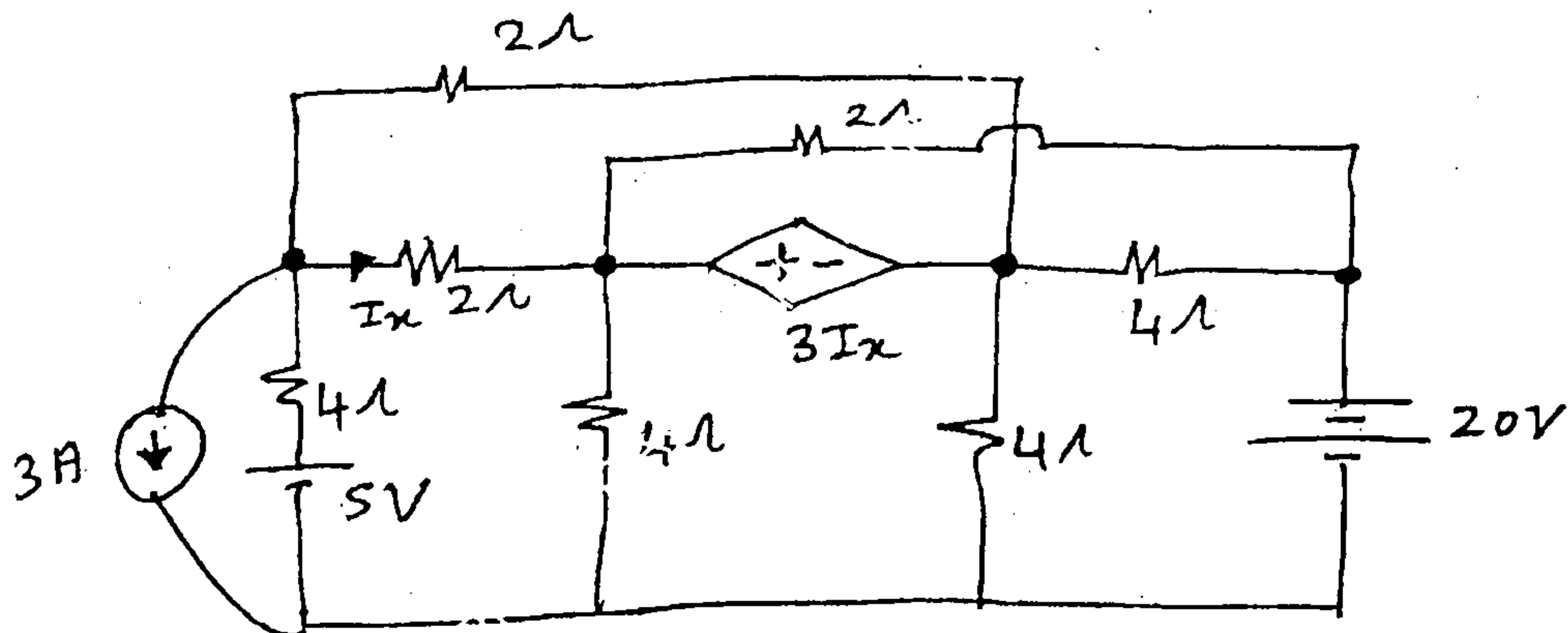


- N. B. : (1) Question No. 1 is compulsory.
(2) Attempt any **three** questions from remaining questions.
(3) Use **Smith chart** wherever required.
(4) **Assume** suitable data if required.
(5) **Attempt every question in a group and not randomly.**

1. (a) Check for Hurwitz polynomial 20
 $Q(s) = s^5 + s^3 + s^1$
 $Q(s) = s^4 + 6s^3 + 8s^2 + 10$
 (b) Obtain s-domain (Laplace Transform) equivalent circuit diagram of an inductor and capacitor with initial conditions.
 (c) Obtain Transmission parameters in terms of 'z' parameters.
 (d) List the types of damping in a series R-L-C circuit and mention the condition for each damping.
2. (a) Obtain power supplied by dependent voltage source 10



- (b) Compare and obtain Foster form I and form II using an example of RC ckt. 10

