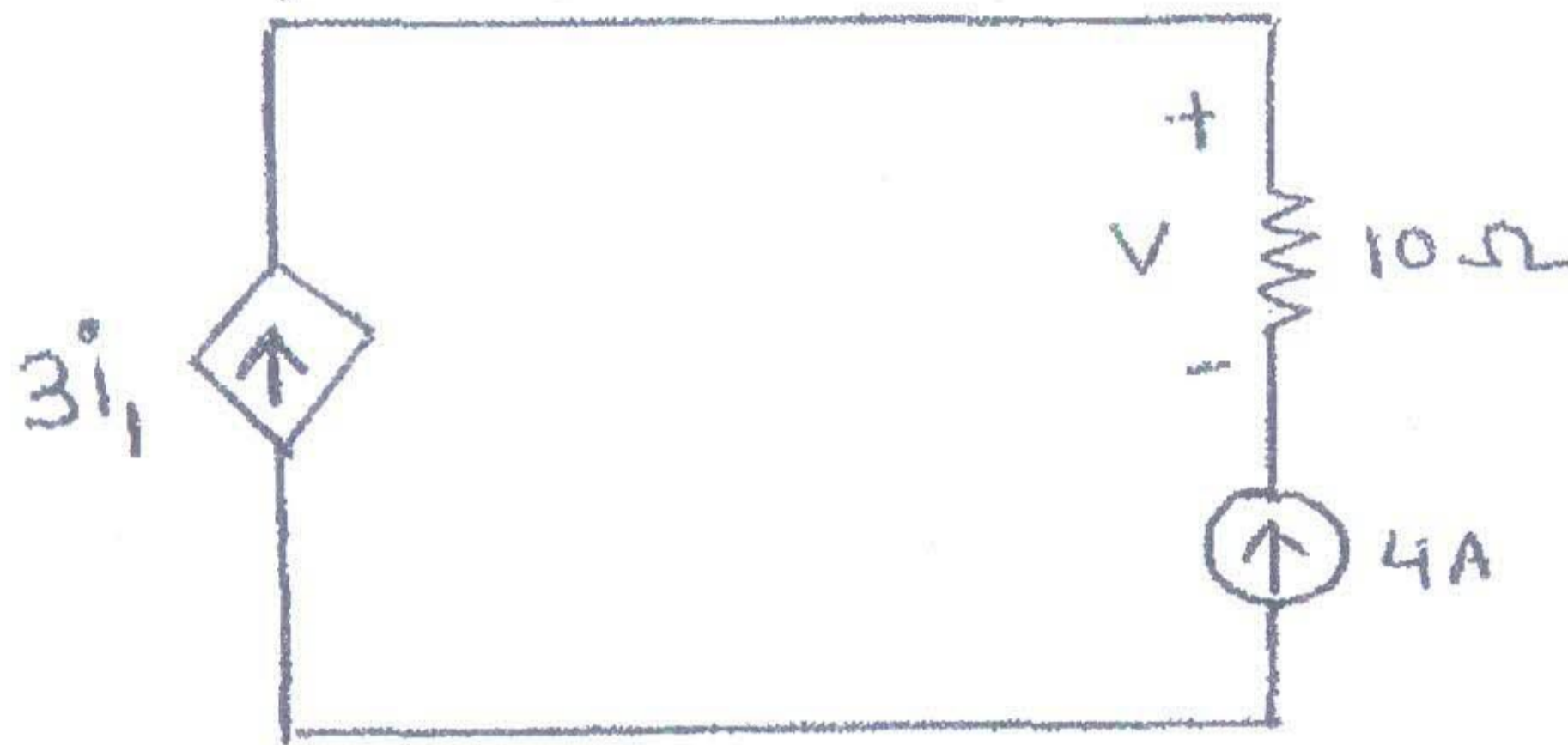


(3 Hours)

