b) In the circuit given in fig.5, determine the input and output impedances. (8)

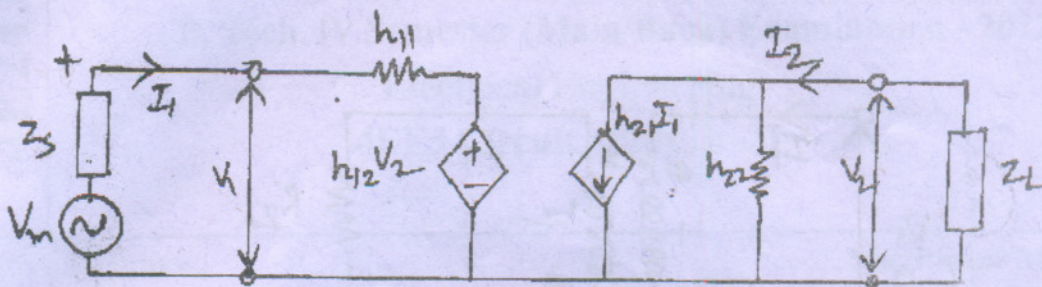
Fig.5

OR

3. a) The Z - parameters of a two port network are

$Z_{11} = 10$ ohm, $Z_{22} = 20$ ohms, $Z_{12} = Z_{21} = 5$ ohms

i) Find ABCD parameters of the network

ii) Find Equivalent T - network (8)

b) Express ABCD parameters in terms of h -parameters for a two port network. (8)

Unit - IV

4. a) Design a T and π section constant - K high pass filter having cut - off frequency of 12 kHz and nominal impedance $R_0 = 500\Omega$. Also find its characteristic impedance and phase constant at 24 kHz. (8)

b) Design T and π section of m - derived high pass filter having design impedance of 600Ω, Cut-off frequency 4 kHz and infinite attenuation at 3.6 kHz. (8)

OR

4. a) Design a half section of a composite HPF section consisting of a prototype HPF with L = 40 mH, C = 0.1 μ F. The load is 600Ω and Cut - off frequency is 1 kHz. Take $m = 0.6$ (8)

b) Design a prototype band pass filter to match with a load of 600Ω and to allow frequencies between 3 kHz and 6 kHz. (8)

Unit - V

5. a) Two coupled coils have self - inductances $L_1 = 10 \times 10^{-3} H$ and $L_2 = 20 \times 10^{-3} H$. The coefficient of coupling (K) being 0.75 in the air, find voltage in the second coil and the flun of first coil provided the second coil has 500 turns and the circuit current is given by $i_1 = 2 Sin 314 t\ A$. (8)