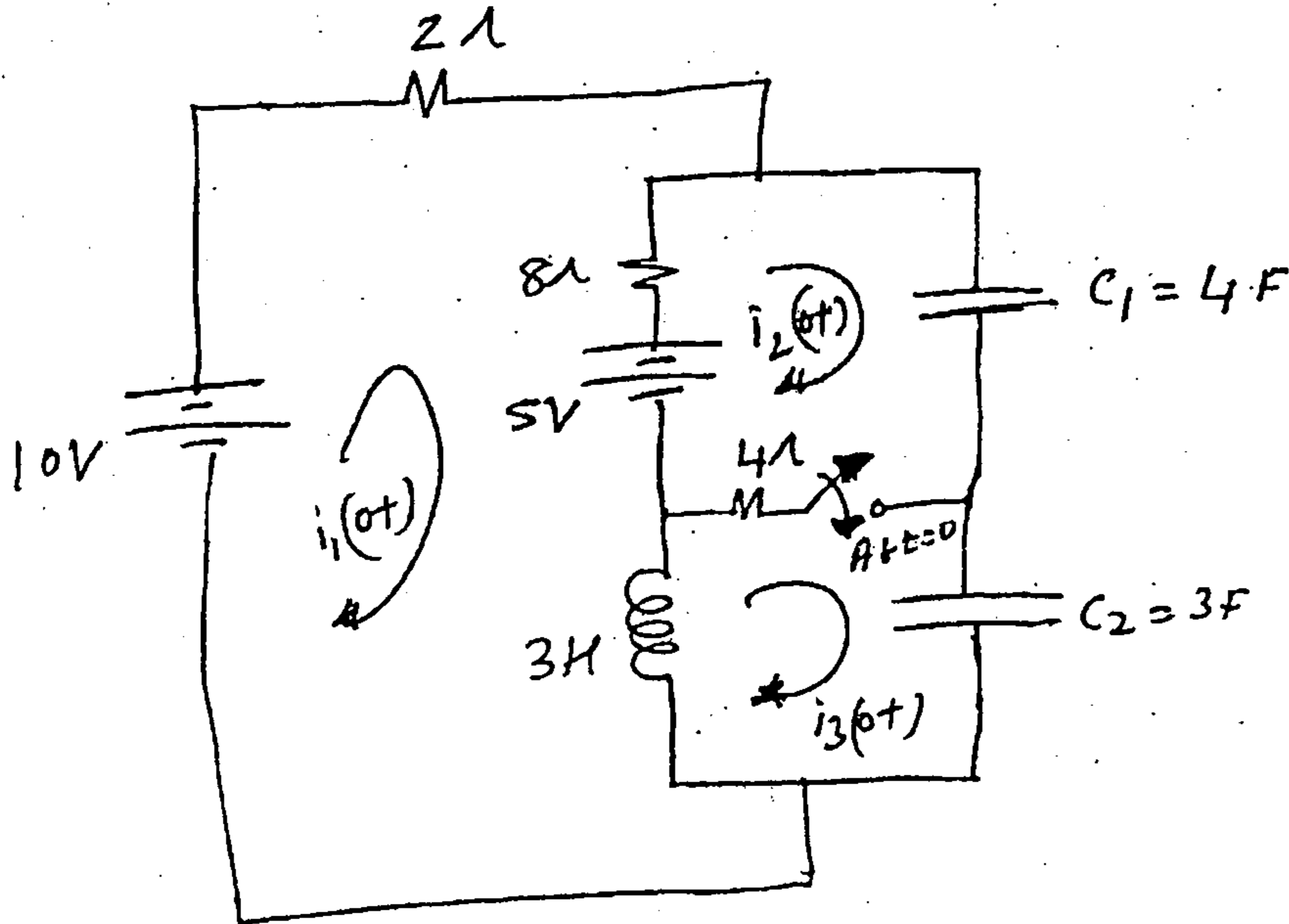
$$Z(s) = \frac{(s+1)(s+6)}{s(s+4)(s+8)}$$

Also give an example of L-C and R-L ckt.