Total Marks: 80

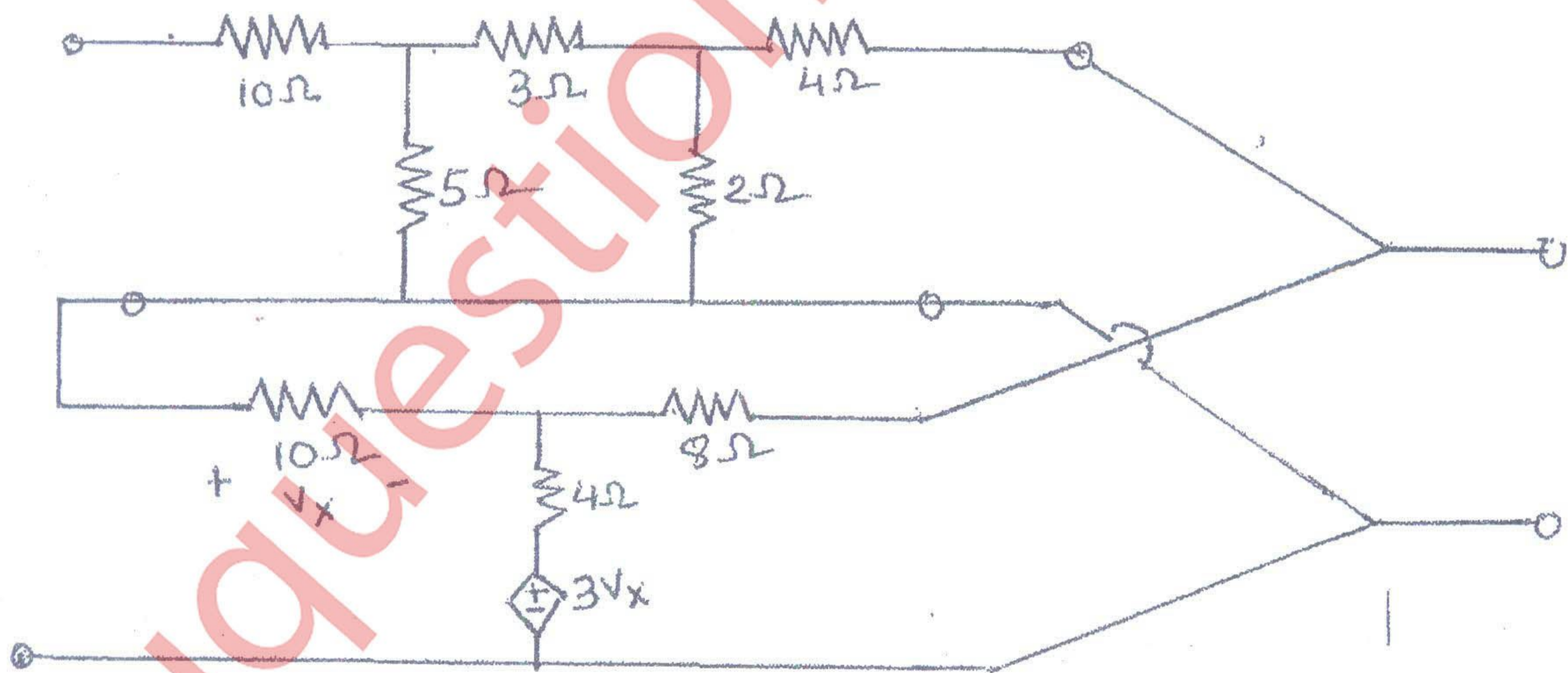
- N.B: (1) Question No.1 is Compulsory.
 (2) Attempt any three questions from remaining.
 (3) Figures to the right indicate full marks.
 (4) Assume Suitable data if required.

