S.E. Electrical III CBGS 5.6.15

35

EN

QP Code : 4796

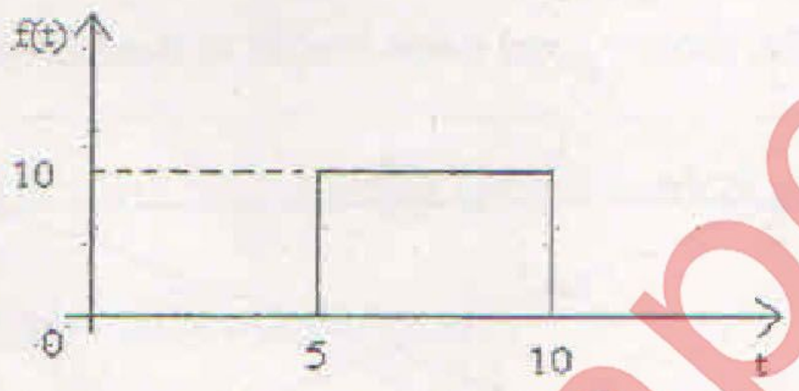
(3 Hours) **[Total Marks : 80**

N.B.
1) Question No.1 is compulsory.
2) Solve any Three questions from question No. 2 To 6.
3) Assume suitable data if necessary.

Q1) Solve any Five questions. [05*04]

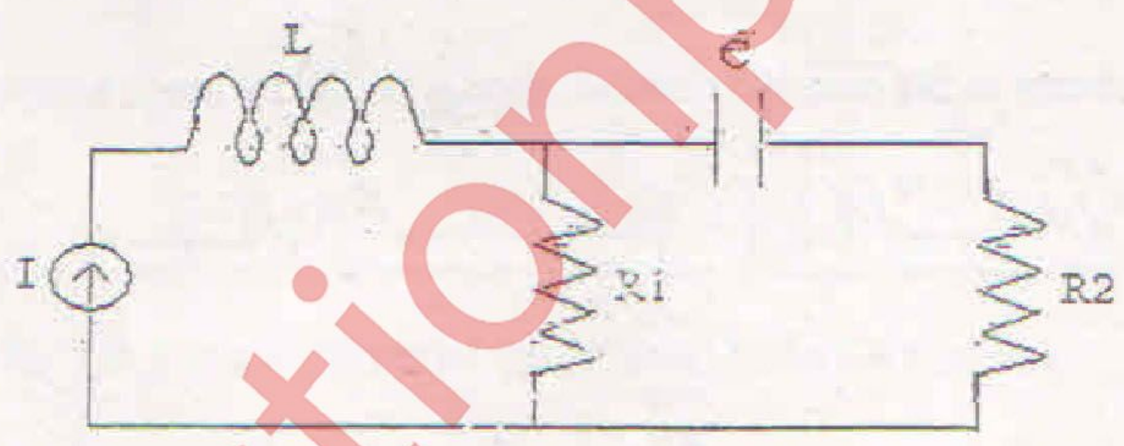
A) Define pole & zero of transfer function & draw P-Z plot for $V(s) = \frac{3(S+3)}{S^2(S+5)}$.

B) Find the laplace transform of the waveform shown below,



C) State & explain Millman's theorem.

