國立雲林科技大學
97學年度碩士班入學招生考試試題　甲組

系所：電機系
科目：電路學

1. (20%)

Find the Thevenin equivalent of the circuit to the left of nodes A-B in Fig. 1with k=10 for (a) $R_2=\infty$ and (b) $R_2=50k\Omega$.

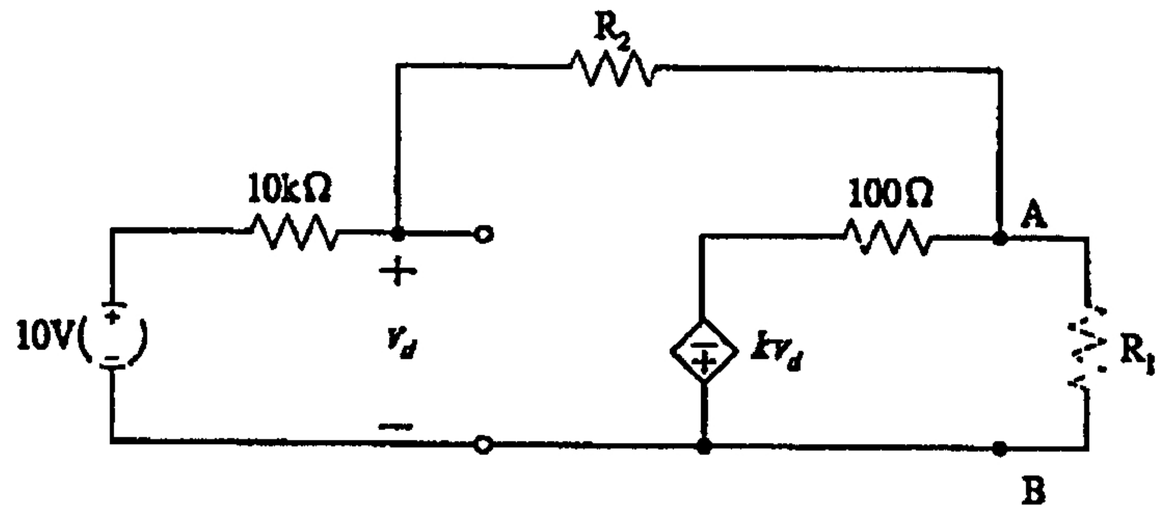

Fig. 1

2. (15%)

For the two-port network shown in Fig. 2 find the values of R_1, R_2, and C, given that the voltage transfer function is

$$H_v(s)=\frac{V_o(s)}{V_i(s)}=\frac{0.2}{s^2+3s+2}$$

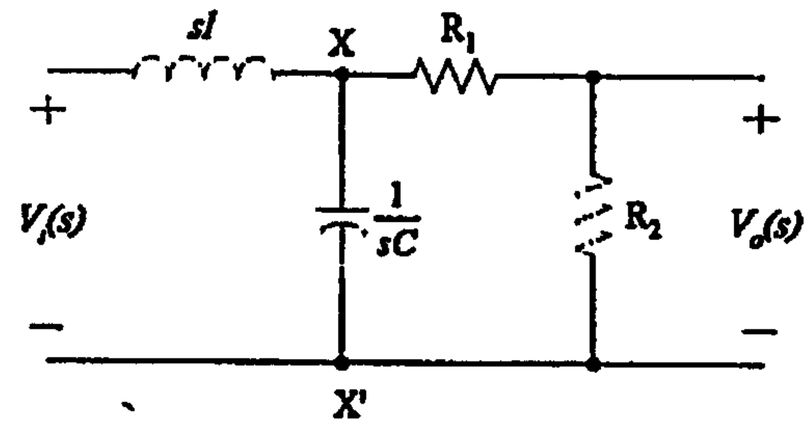

Fig. 2

3. (15%)

For the network in Fig. 3, find the value of the source voltage V which results in $V_o=5\angle 0^\circ$ V.