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

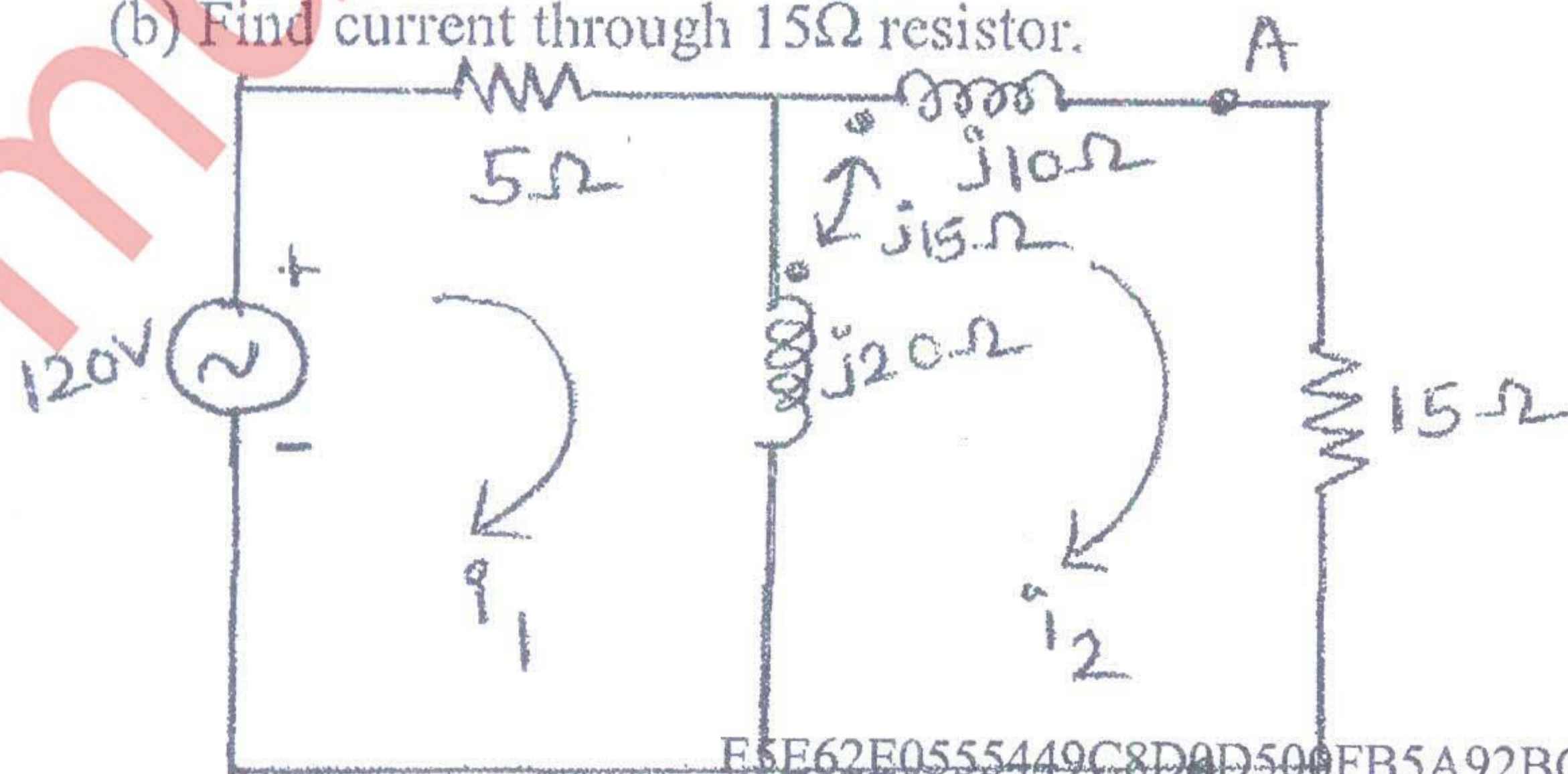


- (c) Obtain s-domain (Laplace transform) equivalent circuit diagram of an inductor and capacitor with initial conditions.
 (d) Check whether the polynomial is Hurwitz or not by continued fraction method.
 $F(s) = s^4 + s^3 + 4s^2 + 2s + 3$
 (e) List the types of damping in a series R-L-C circuit and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

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



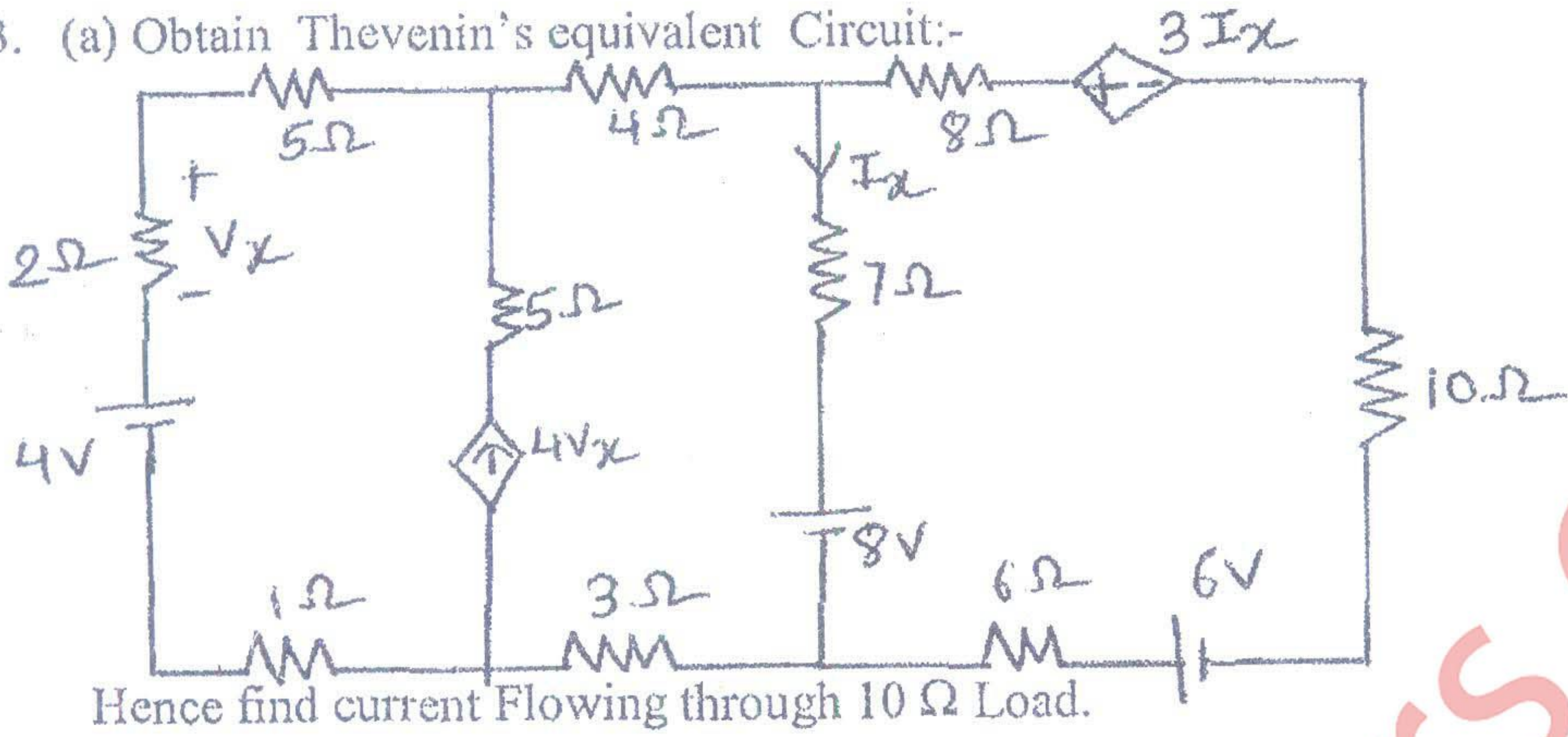
- (b) Find current through 15 ohm resistor. (6)



