SE-sem-II-old - EXTC

EN

21/12/15

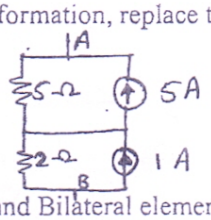
(OLD COURSE) QP Code: **1264**

(3 Hours) [Total Marks: 100]

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

Q.1 Attempt any four (20)

(1) Using source transformation, replace the network with a single current source and a resistor.



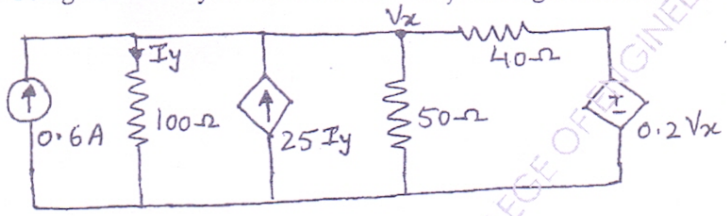
(2) Define Unilateral and Bilateral element.

(3) Define final steady state condition for resistor and capacitor.

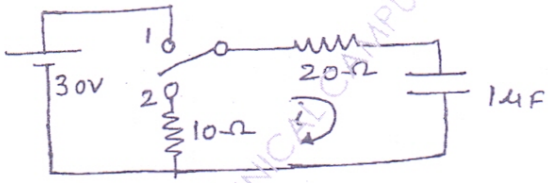
(4) Obtain condition for reciprocity for Z parameters.

(5) Draw pole zero plot for = $S(S + 1) / (S + 3)(S + 2)^2$

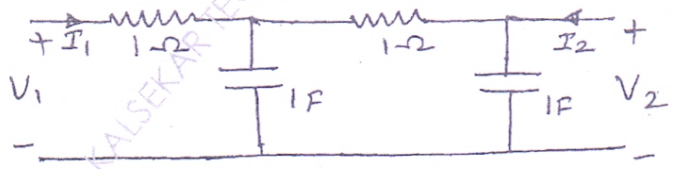
Q. 2 (a) Using nodal analysis calculate current I_y in the given network. (10)



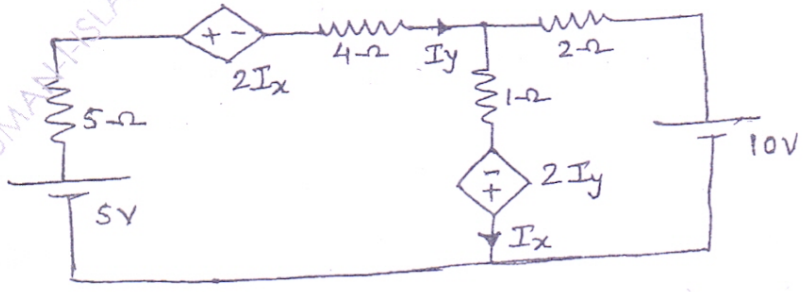
(b) In the given network switch initially is at position 1, and attains steady state condition. At $t = 0$, it is moved from position 1 to position 2, find the value of (i, d_i/d_t and d^2_i/d_t^2) at $t > 0^+$. (10)



Q. 3 (a) Find the network functions V_1 / I_1, V_2 / I_1, and V_2 / V_1. (10)

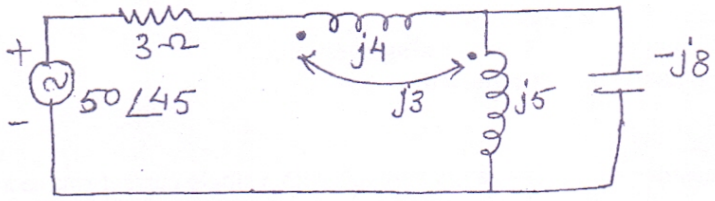


(b) Calculate I_x and I_y for the given network (10)



Turn over

Q.4 (a)) Find the current through 3ohm resistor. (10)

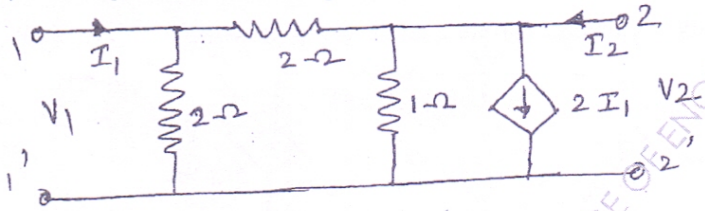


(b) Realise the function using Cauer I and Cauer II (10)
$Z(s) = (10S^4 + 12S^2 + 1) / (2S^3 + 2S)$

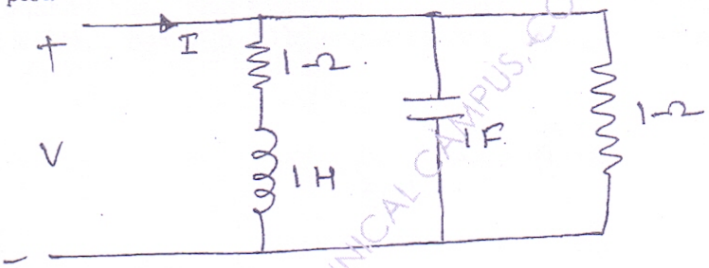
Q. 5(a) Test the function is PRF or not (05)
$F(s) = (S^3 + 6S^2 + 7S + 3) / (S^2 + 2S + 1)$

(b) Test whether the polynomials are Hurwitz or (05)
(1) $P(s) = 2S^4 + 5S^3 + 5S^2 + 4S + 10$
(2) $P(s) = S^5 + S^3 + S$

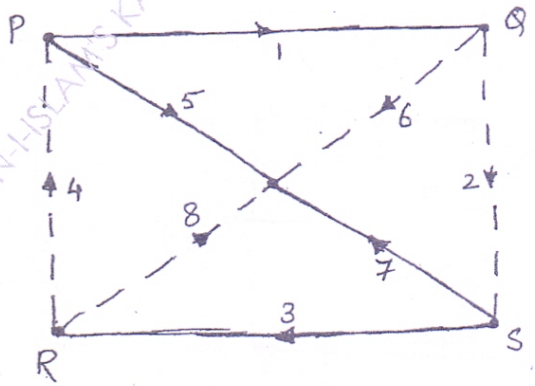
(c) Find h parameters for the given network (10)



Q.6 (a) Find the driving point admittance Y(s) for the network shown and plot the pole-zero plot. (10)



(b) For the given tree obtain (10)
(1) Incidence matrix
(2) Fundamental cutset matrix
(3) Fundamental tieset matrix



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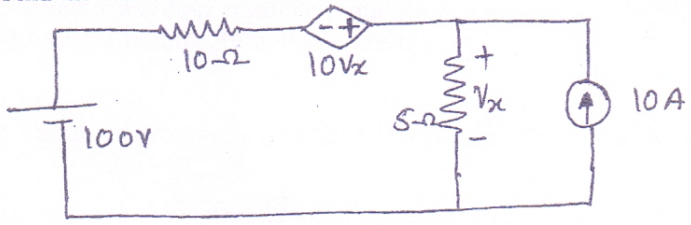
Q.7(a) Find the current in 10 ohm resistor of the network, using thevenin's theorem. (10)



(b) Find the current i(t) through R in the circuit shown below using Laplace transform. (10)