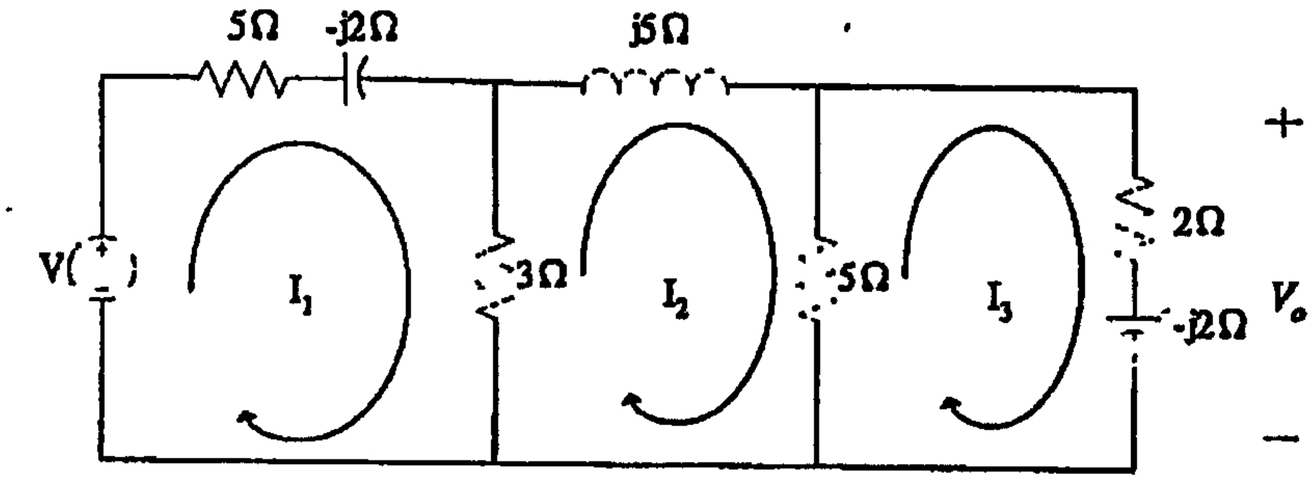

Fig. 3

國立雲林科技大學
97學年度碩士班入學招生考試試題

系所：電機系
科目：電路學

4. Obtain the complete power triangle for the circuit shown in Fig.4, if the total reactive power is 2500 var (inductive). (7%) Find the branch powers P1 and P2. (8%)

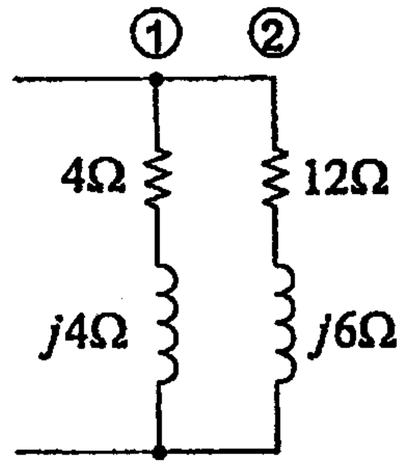

Fig.4

5. Measurements on a practical inductor at 10 MHz give L= 8.0 μH and $Q_{inductor} = 40$. Find the ideal capacitance C for parallel resonance at 10 MHz and calculate the corresponding bandwidth β. (15%)

6. Obtain the dotted equvalent circuit for the coupled circuit shown in Fig.5 (7%), and use it to find the voltage V across the10Ω capacitive reactance (13%).

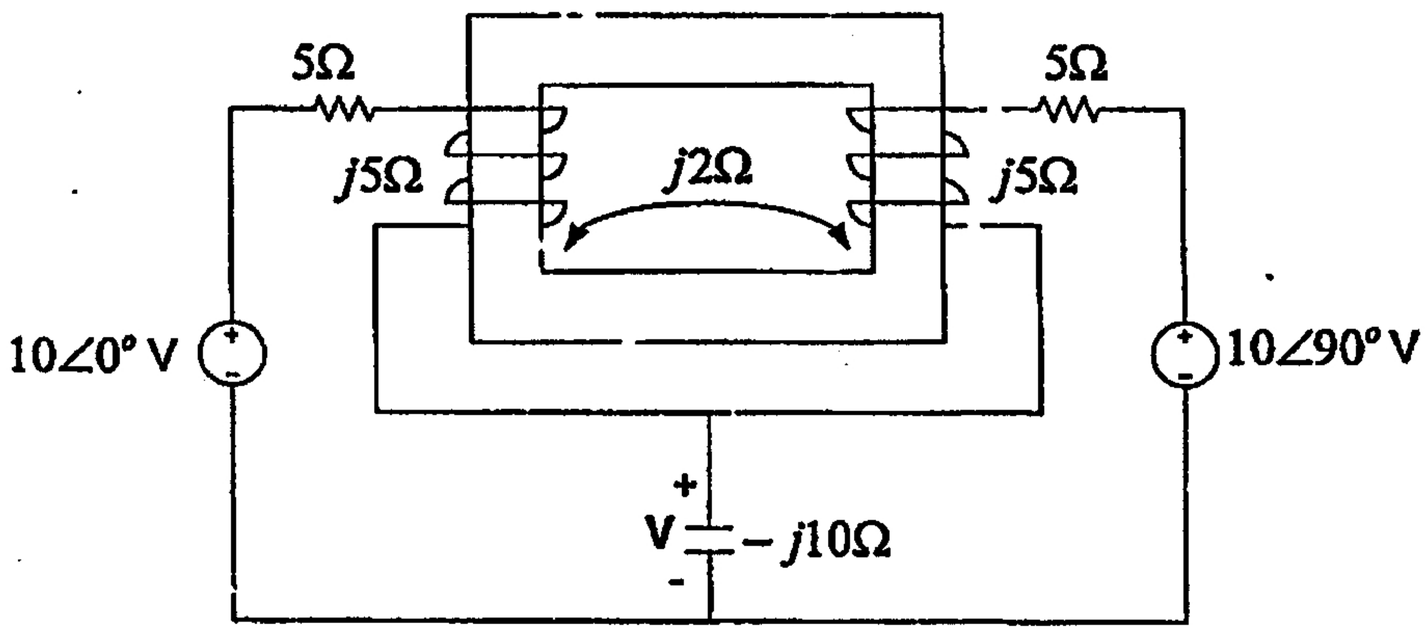

Fig.5