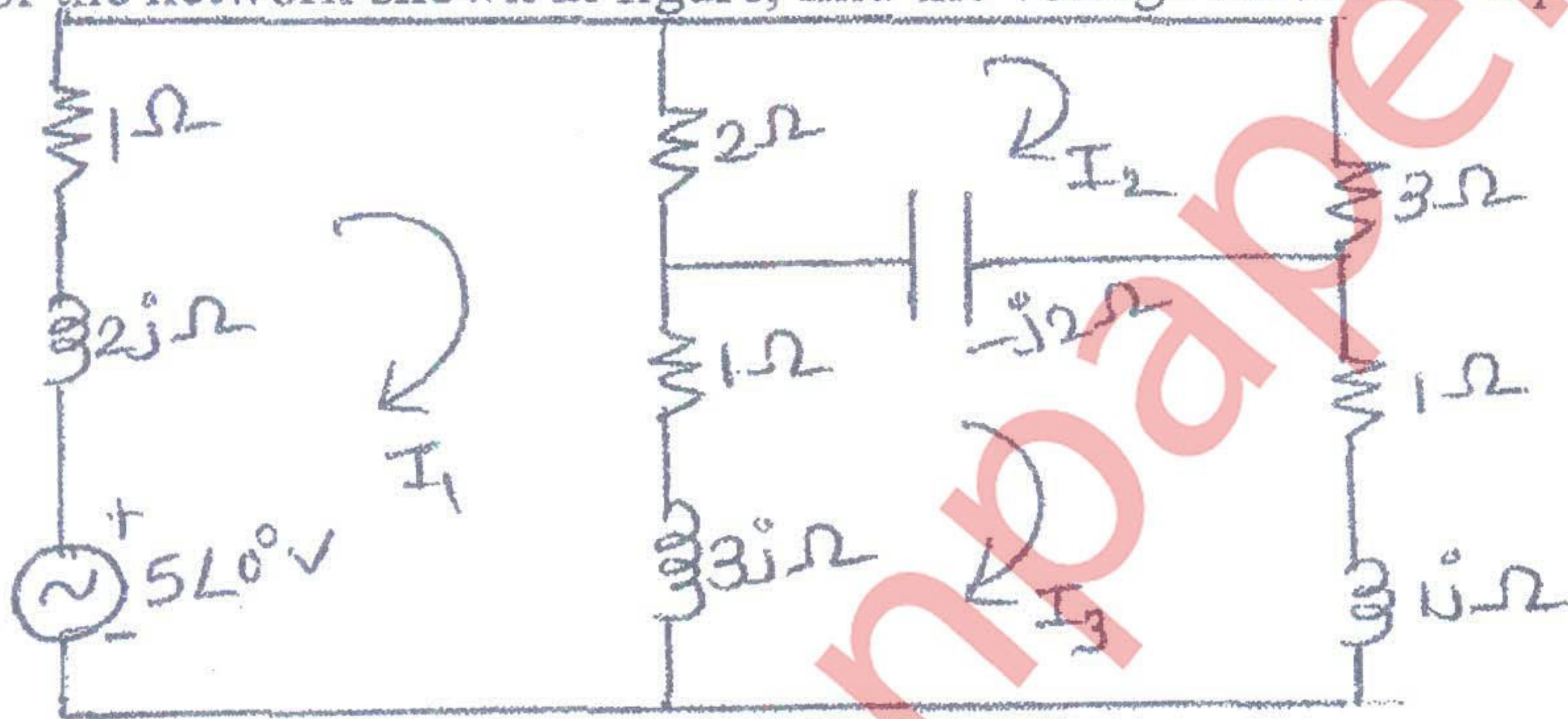
Turn Over

(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)

