

國立台灣科技大學九十八年度電力電子產業研發碩士專班招生(春)試題  
 系所組別：電力電子領域  
 科目：電路學

「總分 100 分」

1. Find the equivalent resistance  $R_{ab}$  in the circuit of Fig. P1 (10 %)

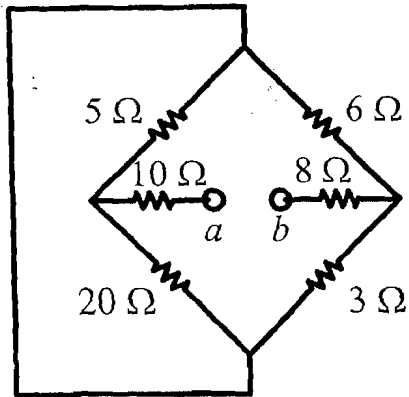


Fig. P1

2. For the circuit in Fig. P2, find  $v_1$ ,  $v_2$  and  $v_3$  using nodal analysis (15 %)

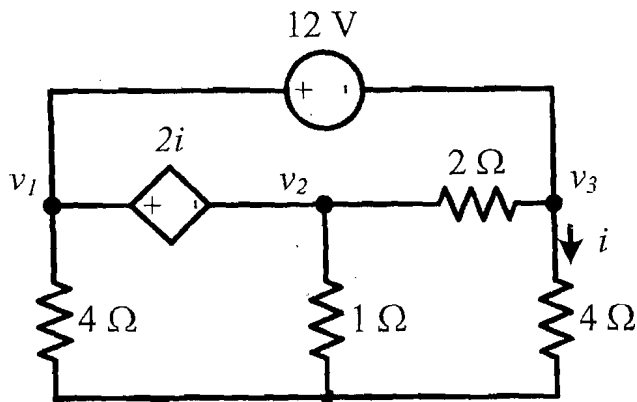


Fig. P2

3. Find the value of  $R_L$  for maximum power transfer in the circuit of Fig. P3. Also find the maximum power. (15 %)

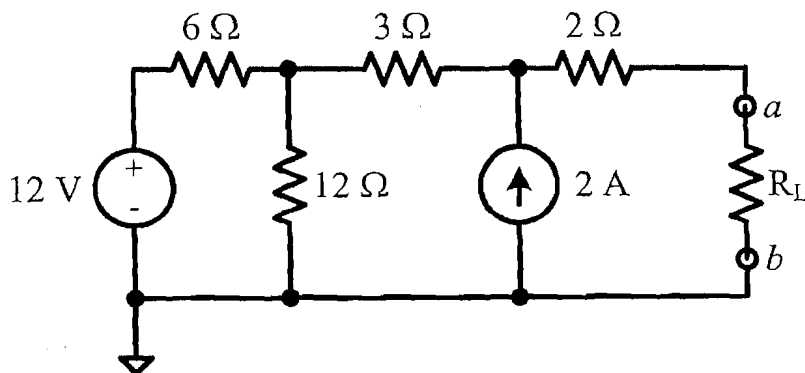


Fig. P3

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4. The switch in the circuit of Fig. P4 has been closed for a long time but is opened at  $t=0$ . Determine  $i(t)$  for  $t>0$  (10 %)

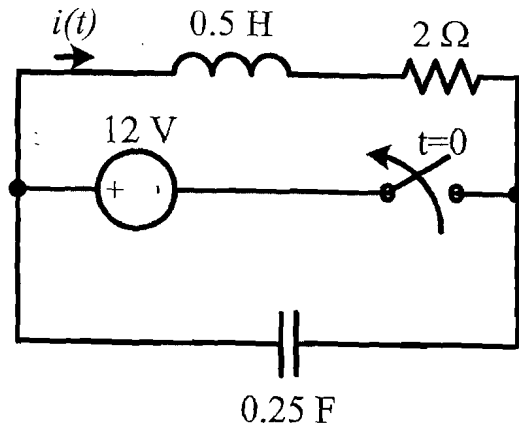
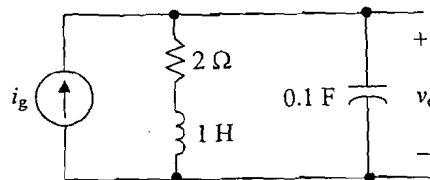


Fig. P4

5. An electrical load absorbs an average power of 8 kW at a lagging power factor of 0.8. Calculate the complex power of the load. (15 %)
6. For the circuit shown below, derive the transfer function  $V_o/I_g$  and calculate the poles and zeros. (20 %)



7. Find the z parameters for the two-port circuit shown below. (15 %)

