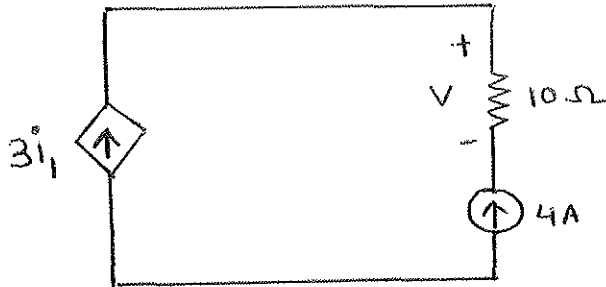


N.B: (1) Question No.1 is Compulsory.

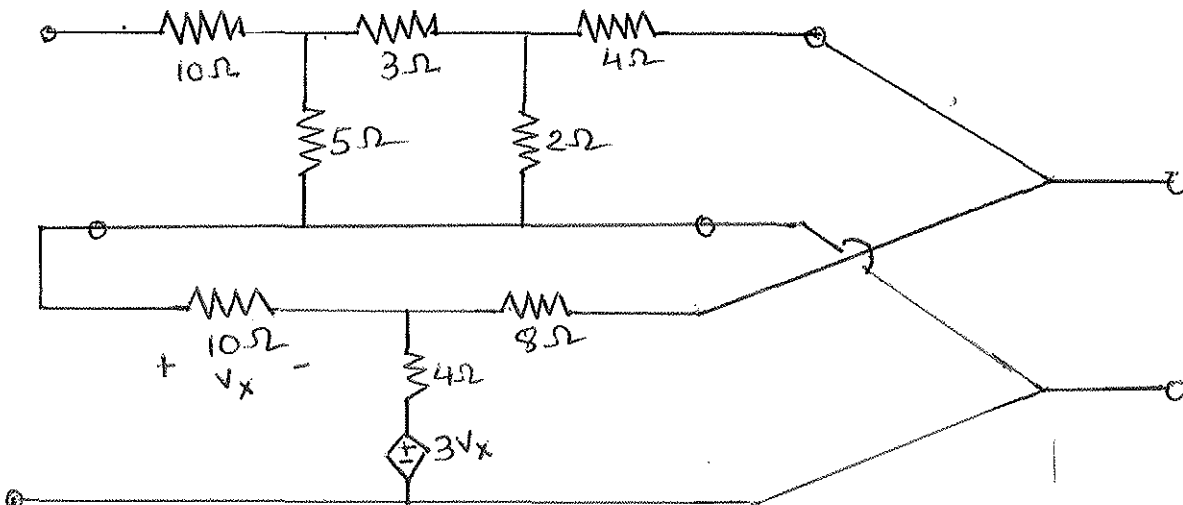
- (2) Attempt any three questions from remaining.
- (3) Figures to the right indicate full marks.
- (4) Assume Suitable data if required.

1. (a) Obtain Transmission parameters in terms of 'Z' Parameter. (20)
 (b) If $i_1 = 2 \text{ A}$, Find V.

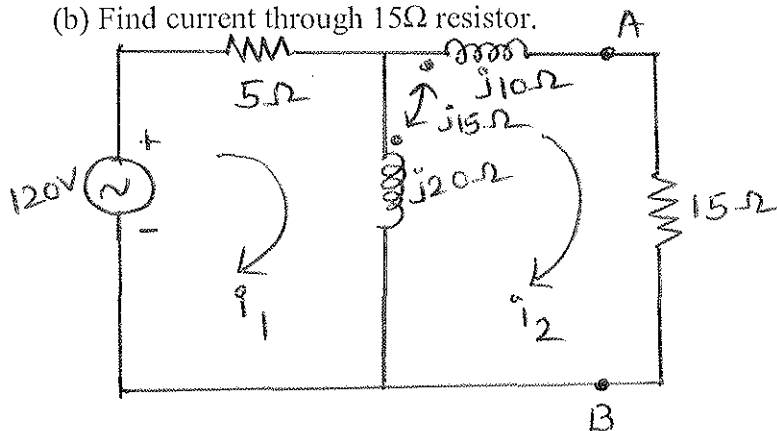


- (c) Obtain s-domain (Laplace transform) equivalent circuit diagram of an inductor and capacitor with initial conditions.
 (d) Check whether the polynomial is Hurwitz or not by continued fraction method.
 $F(s) = s^4 + s^3 + 4s^2 + 2s + 3$
 (e) List the types of damping in a series R-L-C circuit and mention the condition for each damping.