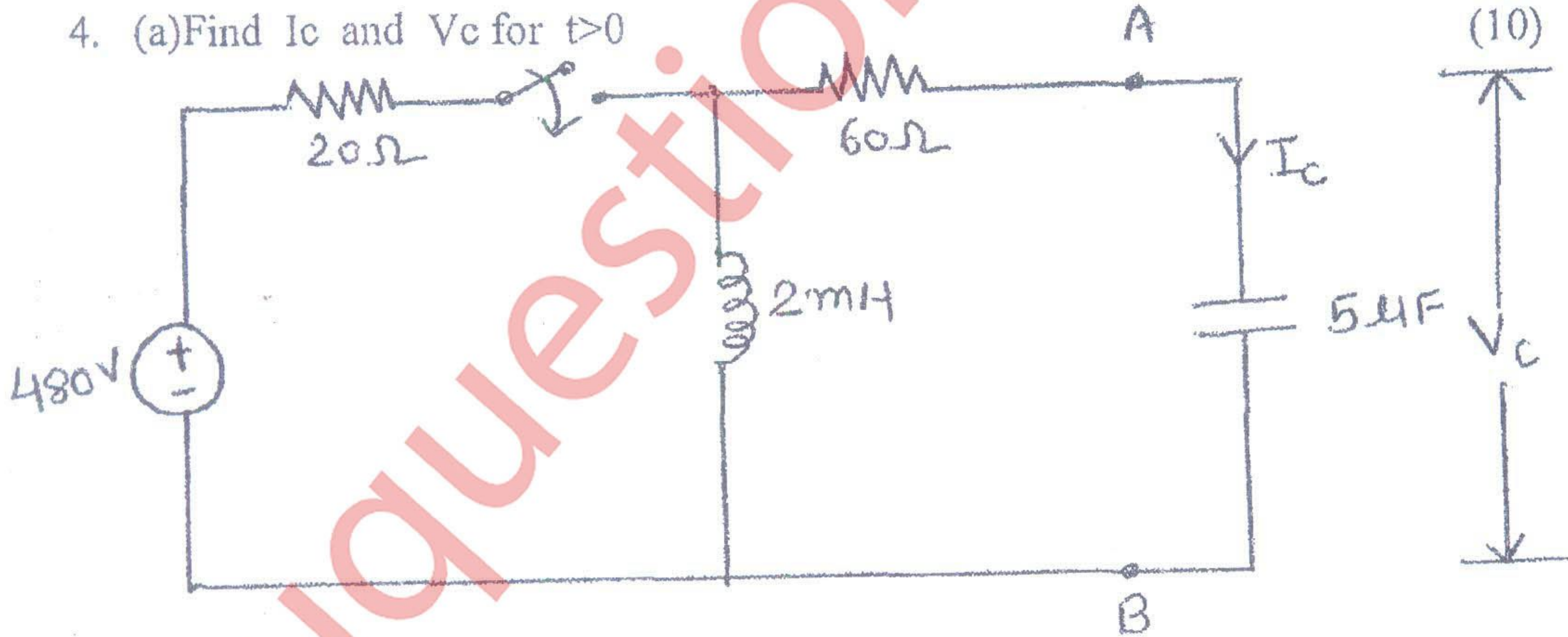
3. (a) Obtain Thevenin's equivalent Circuit:- (10)



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



4. (a) Find I_c and V_c for $t > 0$ (10)

