SE III CBSGS
Biomed
EMAS

16/12/13

Ash7-D:\Data-84

Con. 9947-13. Electrical Network Analysis & Synthesis

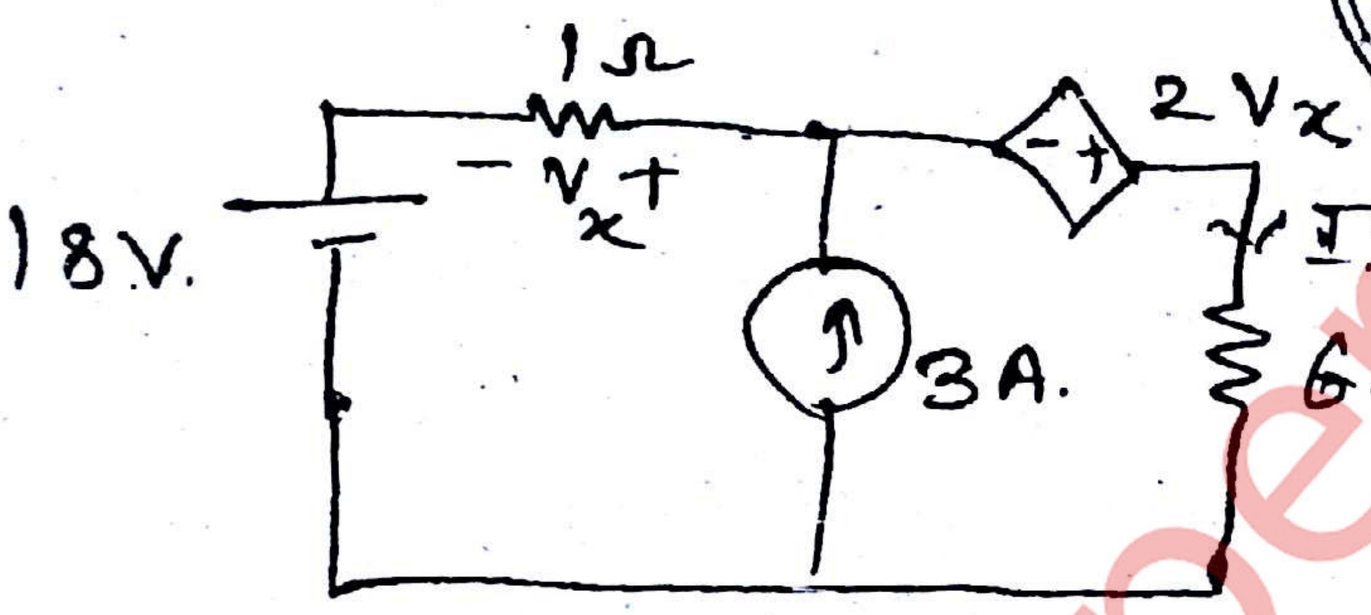
GX-12191

(18)

