S.E. CETRX) Sem III (R) 03/06/09

Electrical Network Analysis & Synthesis

Con. 2742-09. **VR-3309**

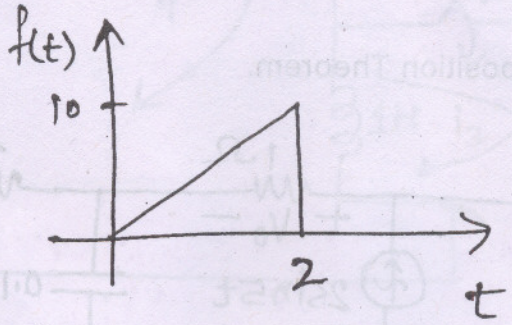
Li6

(REVISED COURSE) 3 p.m. to 6 p.m.

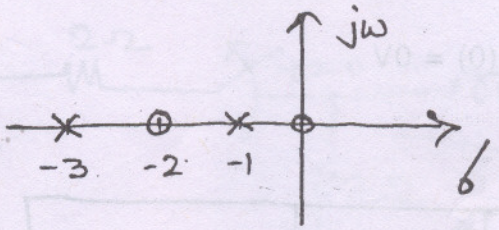
(3 Hours) **[Total Marks : 100**

N.B.: (1) Question No. **1** is **compulsory**.
(2) Attempt any **four** questions from the **remaining** questions.
(3) Assume **suitable data** wherever **required** but justify the **same**.

1. (a) State the properties of Hurwitz polynomial. 4
(b) Express transmision parameters in terms of admittance parameter. 4
(c) Find Laplace Transform of the following waveshape. 4



(d) Find Z(s) if $Z(\infty) = 1$ 4



(e) For the network given determine the number of possible Trees. 4

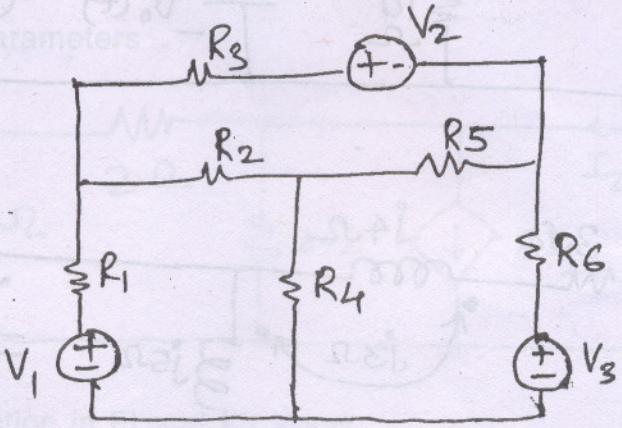


FIG. 1

2. (a) In the **Figure 1** above, 14

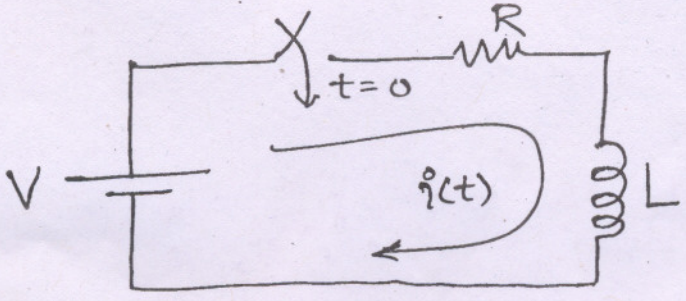
$R_1 = R_6 = R_3 = 2\ \Omega$

$R_2 = R_4 = R_5 = 4\ \Omega$

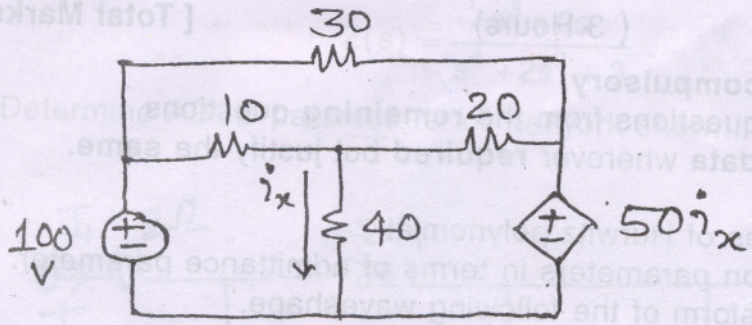
$V_1 = 4V,\ V_2 = 6V;\ V_3 = 10\ V$

Write TIESET and CUTSET. Also obtain matrix KVL equation and hence determine the values of link curents.