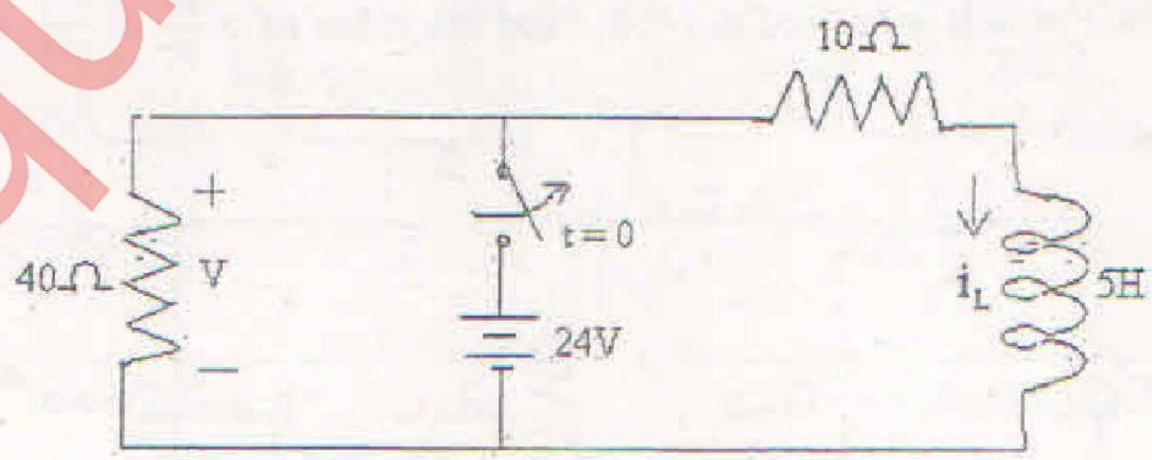
D) Find the dual of the given network,



E) Test whether the following function is Hurwitz polynomial.

$$F(s) = S^4 + 16S^3 + 86S^2 + 176S + 105.$$

F) Find $i_l(0^+)$ & $V(0^+)$ in the circuit shown below, if switch is opened at $t = 0$.

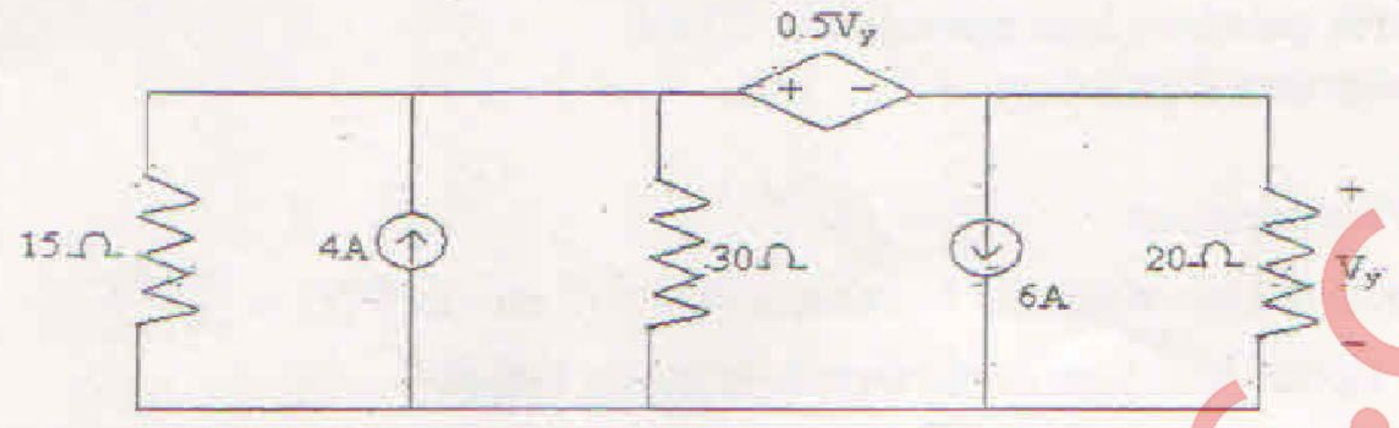


S.E. Electrical III CBGS

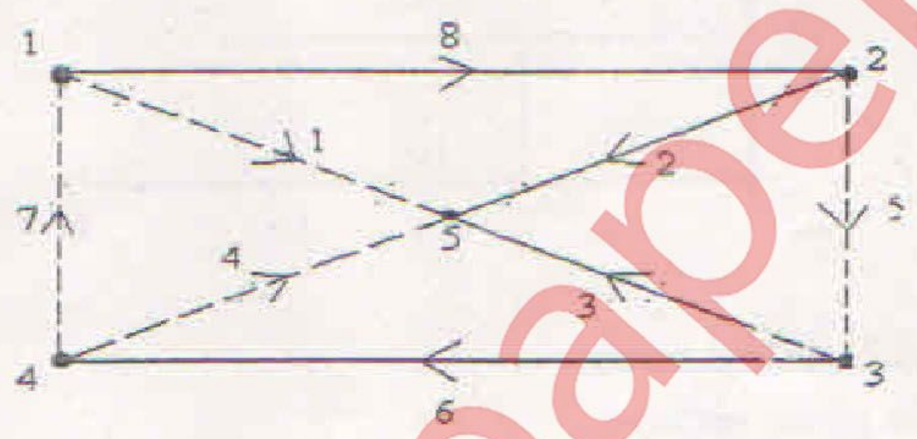
E.N. 5.6.15

Q2)

