Time: 3 Hours **Max. Marks: 80**

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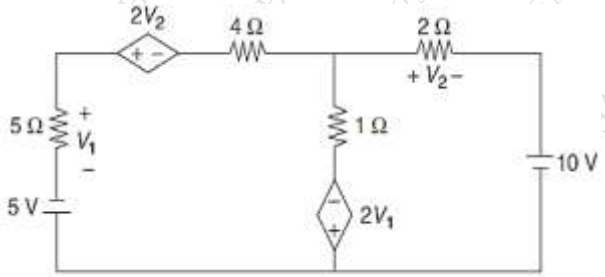
N. B. Question No. 1 Compulsory
Question No. 2 to Question No. 6 Solve any Three

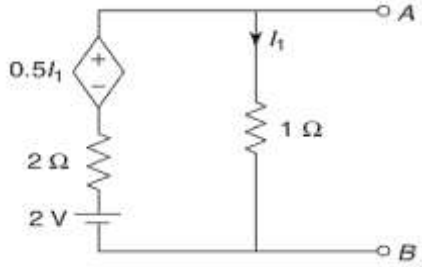
Q1 **Solve any Four out of Six** **5 marks each**

A Find the Mesh Currents in the Network Shown.



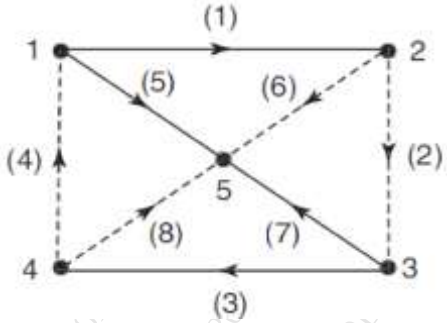
Find the Norton's equivalent Network.

B



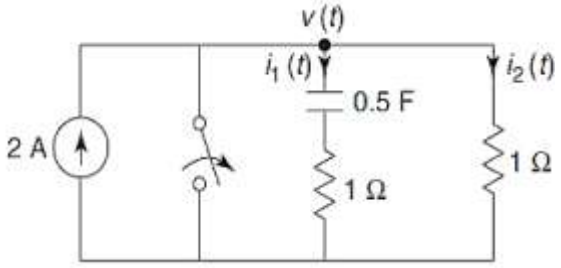
For the Graph shown ,write the complete incidence matrix and tiset matrix.

C

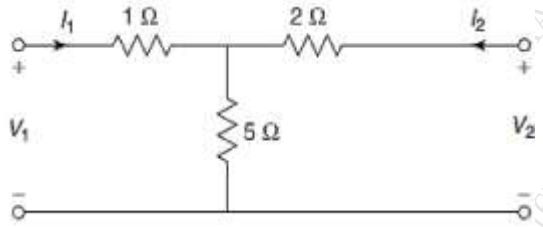


In the network, the switch is closed for a long time and at t=0 switch is opened. Determine the current through the capacitor.

D



E Find the transmission parameter for the network shown.



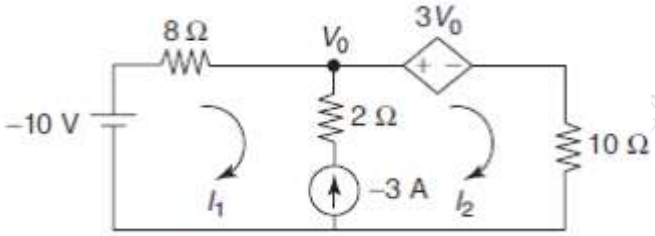
Test whether, F(s) is a positive real function.

F $F(s) = \dfrac{s+3}{s+1}$

Q2 **10 marks each**

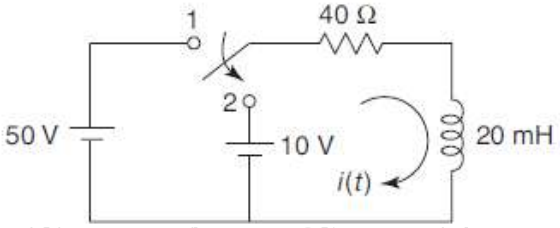
In the network Shown Find I_1 and I_2

A



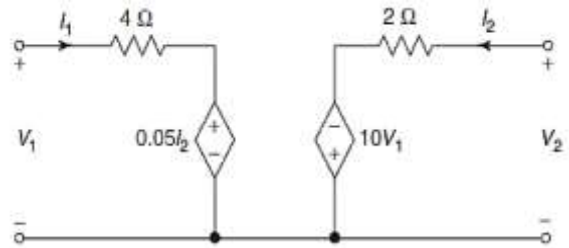
The Network shown in Figure is under steady state with switch at position -1. At t=0 the switch is moved to position 2. Find i(t).