[TURN OVER

3. (a) Obtain $i_1(0^+)$, $i_2(0^+)$ and $i_3(0^+)$

10

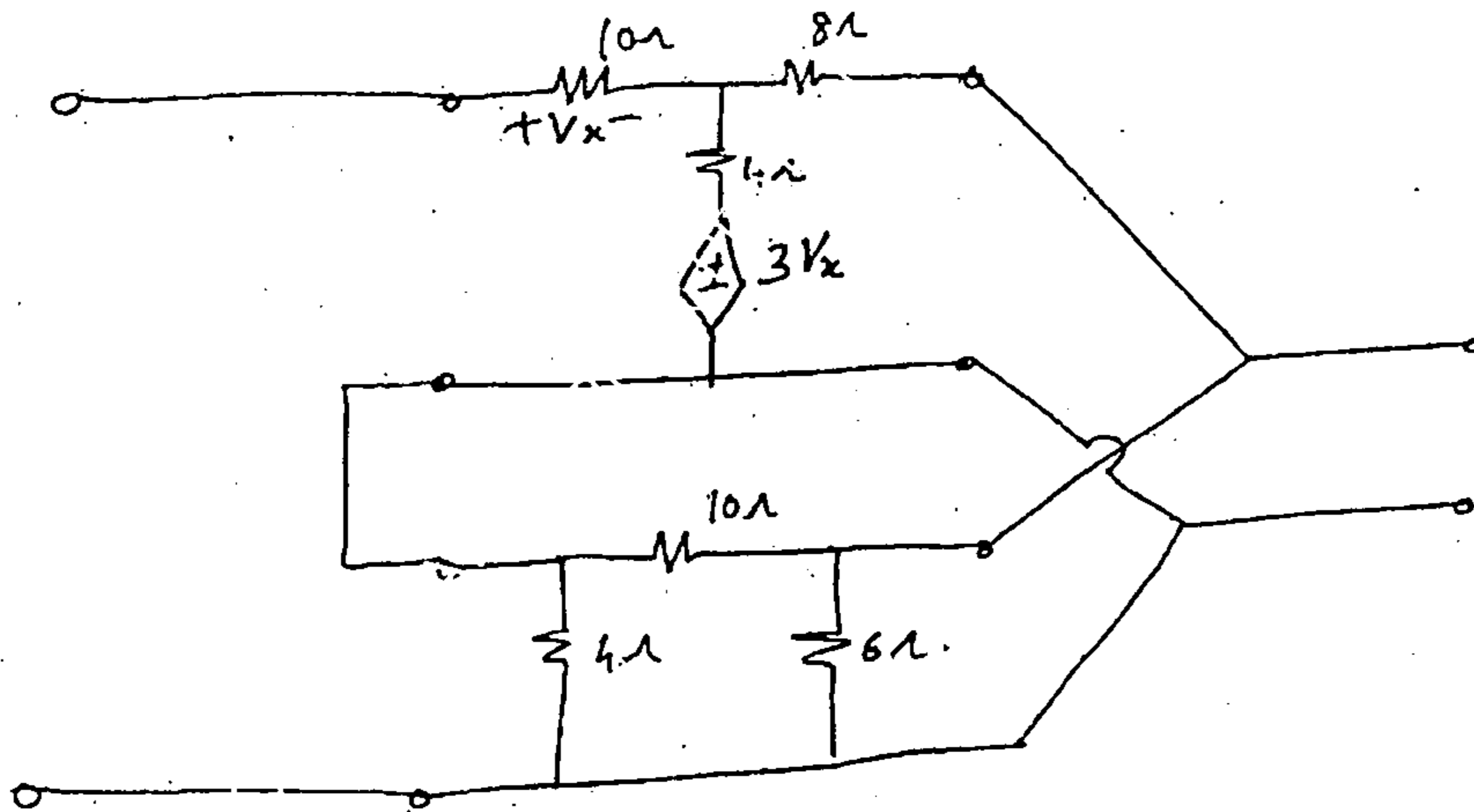


(b) Design a short circuit stub match for $Z_L = 450 - 600j(\Omega)$
for a line of $Z_0 = 300(\Omega)$
and $f = 20$ MHz
use Smith charts.

