Sem.III / INST / CBGS / ENAS / 03-06-16

Electrical Network & Analysis & synthesis

QP Code : 30748

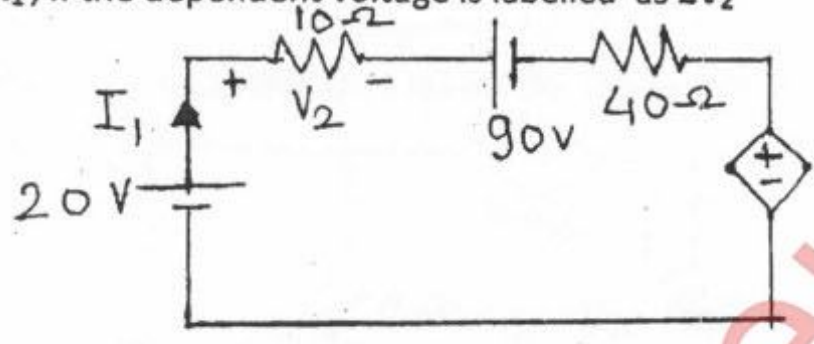
(3 Hours) **[Total Marks : 80**

Note: 1.Question no.1 is compulsory.

2. Solve any **three** from the remaining questions.

Q1. (20)

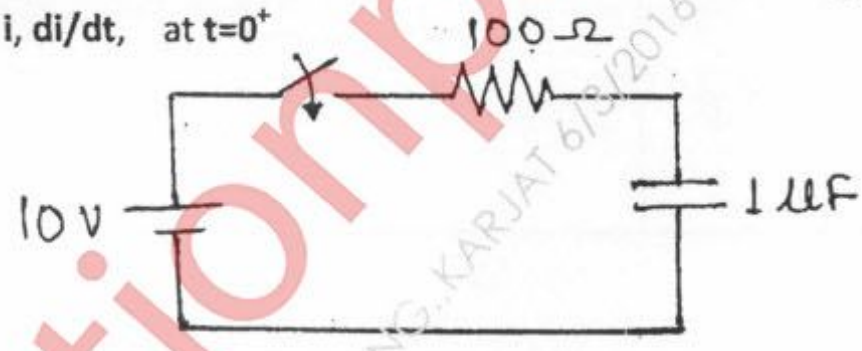
a) Find I_1, if the dependent voltage is labelled as $2V_2$



b) Draw oriented graph for the given incidence matrix

$$A = \begin{bmatrix} -1 & 1 & 0 & -1 \\ 0 & 0 & 1 & 1 \end{bmatrix}$$

c) In the network shown the switch is closed at t=0. With the capacitor uncharged, find value for i, di/dt, at $t=0^+$