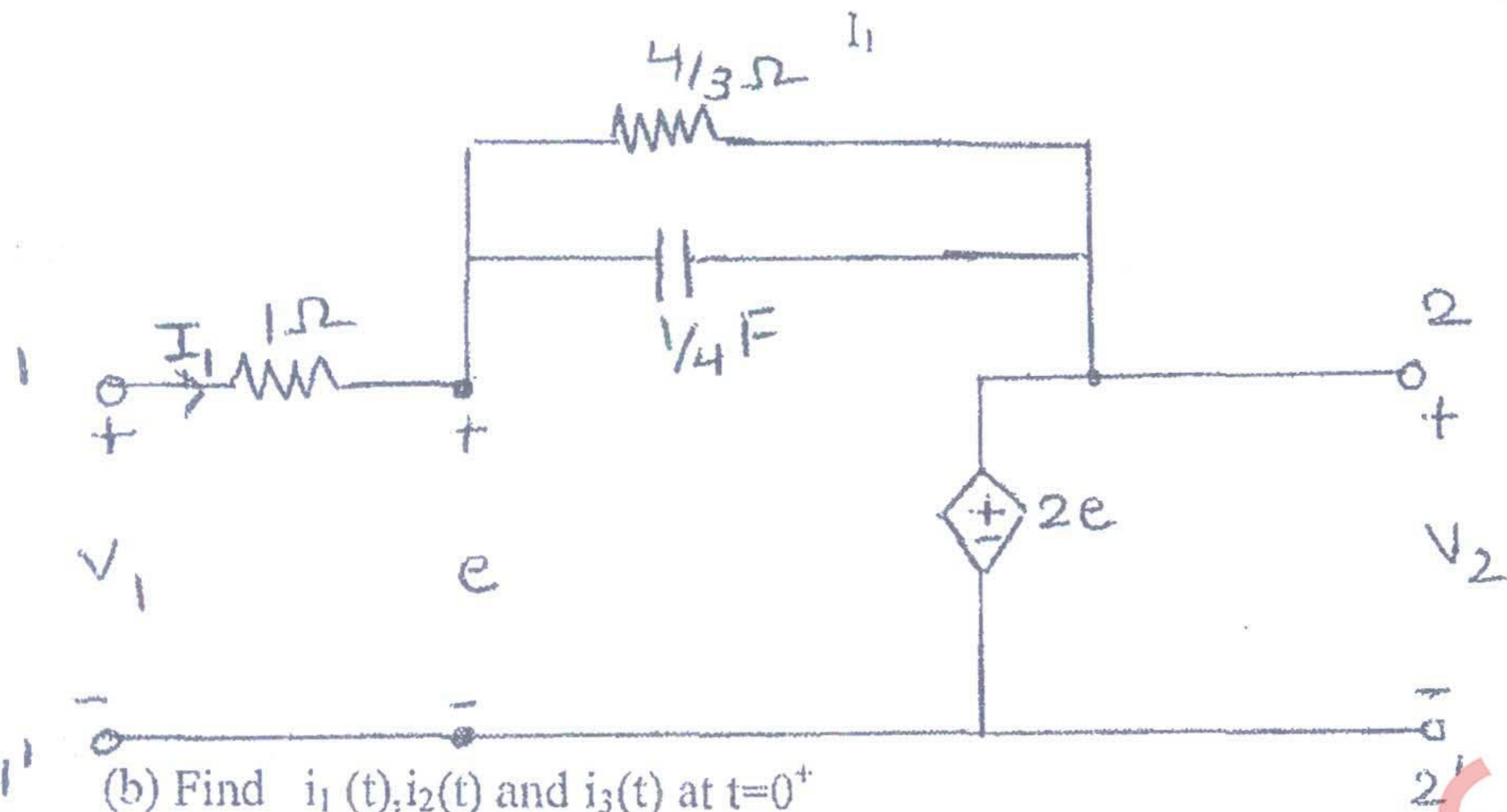


(b) Realise the following function in Foster-I and Foster-II form. (10)