10

4. (a) Obtain hybrid parameters of the intercorrected 'Two' 2-port networks

8



(b) Check for p.r.f. test

6

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

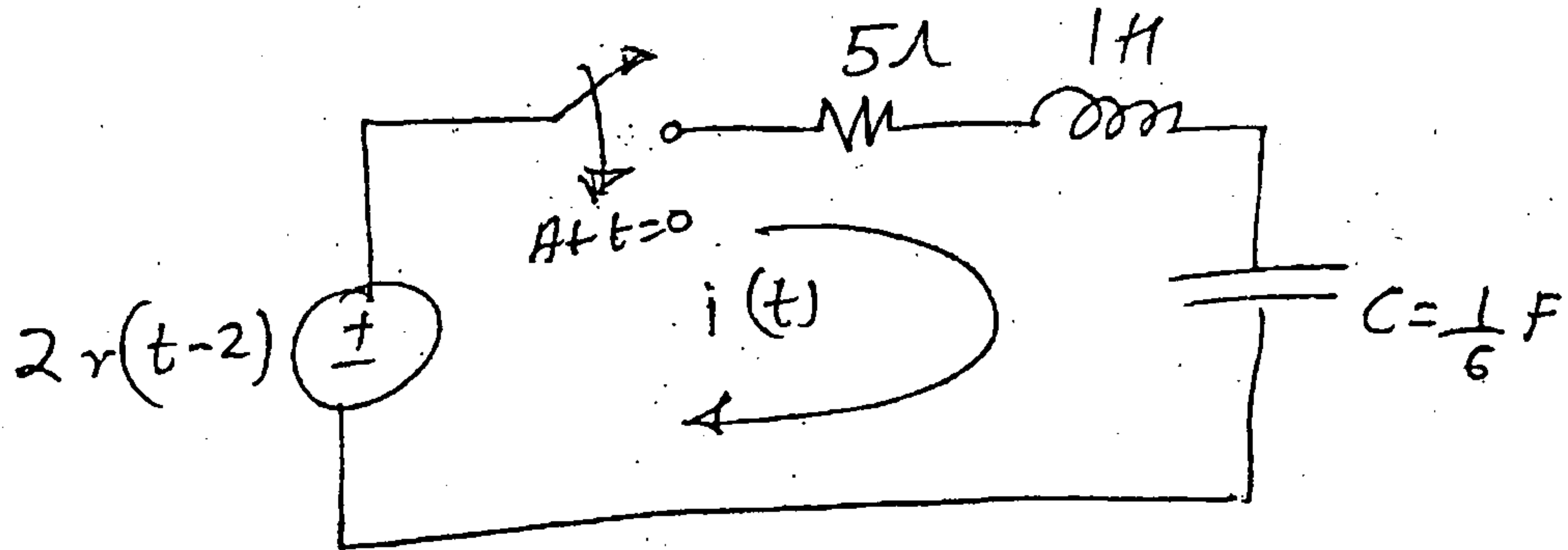
6

(c) Compare Cauer Form I and Cauer Form II of a LC Network.