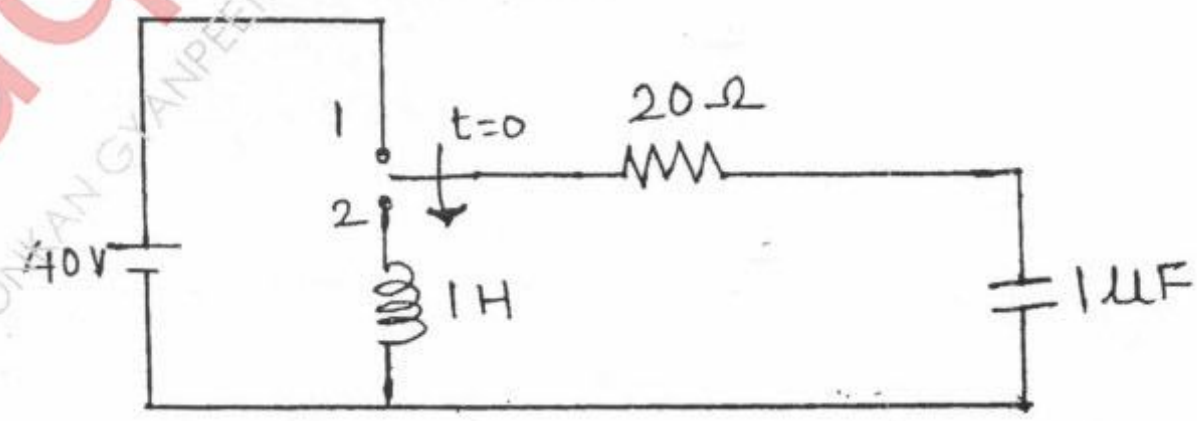


d) Test whether the polynomial is Hurwitz

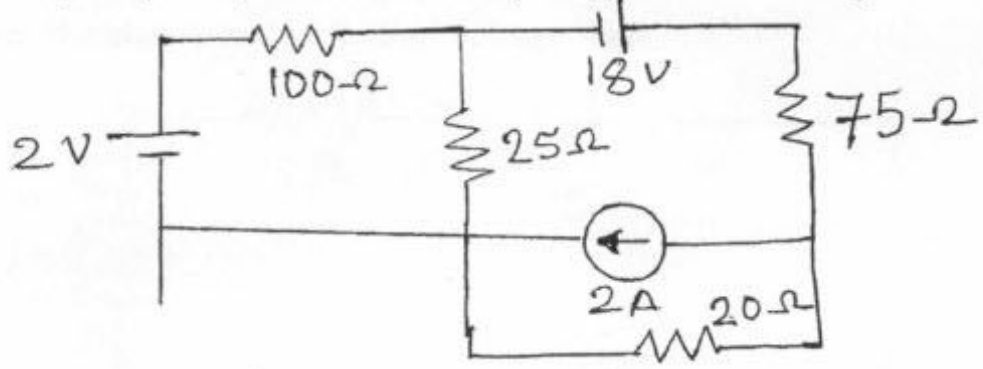
1) $P(s)= s^6+ 3s^5+8s^4+15s^3+17s^2+12s+4$
2) $P(s)= s^8+ 5s^6+ 2s^4+ 3s^2+1$

Q2.

a) In the network shown the switch is changed from position 1 to 2 at t=0. Steady state condition having reached before switching, find value for i, di/dt, & d^2i/dt^2 at $t=0^+$ (10)

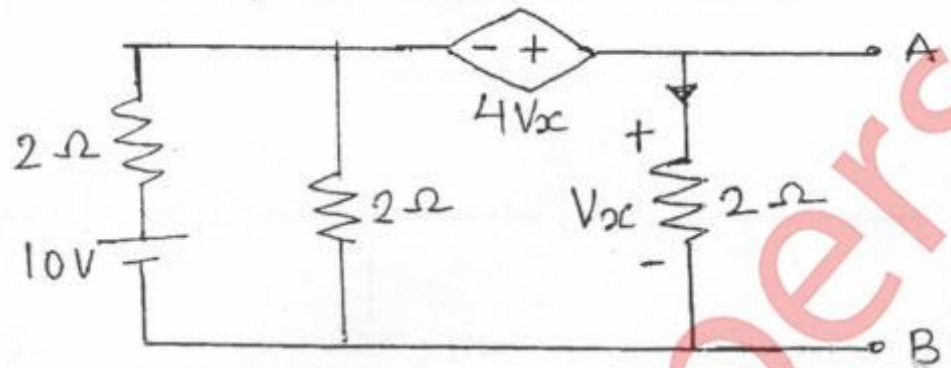


b) Using the principle of network topology, find I in the fig. (10)

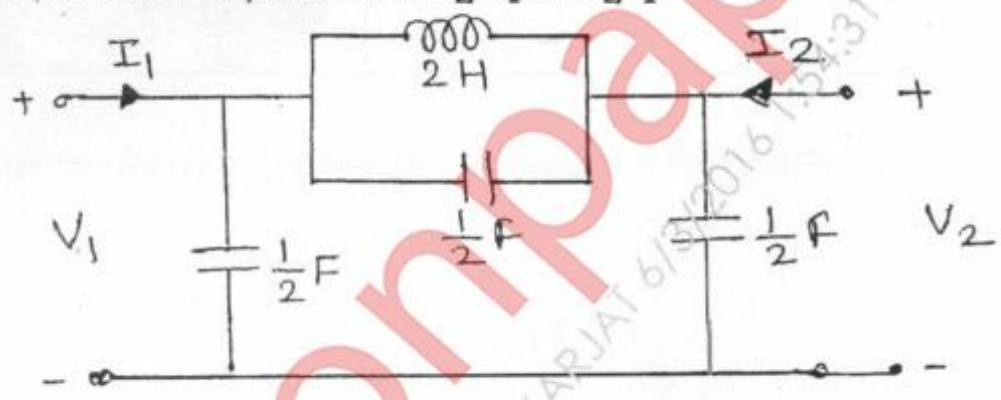


Q3.

a) Determine thevenin's equivalent ckt for the shown network (10)



b) For the network shown ,determine V_2/V_1 & V_2/I_1 (10)



Q4.

a) For the shown network ,switch is closed at t=0. Find current i_1 for t>0 (10)

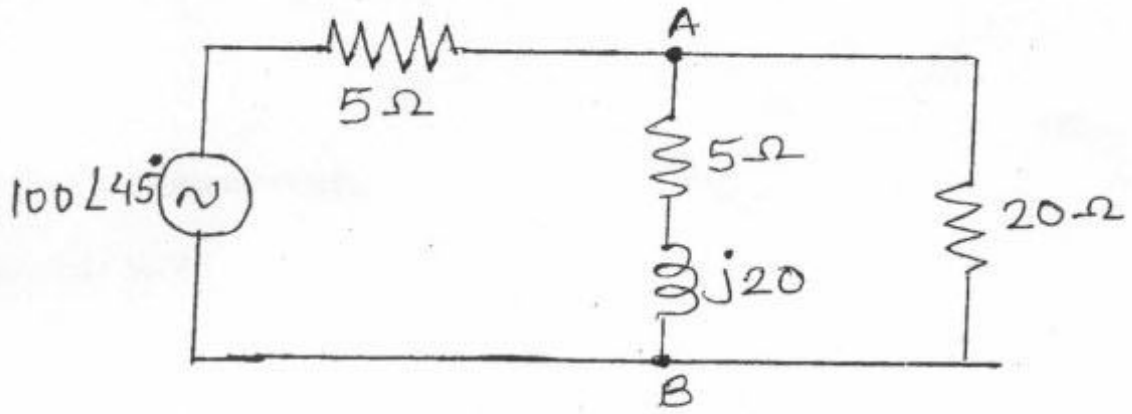
b) Check the positive realness of the given functions (10)