(3 Hours) **[Total Marks : 80**

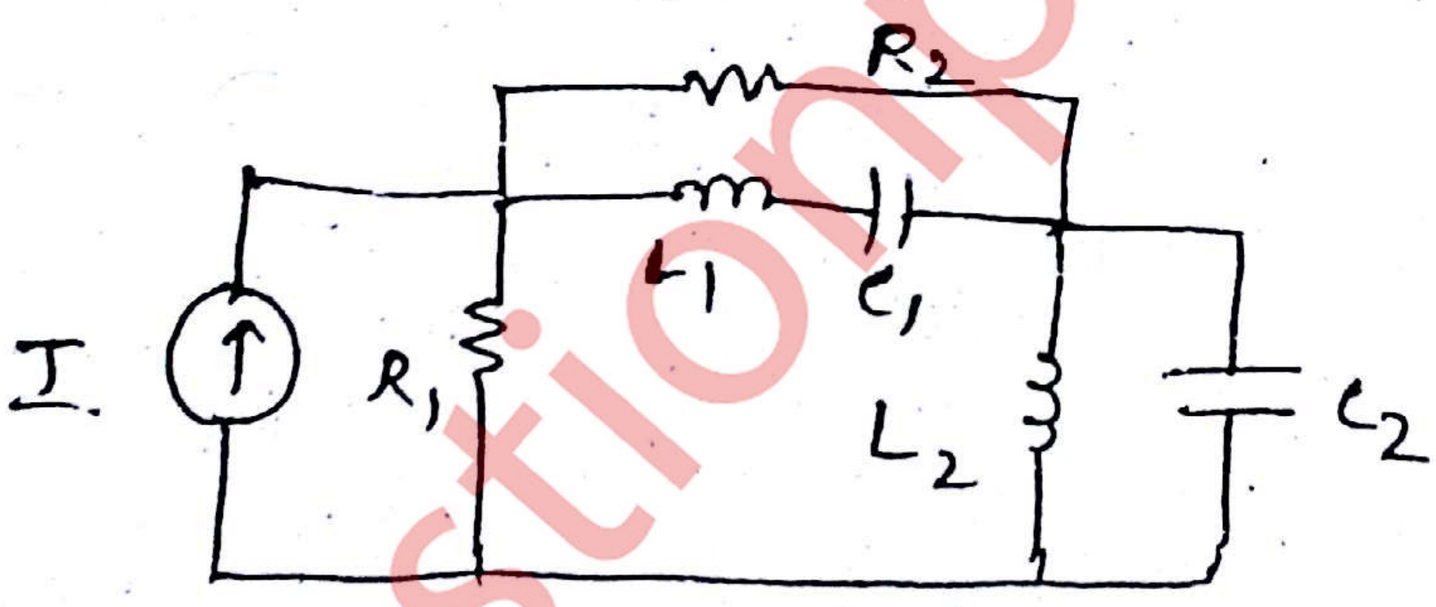
N.B. : (1) Attempt any **four** questions out of **six** questions.
(2) **Figures** to the **right** indicate **full** marks.
(3) Assume data wherever **necessary.**

1. (a) Find the current in 6Ω resistor :– 5



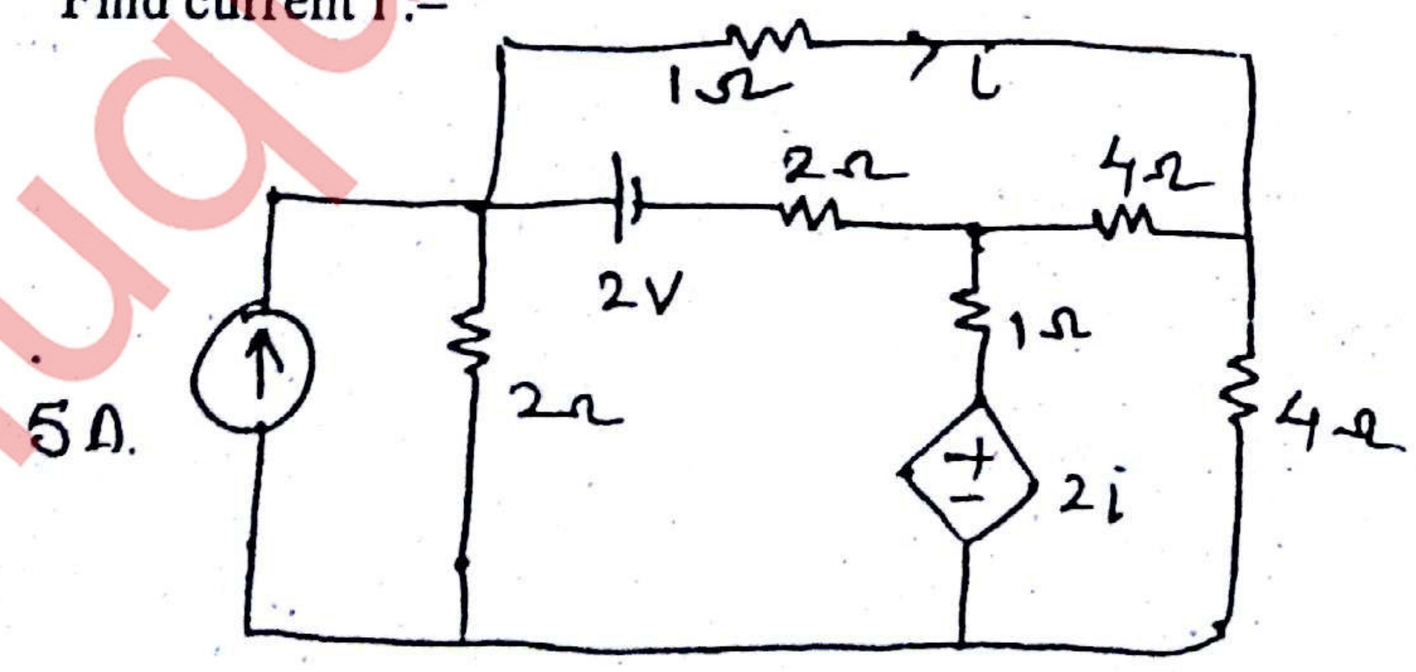
(b) Test whether $P(s) = S^4 + 7S^3 + 6S^2 + 21S + 8$ is Hurwitz or not. 5