2. (a) Obtain hybrid parameter of the interconnected 2-port network. (8)

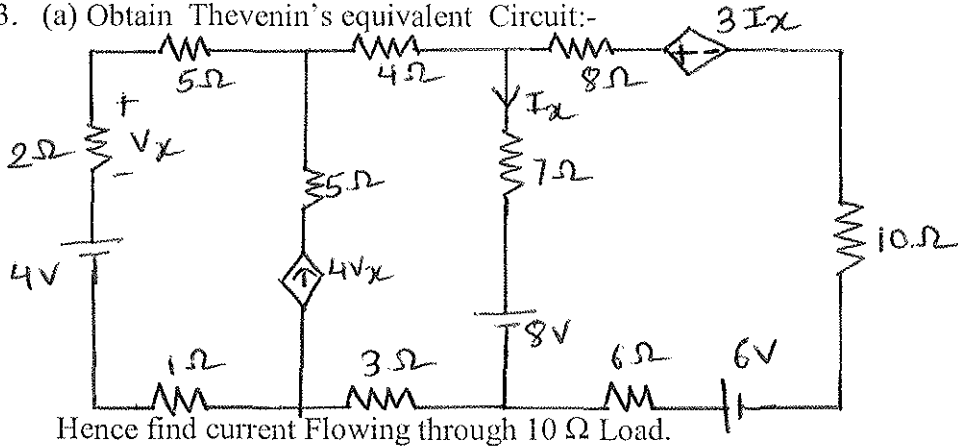


- (b) Find current through 15Ω resistor. (6)

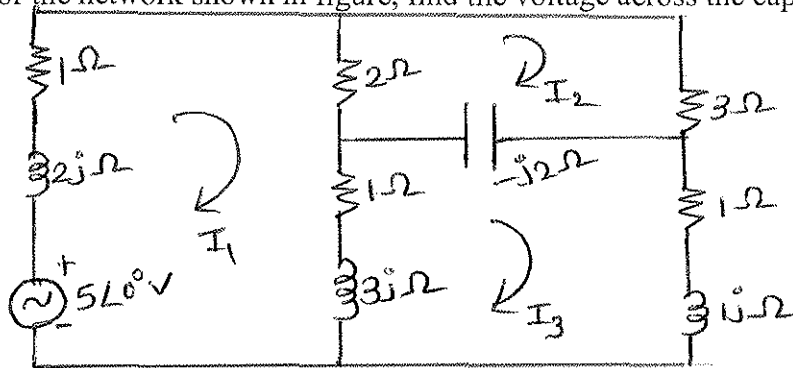


(c) Test whether $F(S) = \frac{2S^4+7S^3+11S^2+12S+4}{S^4+5S^3+9S^2+11S+6}$ is a positive real function. (6)

