b) Compute the Z-parameters of the circuit in figure 6(b).

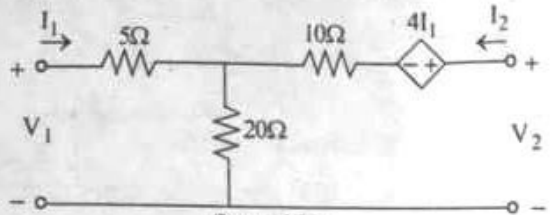

figure 6(b)

7. a) In the network in figure 7(a) the switch is moved from position 1 to 2 at t=0, steady state having reached before switching. Calculate i, $\frac{di}{dt}$ and $\frac{d^2i}{dt^2}$ at $t = 0^+$.

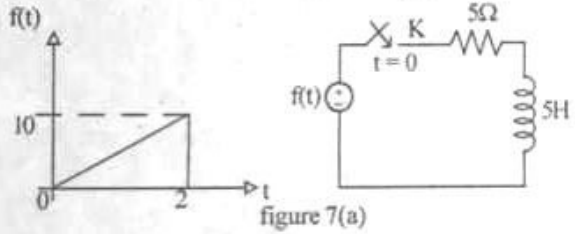

figure 7(a)

b) Define the mesh currents for the circuit of figure 7(b).

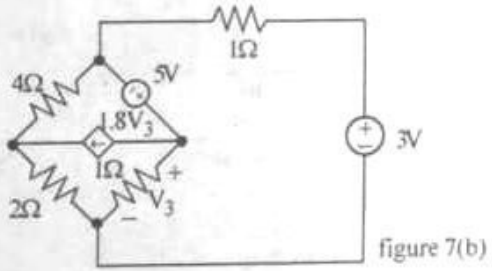

figure 7(b)

8. Write short notes on any three.
   a) Initial value and Final value theorem
   b) Relationship between star and delta and vice versa
   c) Tie-set and Tie-set schedule
   d) h-parameters of two port network

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Total No. of Questions : 8] *[Total No. of Printed Pages : 4*

Roll No .....

EC-222

B.E., III Semester

Examination, December 2016

Choice Based Credit System (CBCS)

Network Analysis

Time : Three Hours

Maximum Marks : 60

Note: i) Attempt any five questions.
ii) All questions carry equal marks.

1. a) Define coefficient of coupling K and show that $M = K\sqrt{L_1 L_2}$ for a mutually coupled circuit.

   b) Determine v_1 and v_2 in given circuit of figure 1(b).

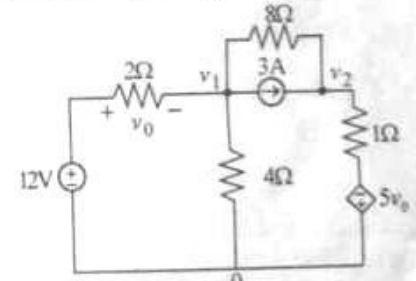

figure 1(b)

2. a) Explain the principle of duality in electrical networks and obtain the dual of the network graph shown in figure 2(a).

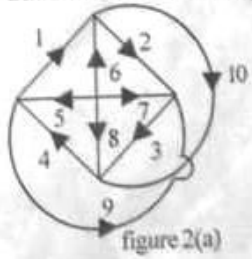

figure 2(a)

b) Find the branch currents using Tie-set schedule for the network shown in figure 2(b).

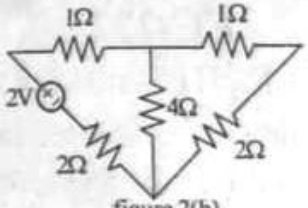

figure 2(b)

3. a) State reciprocity theorem. Find the current through 5Ω resistors and verify reciprocity theorem in the network shown in figure 3(a).

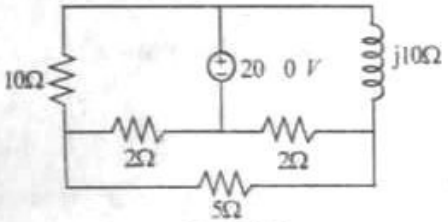

figure 3(a)

b) Calculate value of $v_0(t)$ in given circuit of figure 3(b) using superposition theorem.

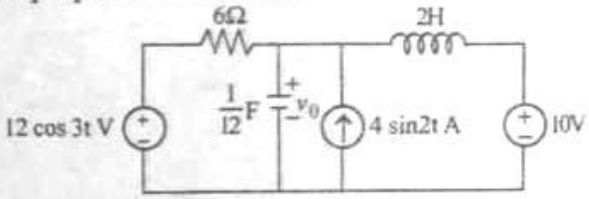

figure 3(b)

4. a) The switch in figure 4(a) has been in position a for a long time. At t=0, it moves to position b. Calculate i(t) for all t>0

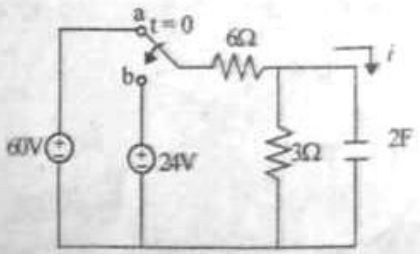

figure 4(a)

Contd...

b) For the circuit, shown in figure 4(b) if $v = 10e^{-4t}V$ and $i = 0.2e^{-4t}A$, $t>0$

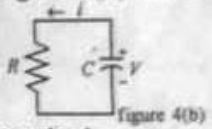

figure 4(b)

i) Find R and C

ii) Determine the time constant

iii) Calculate the initial energy in capacitor

5. a) Determine the Laplace transform of f(t) in figure 5(a).

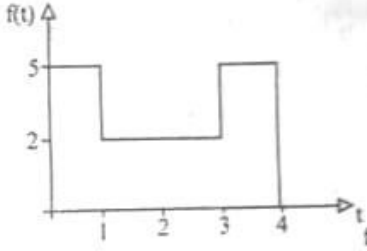

figure 5(a)

b) Find $I_1(S)$ and $I_2(S)$ in circuit of figure 5(b)

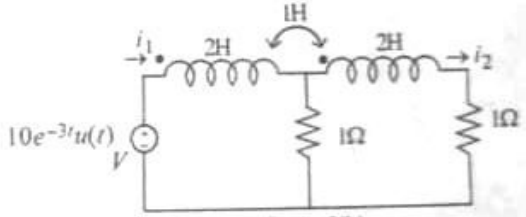

figure 5(b)

6. a) Obtain the ABCD parameters for the Network in figure 6(a).

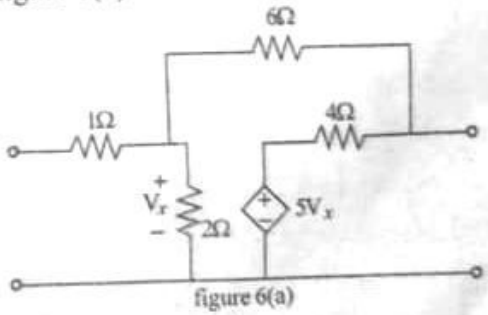

figure 6(a)

PTO