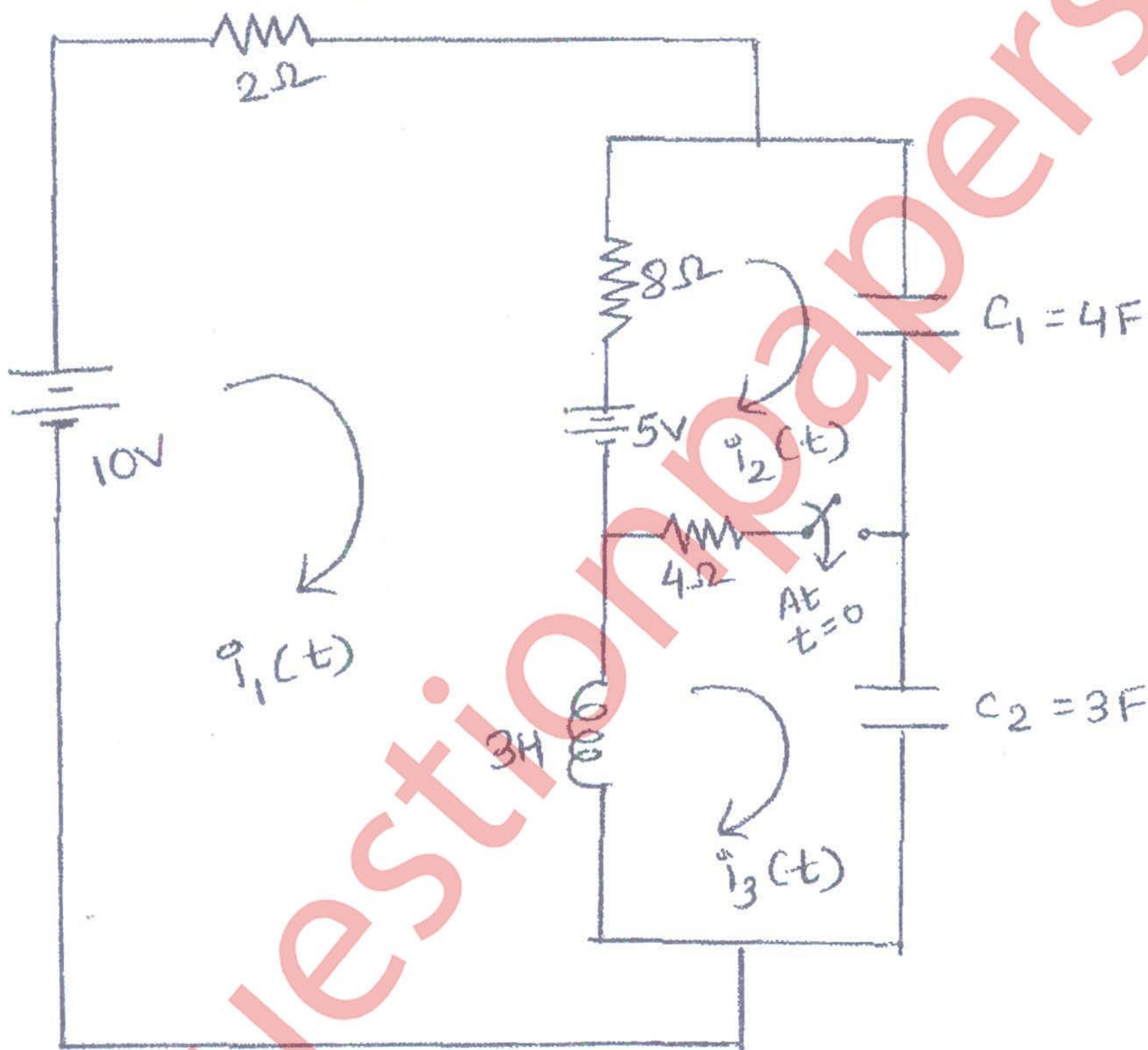
$$Z(s) = \frac{(S+1)(S+3)}{(S+2)(S+4)}$$

Turn Over

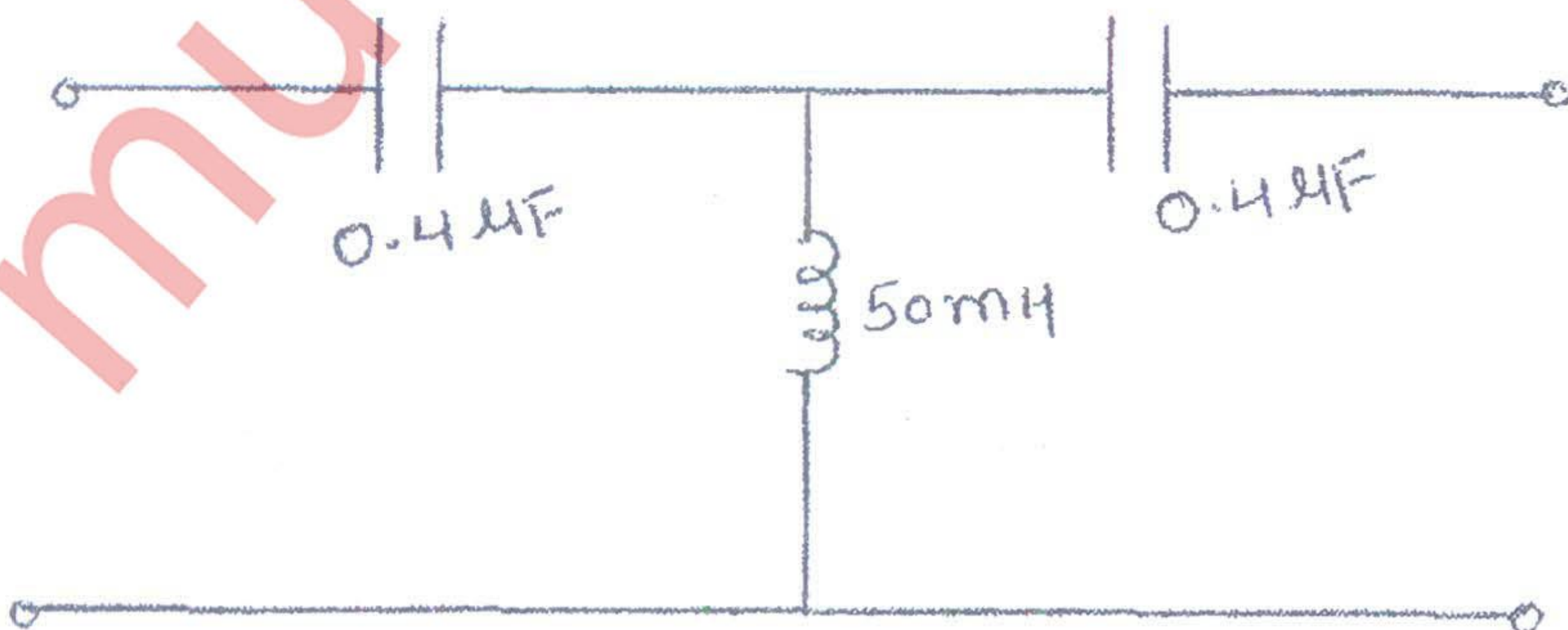
5. (a) Find driving point impedance V_1 for the network shown in figure. (10)