1) $F(s)= \frac{S^2+6s+5}{S2+9s+14}$

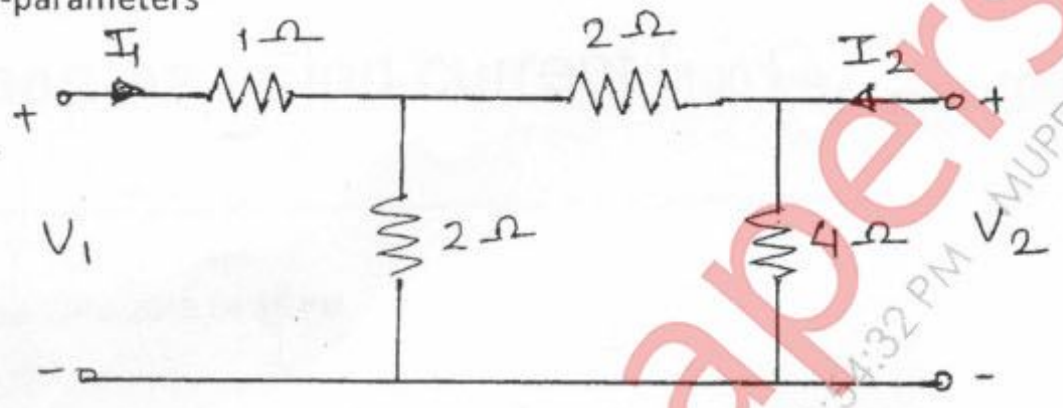
2) $F(s)= \frac{2s^3+2s^2+3s+2}{S^2+1}$

Q5.

a) For the shown network, find voltage Vab (10)



b) Determine Y parameters for the shown network. Also write Z-parameters from Y-parameters (10)

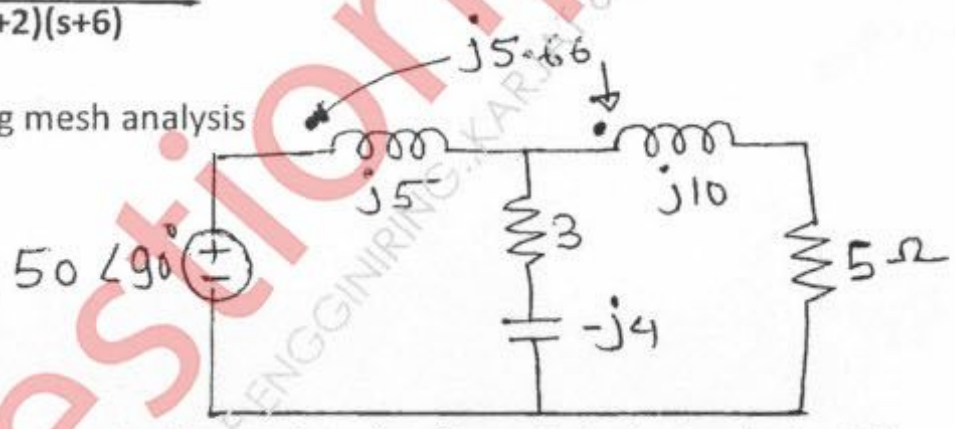


Q6.

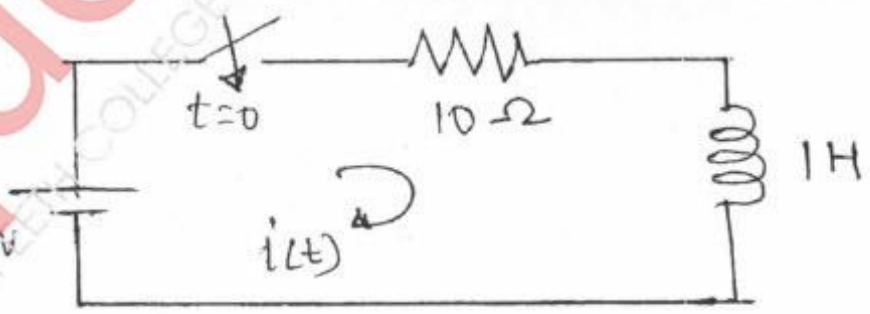
a) Synthesize the following RL function in Foster-I & Foster-II form (10)

$$Z(s) = \frac{2(s+1)(s+3)}{(s+2)(s+6)}$$

b) Find I1 using mesh analysis (5)



c) For the shown network ,switch is closed at t=0. find value for **i, di/dt** (5)



Course: SE (Instrumentation)

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Correction

Q. 2(b)

Read As : Find current $I_{100\,\Omega}$

Date and Time 03/06/2016 04:35 PM