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

5. (a) Obtain $i(t)$ for $t > 0$

8



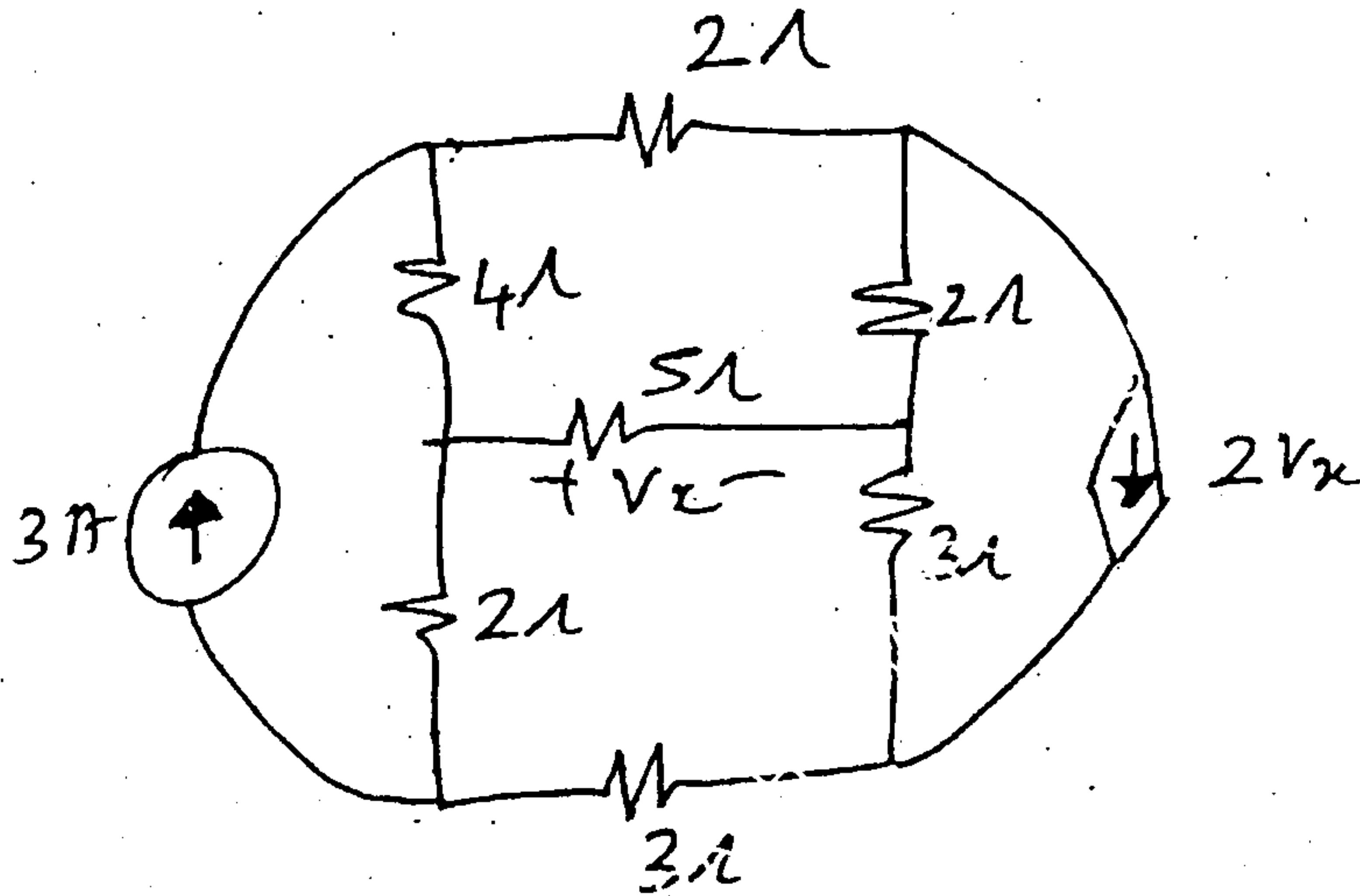
Where $r(t)$ is a ramp signal.

(b) Derive an expression for characteristic equation of a transmission line. Also obtain α , β and γ of the line.

6

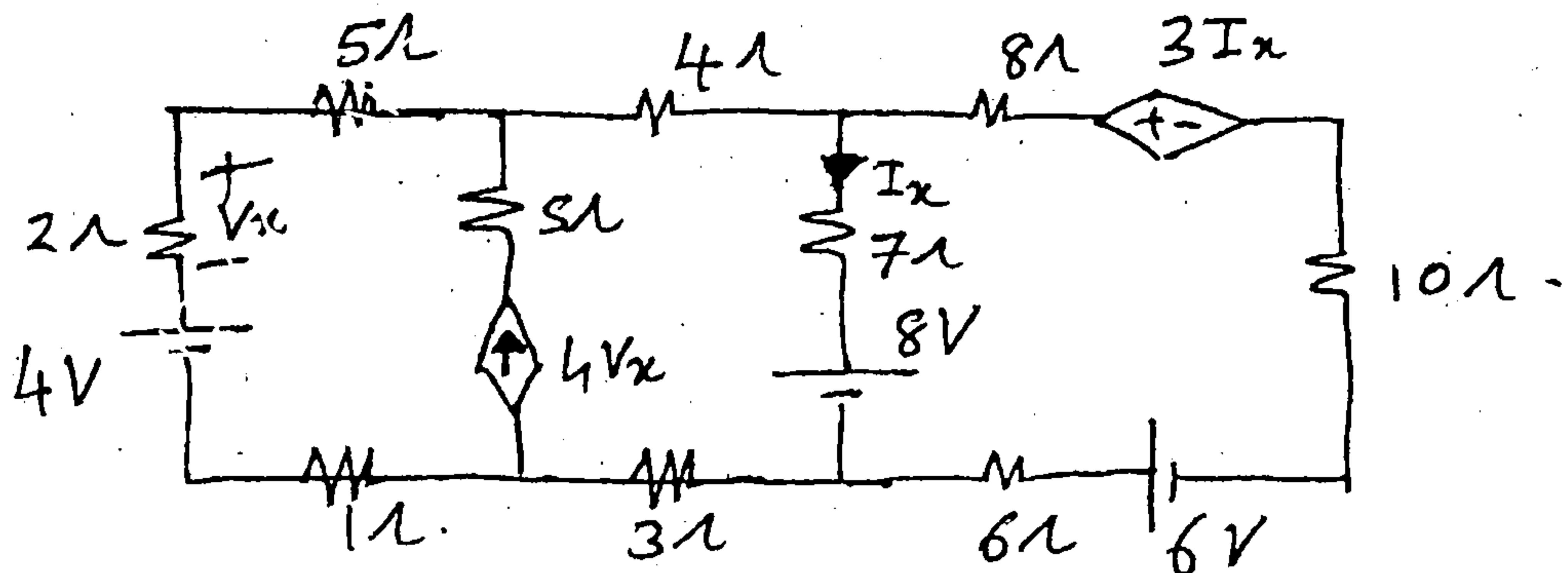
(c) Obtain V_x using some shifting and source transformation technique.

