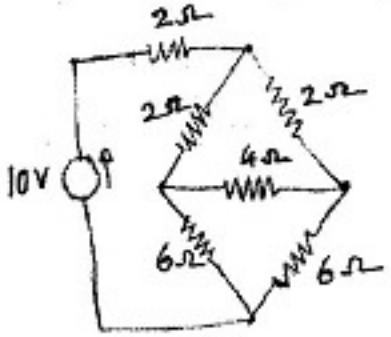

Fig. Q3 (b)

3 a. State and explain reciprocity theorem and Millmans theorem. **(10 Marks)**

b. Find the current in 4Ω using Thevenins theorem for the circuit of figure Q3 (b). **(10 Marks)**

4 a. Find the current in 24Ω resistance using mesh current analysis in figure Q4 (a). **(10 Marks)**

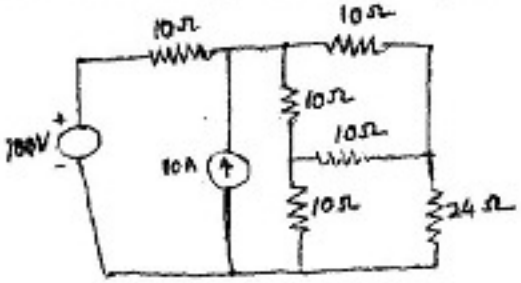

Fig. Q4 (a)

b. Find current in 24Ω of figure Q4 (a) using node voltage analysis. **(10 Marks)**

5 a. Obtain the expressions for the following in a series RLC circuit: i) Resonant frequency ii) Q factor iii) Half power frequencies iv) Band width. **(10 Marks)**

b. A series circuit has R = 10Ω, L = 5 mH, C = 20 μF. Find i) fr ii) Q factor iii) half power frequency and iv) current at resonance if applied voltage is 100 V. **(10 Marks)**

6 a. Explain why we study initial conditions. **(04 Marks)**

b. In the Network shown in figure Q6 (b), K is closed at t = 0, find V_1, $\frac{dV_1}{dt}$, $\frac{d^2V_1}{dt^2}$ at t=0+. **(10 Marks)**

c. If $I(s)=\frac{10}{s(s+1)}$, find i(0) and i(∞) using initial and final value theorems. **(06 Marks)**

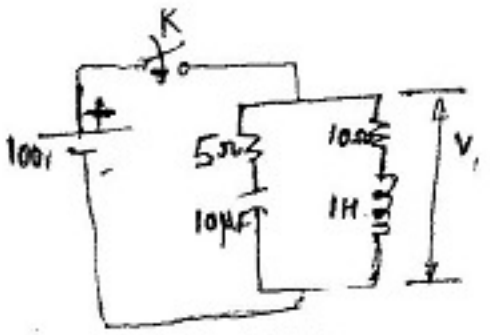

Fig. Q6 (b)

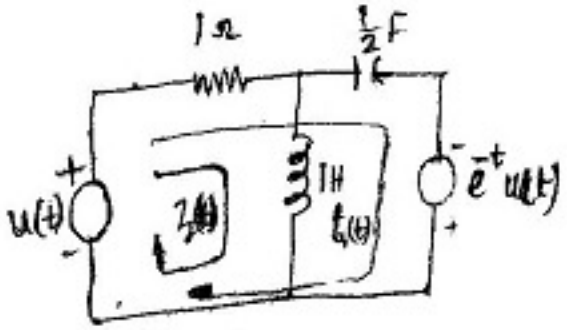

Fig. Q7 (a)

7 a. In the figure Q7 (a) all initial conditions are zero. Find $i_1(t)$ and $i_2(t)$ using Laplace transformation. **(10 Marks)**

b. State and prove convolution theorem. **(05 Marks)**

c. Find L.T of waveform shown in figure. Q7 (c). **(05 Marks)**

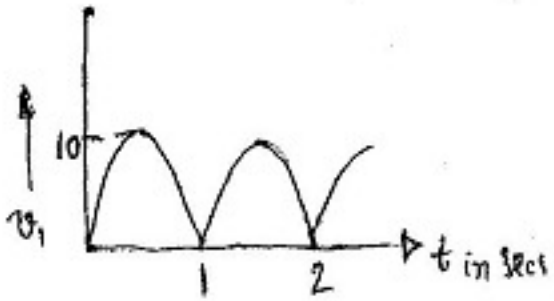

Fig. Q7 (c)

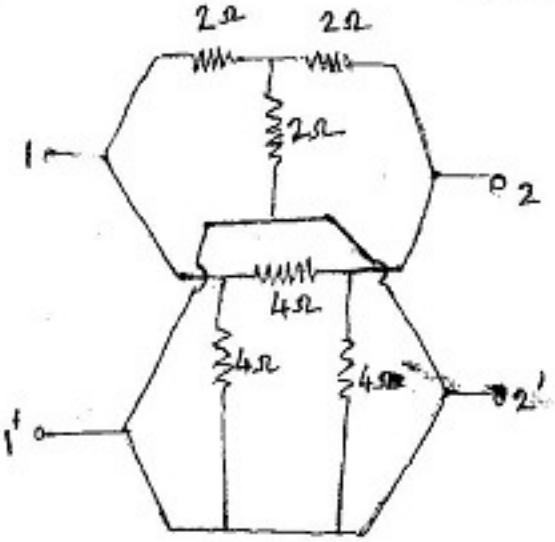

Fig. Q8 (b)

8 a. Obtain z parameters in terms of transmission parameters. **(08 Marks)**

b. Find y and h parameters for the network shown in figure Q8 (b). **(12 Marks)**