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

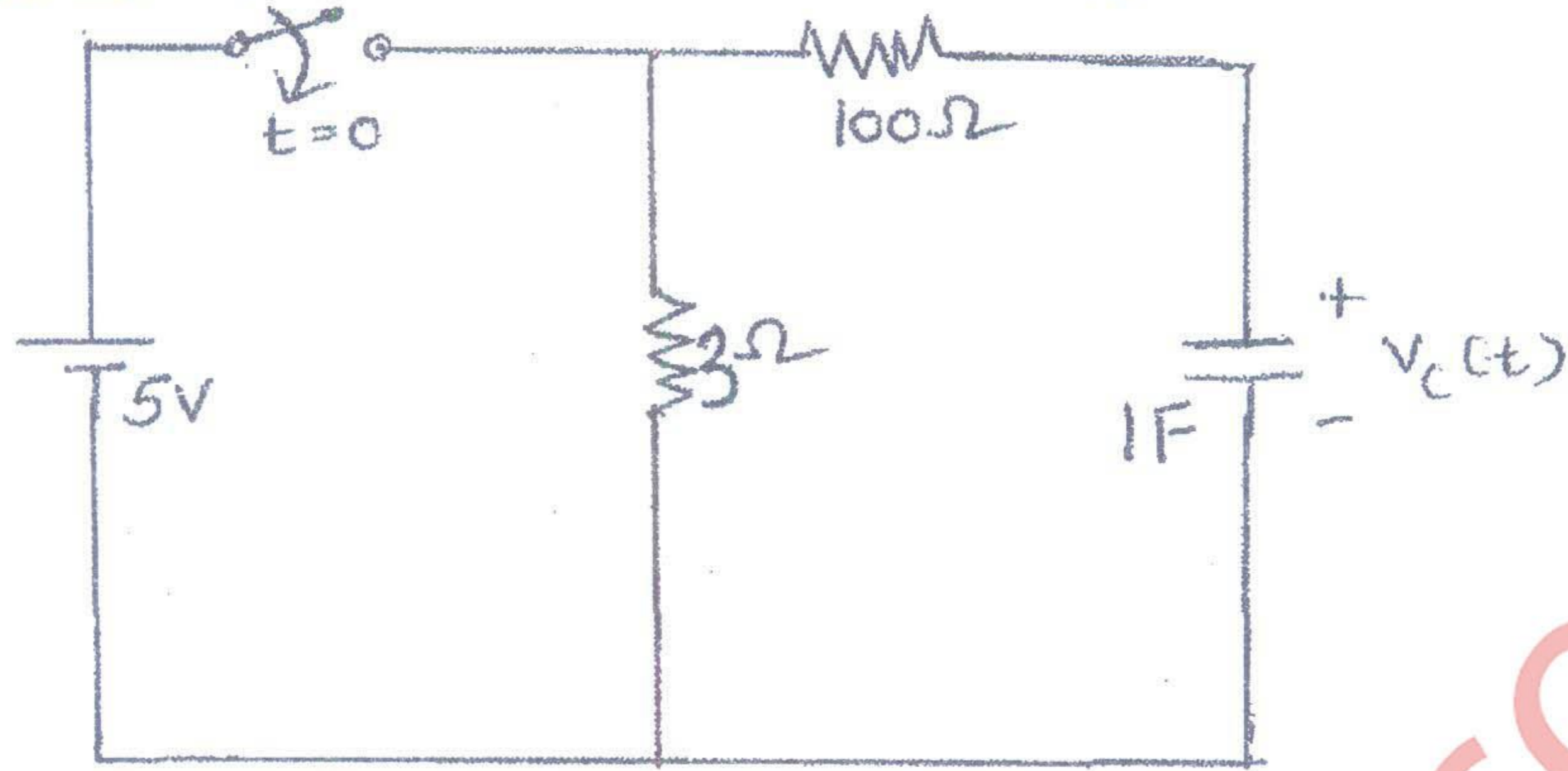


6. (a) Find the characteristic impedance, cut off frequency and pass band for the network shown: (6)



Turn Over

(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 $t=0^+$