A) Use Nodal analysis to find V_y in the circuit shown below, [10]

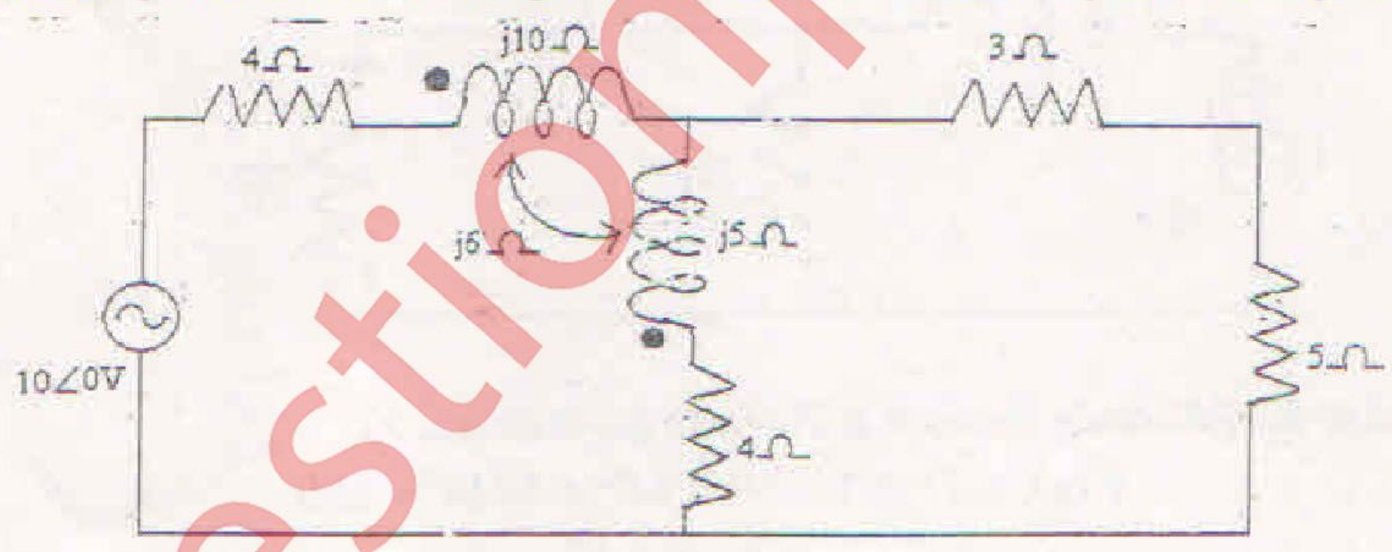


B) Write a incidence matrix, fundamental tieset matrix & fundamental cutset matrix for the graph shown below, [10]