(c) Draw the dual of the following network :– 5



(d) Write a short note on initial condition and its significance. 5

2. (a) Find current i :– 10



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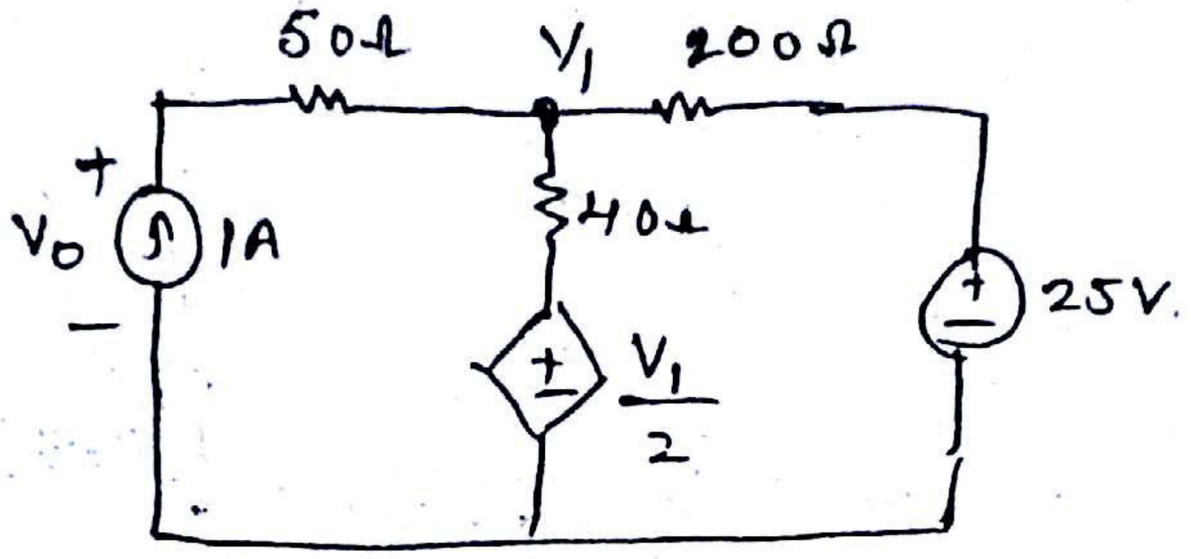
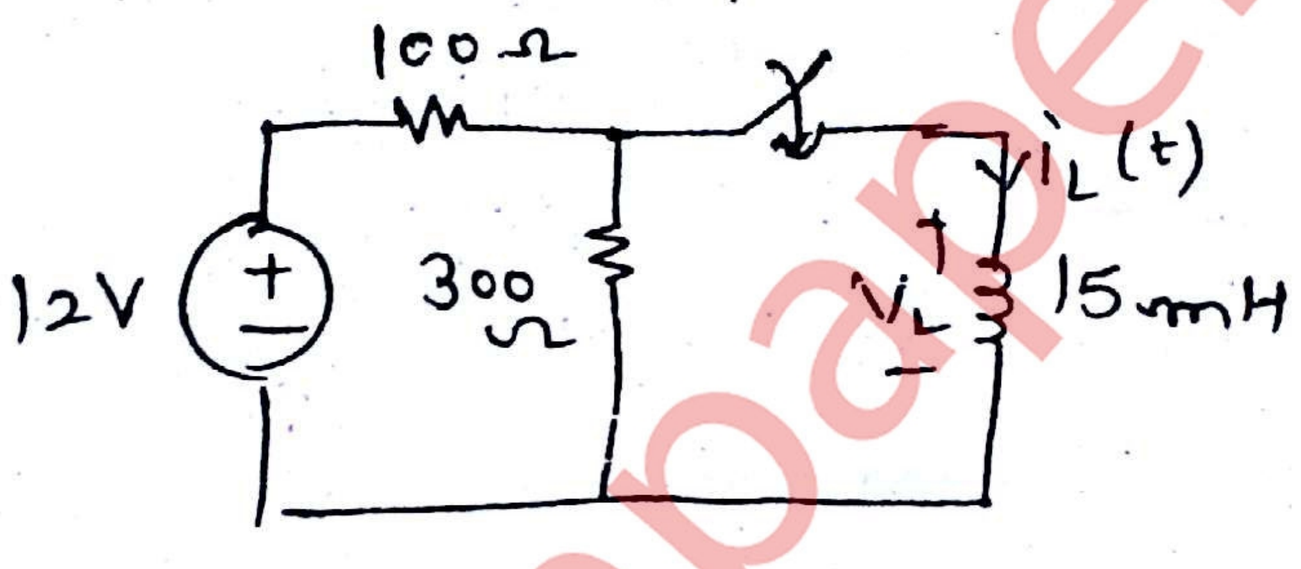
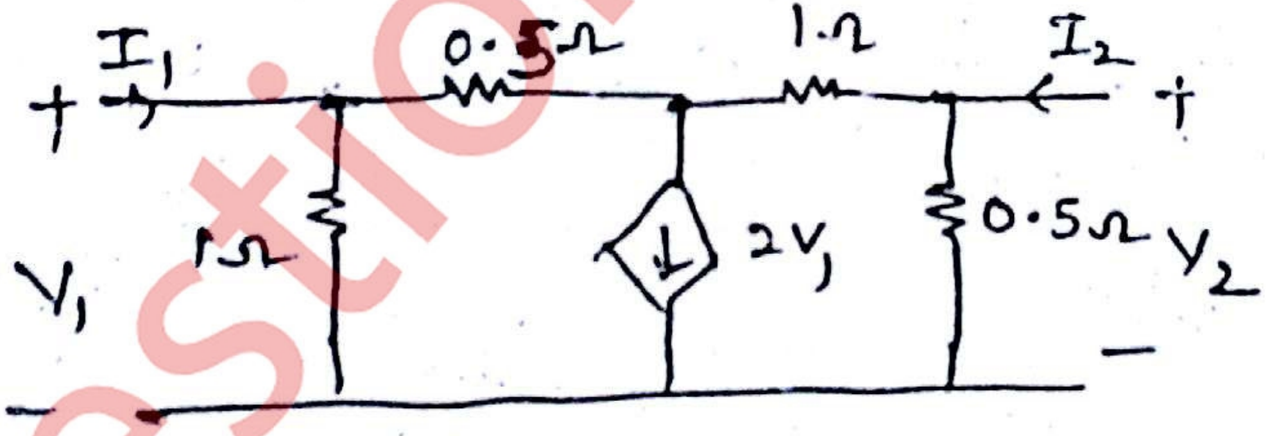
(b) Find V_o by superposition theorem :– 10