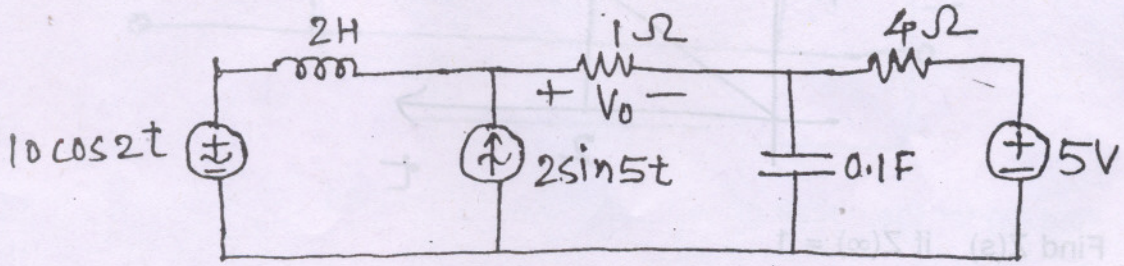
(b) Derive the expression for i(t). 6



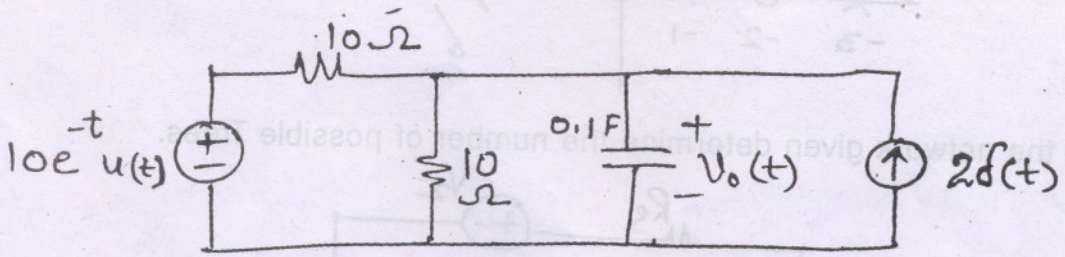
3. (a) Find power associated with CCVS. 8



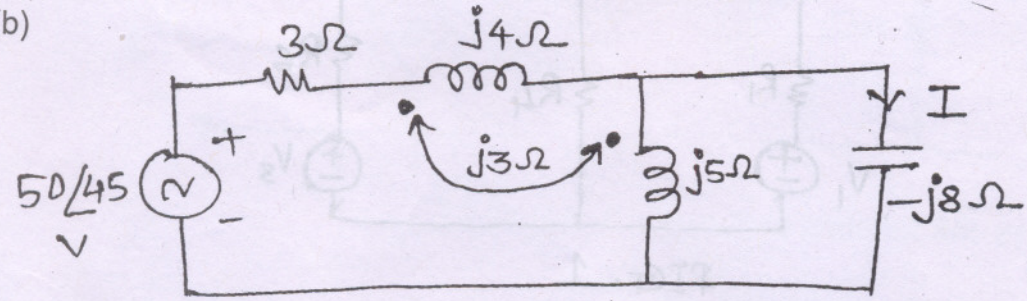
(b) Find V_o using Superposition Theorem. 12