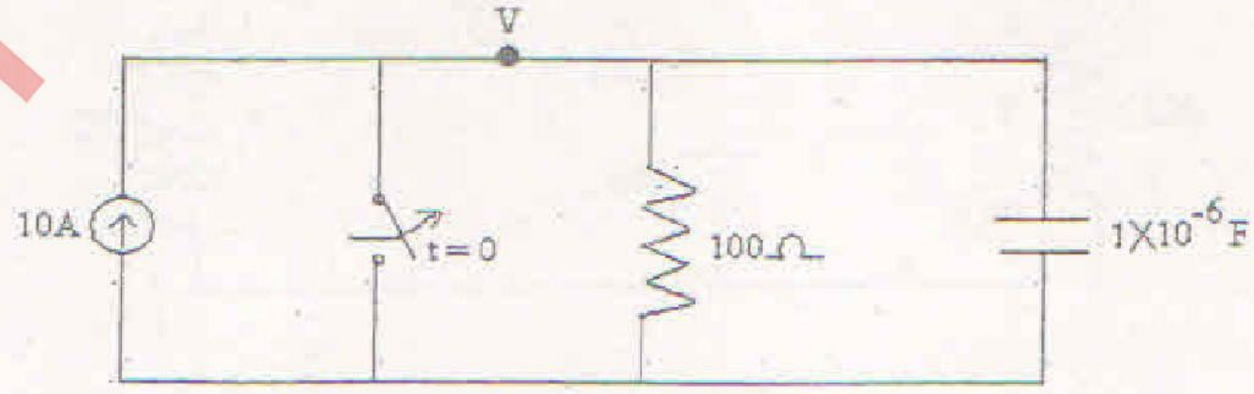


Q3)

A) Find the loop currents in the coupled network shown below by mesh analysis. [10]



B) In the given circuit switch is opened at t = 0. Find the value of $v, \frac{dV}{dt}$ & $\frac{d^2V}{dt^2}$ at $t = 0^+$. [10]

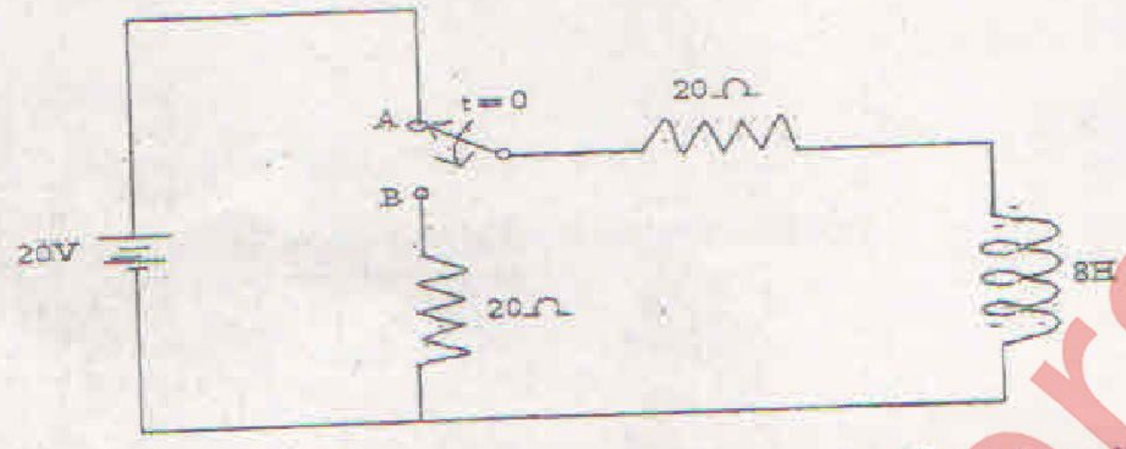


S.E. Electrical III CBGS 5.6.15
E.N.

(35)

Q4)