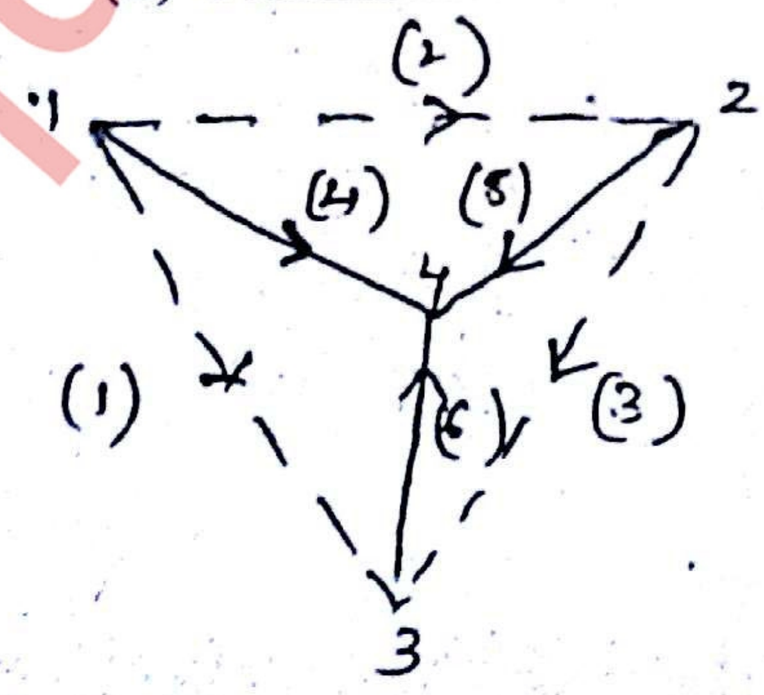
3. (a) The switch is closed at $t = 0$ find $i_L(t)$ for $t > 0$ Also $v_L(t)$ for $t > 0$:– 10



(b) Determine Y parameter and hence calculate Z parameter for the following network :– 10



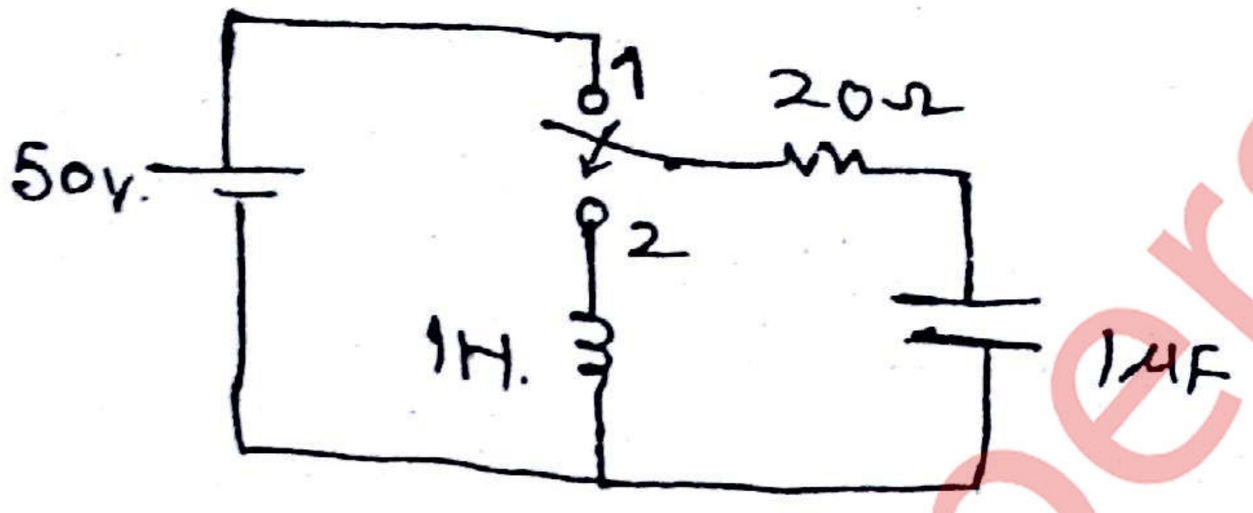
4. (a) For the tree shown below obtain :–
(i) Tieset matrix. 10
(ii) Fundamental cutset matrix.