B

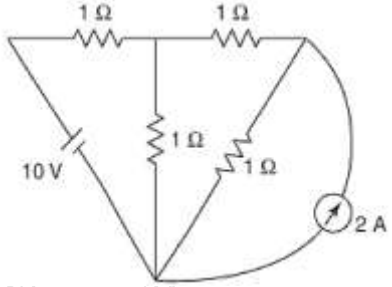


Q3. **10 marks each**

A Determine Z and Y parameters of the Network shown.

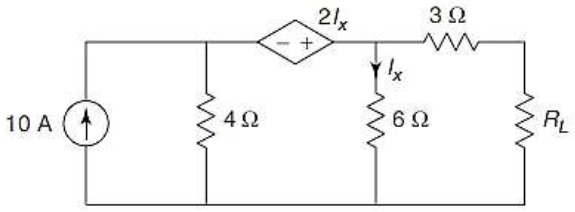


B For the Network shown, write down the *f* –cutset matrix and obtain the Network equilibrium equation in matrix form using KCL.

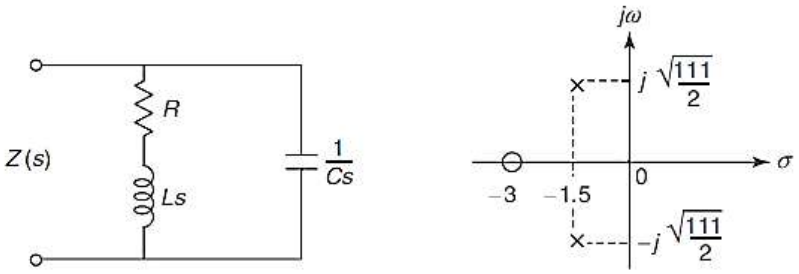


Q4. **10 marks each**

A For the network shown , Calculate the maximum power that may be dissipated in the load resistor R_L.

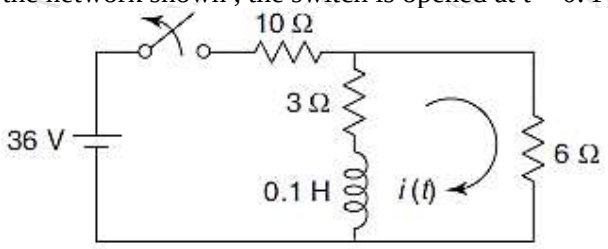


B A Network and its pole zero plot configuration is shown in figure. Determine the values of R, L and C if Z(j0) = 1

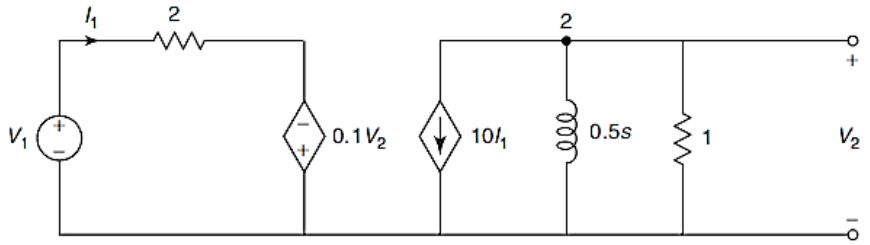


Q5. **10 marks each**

A In the network shown , the switch is opened at t = 0. Find i (t)



B Find the Driving point admittance function and draw the pole zero plot of the Network Shown.



Q6. **10 marks each**

A Test whether the polynomial is Hurwitz

$$P(s) = s^4 + 5s^3 + 5s^2 + 4s + 10$$

B

Realise Cauer forms of the following LC impedance function:

$$Z(s) = \frac{10s^4 + 12s^2 + 1}{2s^3 + 2s}$$