4. (a) Find $V_0(t)$; Assume $V_0(0) = 0V$ 10

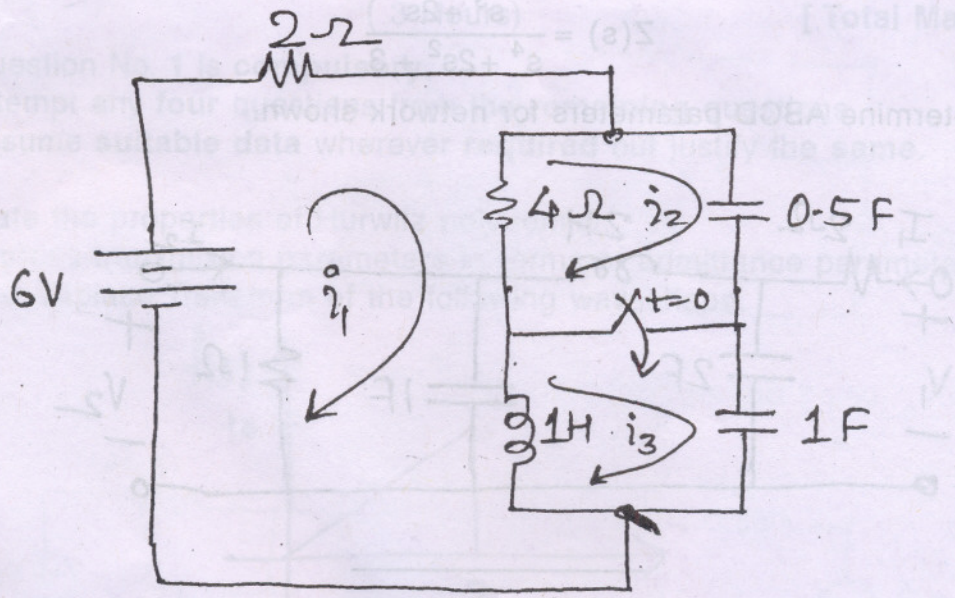


(b) 10

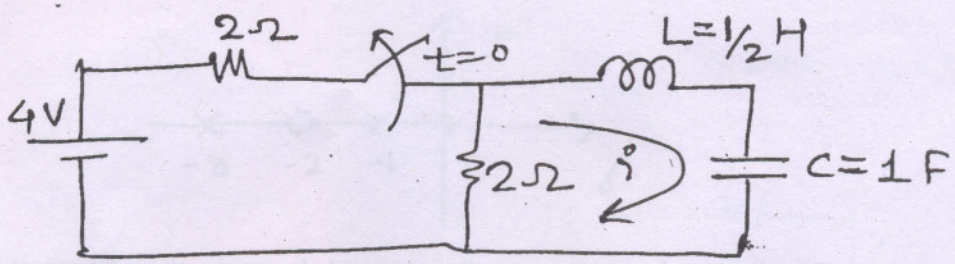


In the above circuit find I.

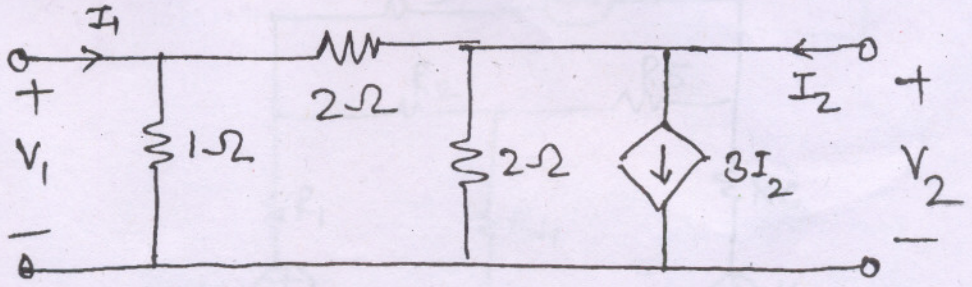
5. (a) Find three loop currents at t = 0+ 10



(b) Find i(t) for the circuit given using classical method. 10



6. (a) Find Z and Y parameters 10



(b) Realise the function in FI and FII forms 10

$$Y(s) = \frac{s(s+2)(s+6)}{(s+1)(s+4)(s+8)}$$

7. (a) Synthesize the function for CI and CII forms **10**

$$Z(s) = \frac{s^3 + 2s}{s^4 + 2s^2 + 3}$$

(b) Determine ABCD parameters for network shown. **10**