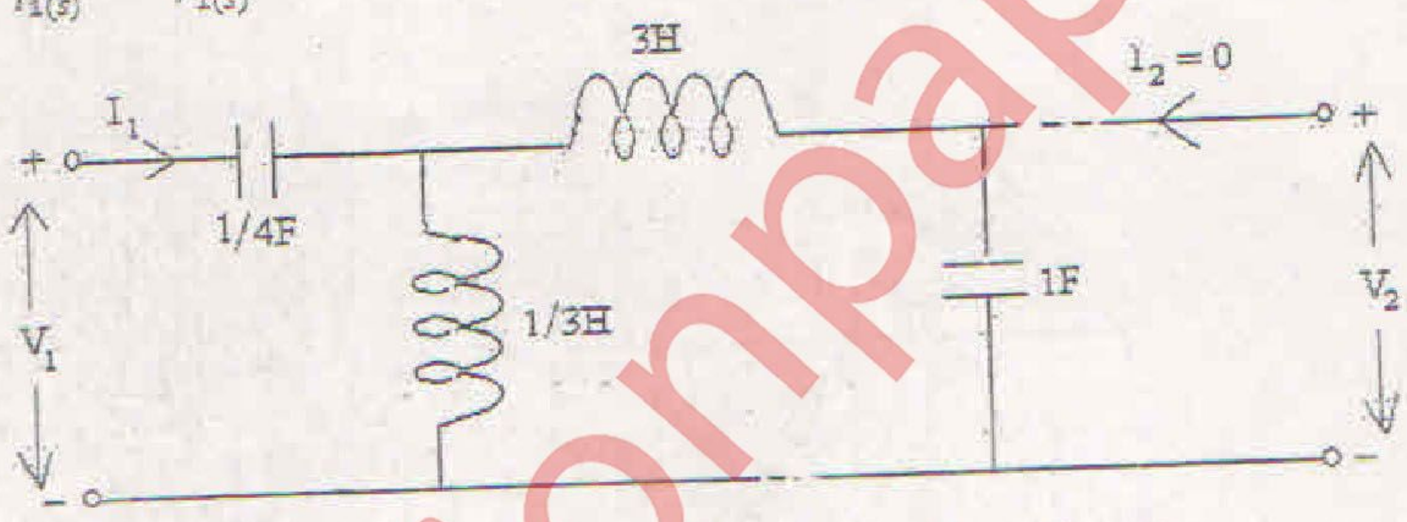
A) The switch changes it's position from "A" to "B" at t = 0.Determine current i(t) for t > 0 using laplace transform. [10]



B) Explain Z-parameters & prove the condition for symmetry & reciprocity. [10]

Q5)

A) Find $\frac{V_1(s)}{I_1(s)}$ & $\frac{V_2(s)}{V_1(s)}$ for the circuit shown below, [10]

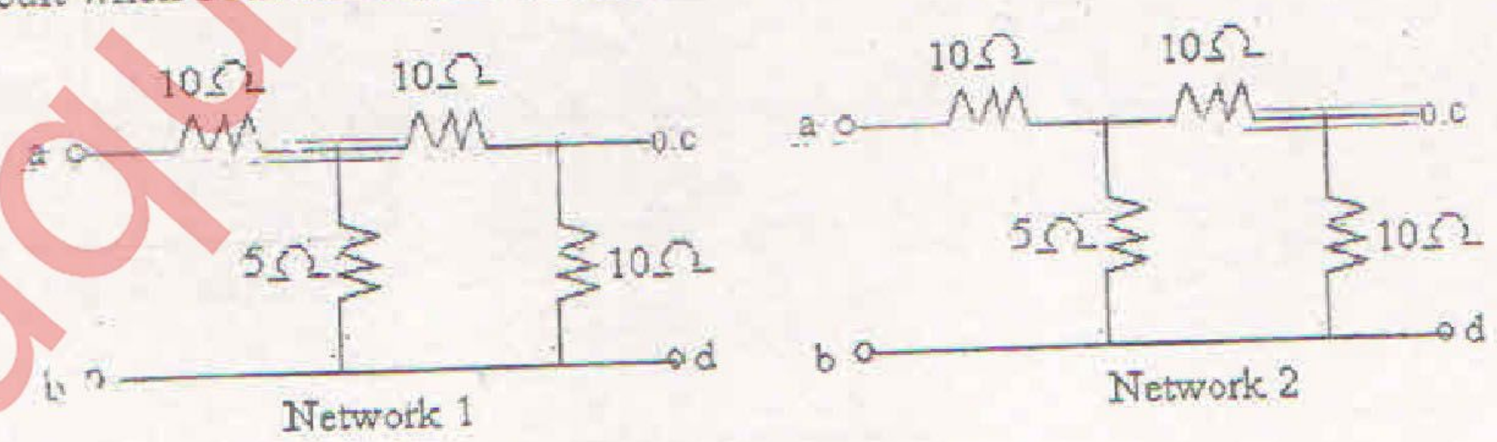


B) Find the foster I & foster II forms of the given impedance function. [10]

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

Q6)

A) Two networks are shown below; obtain the transmission parameters of the resulting circuit when both circuits are connected in cascade. [12]



B) Explain the properties of positive real function. [08]