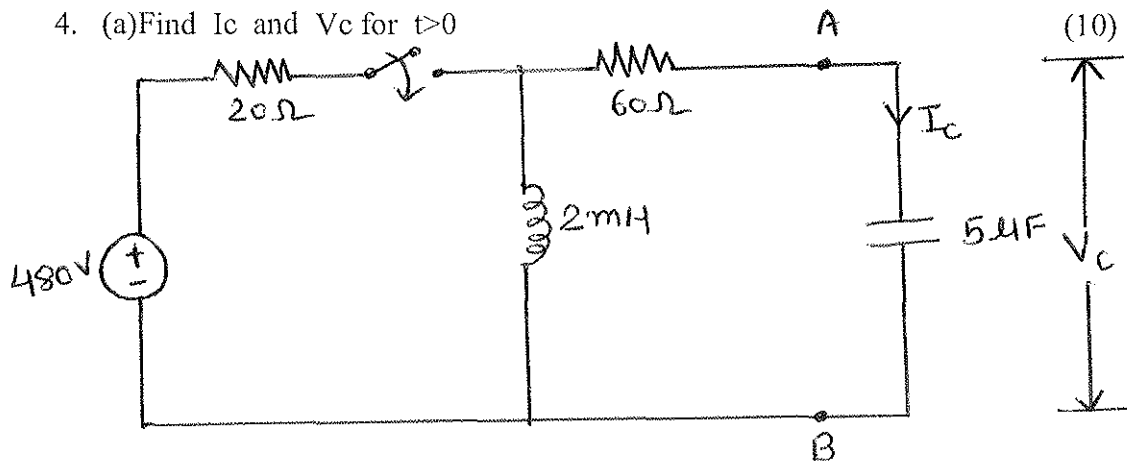
3. (a) Obtain Thevenin's equivalent Circuit:- (10)



(b) For the network shown in figure, find the voltage across the capacitor. (10)