6



6. (a) Obtain Thevenin's equivalent circuit :-

8

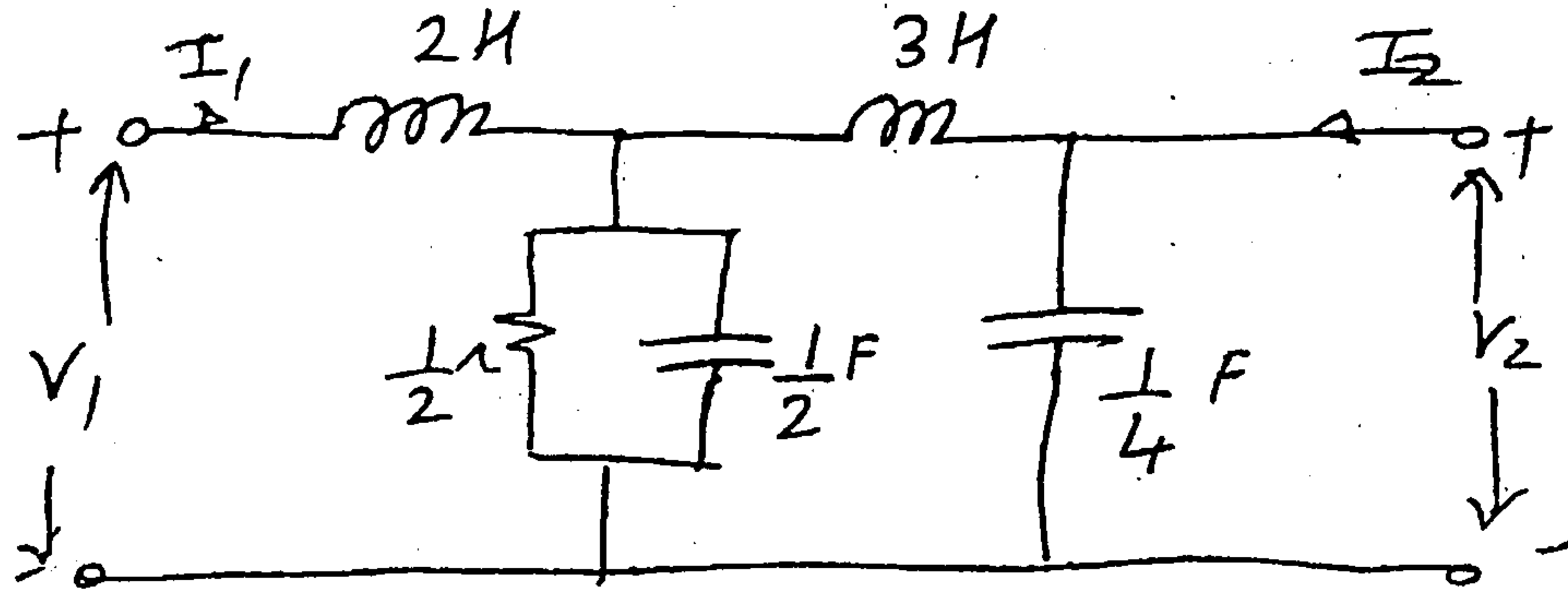


Hence find current flowing through 10Ω load.

[TURN OVER

(b) Obtain $Z_{11}(s)$, $Z_{21}(s)$, $G_{21}(s)$ for the Ladder Network

8



(c) Explain various types of filters.

4