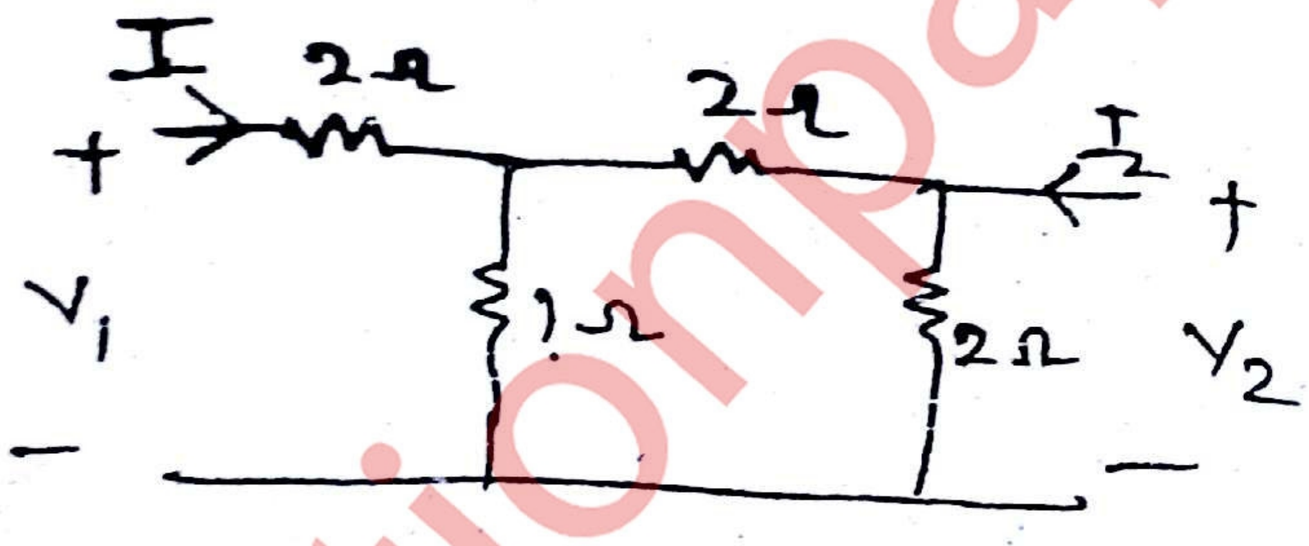
(b) Derive the condition of symmetry and reciprocity for h–parameters. **10**

5. (a) For a given network the switch is in position 1 initially and steady state is achieved At time $t=0$, the switch is changed to position 2. **10**

Find i, $\frac{di}{dt}$, $\frac{d^2i}{dt^2}$ for $t=0^+$:–



(b) Two identical section are connected in cascade, find transmission parameter for overall Cascaded network. **10**



6. (a) Synthesis the given function in cauer I and cauer II forms :– **10**

$$Z(S)=\frac{S^2+7S+10}{S^3+10S^2+24S}$$

(b) Synthesis the given function in Foster I and Foster II forms :– **10**

$$Z(S)=\frac{(S^2+1)(S^2+3)}{S(S^2+2)}$$