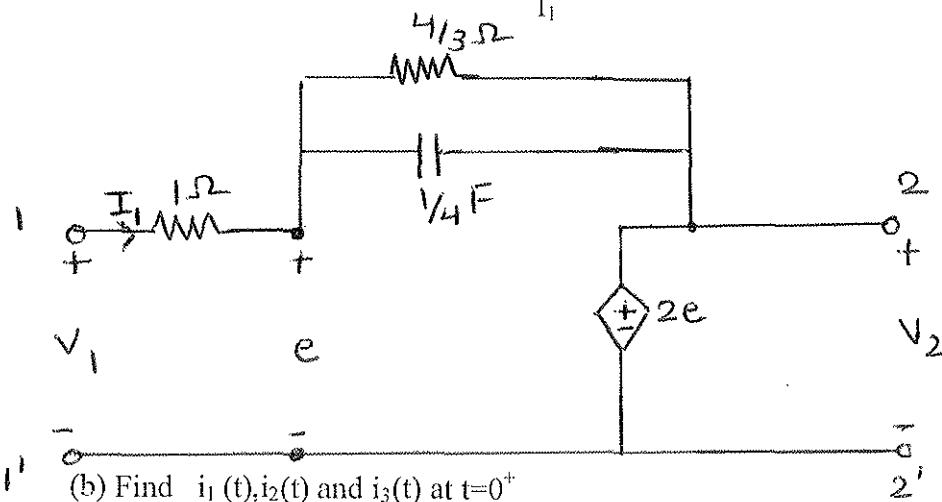
4. (a) Find I_c and V_c for $t > 0$



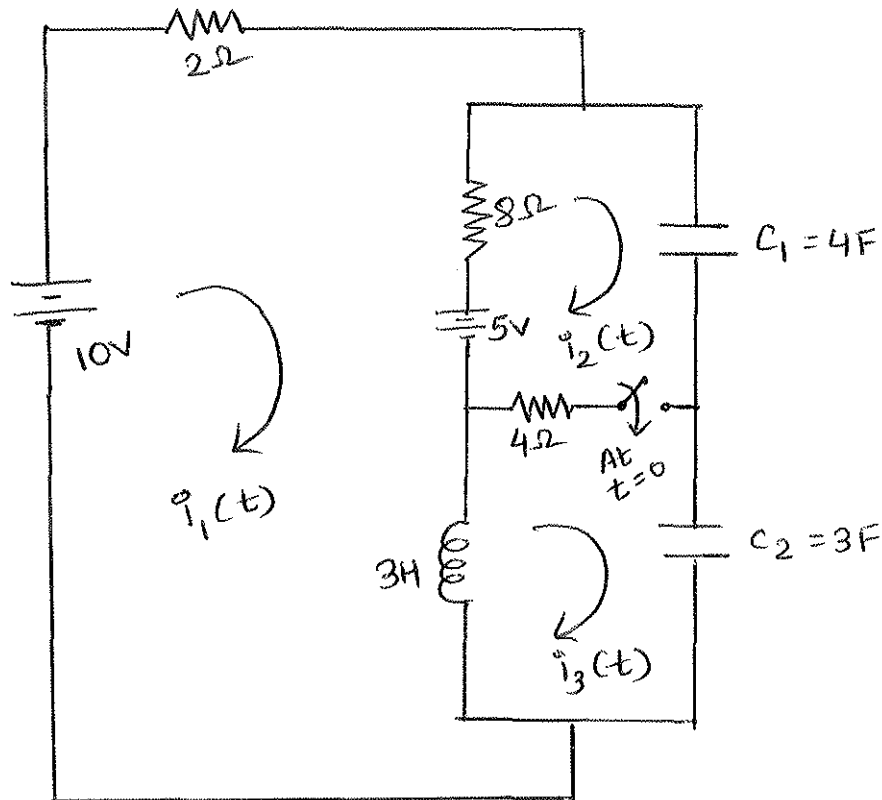
(b) Realise the following function in Foster- I and Foster-II form. (10)

$$Z(s) = \frac{(S+1)(S+3)}{(S+2)(S+4)}$$

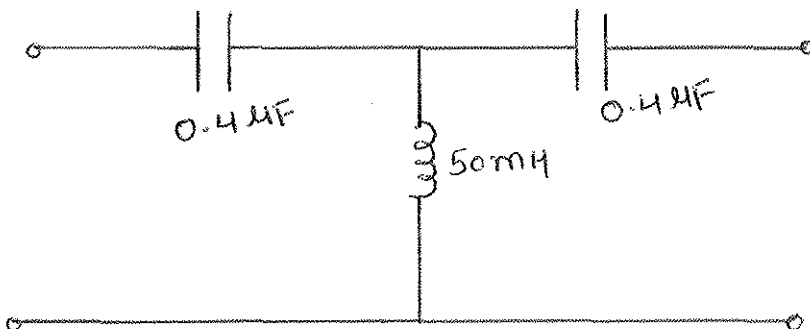
5. (a) Find driving point impedance $\frac{V_1}{I_1}$ for the network shown in figure. (10)



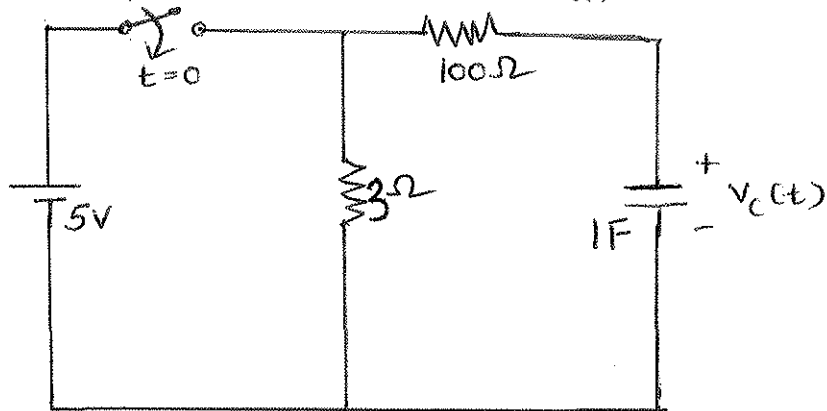
- (b) Find $i_1(t)$, $i_2(t)$ and $i_3(t)$ at $t=0^+$



6. (a) Find the characteristic impedance, cut off frequency and pass band for the network shown: (6)



(b) For given circuit, the switch is closed at $t=0$. Find $V_c(t)$ for $t>0$



(c) The network shown in Figure reaches a steady state with switch at position 1. At $t=0$, the switch is changed from the position 1 to the position 2, Find the value of i , $\frac{di}{dt}$, $\frac{d^2i}{dt^2}$ at $t=0^+$

