

1. Find the  $i_1, i_2$  for the network of Fig.1
2. Find the  $v_1, v_2$  and  $v_3$  for the network of Fig.2
3. Find the  $I_2$  if  $I_1 = 3A$  for the network of Fig.3
4. Find the  $i$  for the network of Fig.4
5. Find the  $R_{eq}$  and  $i_1$  if  $i = 6A$  for the network of Fig.5
6. Find the  $I$  for the network of Fig.6
7. Find the  $I$  for the network of Fig.7
8. Find the  $v$  for the network of Fig.8
9. Find the  $v$  for the network of Fig.9
10. Find the  $R_{eq}$  for the network of Fig.10
11. Find the  $R$  for the network of Fig.11

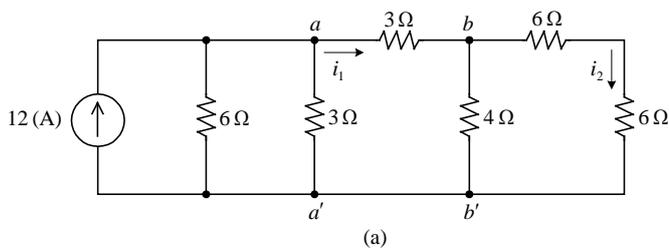


Fig.1

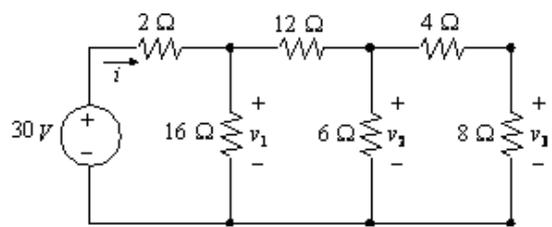


Fig.2

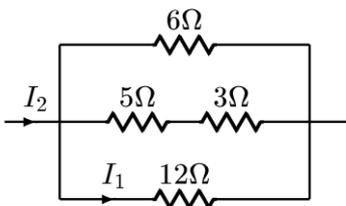


Fig. 3

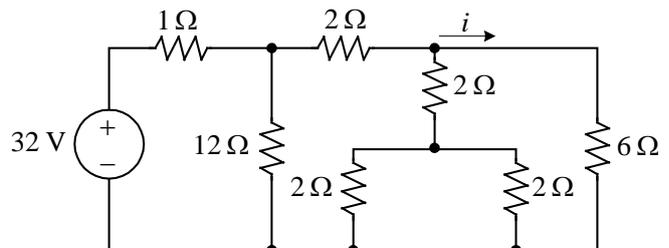


Fig. 4

P. 2

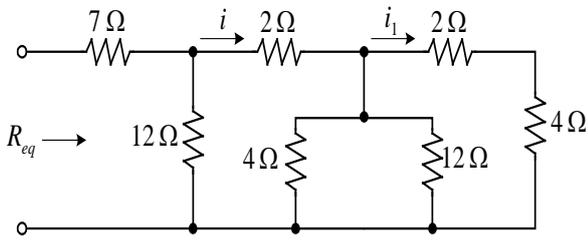
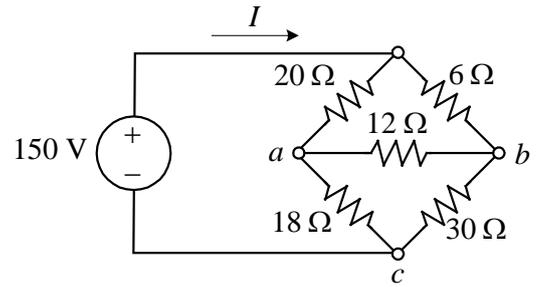


Fig.5



(a)

Fig.6

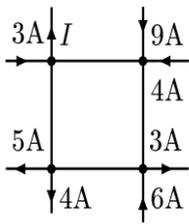


Fig.7

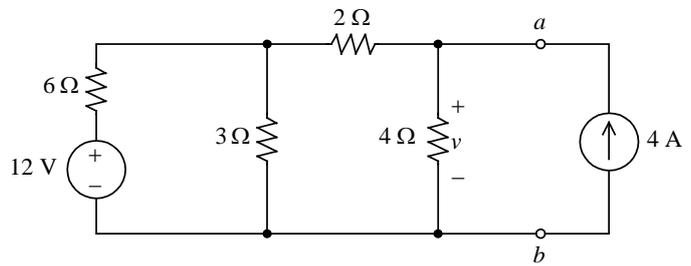


Fig.8

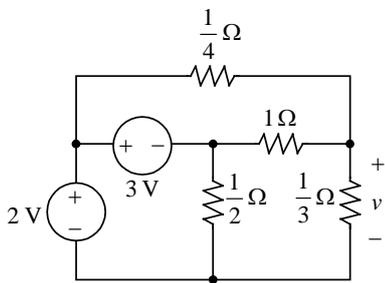


Fig.9

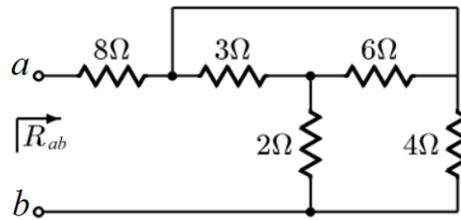


Fig.10

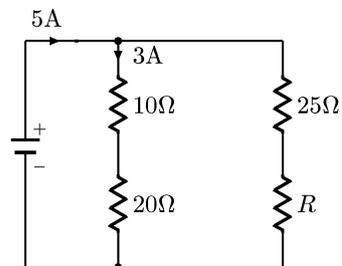


Fig.11

1. Find the  $i$ ,  $i_2$  and  $v_1$  for the network of Fig.1
2. Find the  $i$  for the network of Fig.2
3. Find the  $I_2$  if  $I_1 = 3A$  for the network of Fig.3
4. Find the  $V_o$  for the network of Fig.4
5. Find the  $R$  for the network of Fig.5
6. Find the  $I$  for the network of Fig.6
7. Find the  $v$  for the network of Fig.7
8. Find the  $i$  for the network of Fig.8
9. Find the  $R_1$  and  $R_2$  for the network of Fig.9
10. Find the  $R_{eq}$  for the network of Fig.10
11. Find the  $R$  for the network of Fig.11

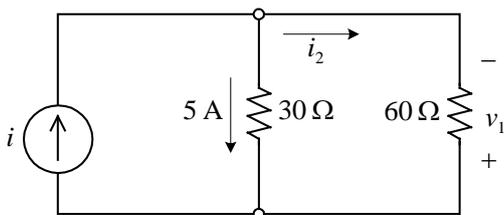


Fig.1

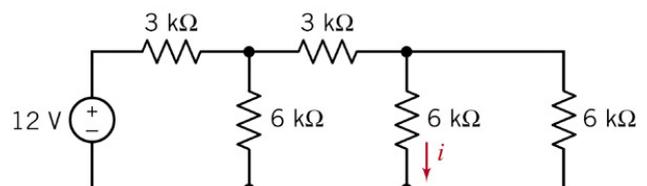


Fig.2

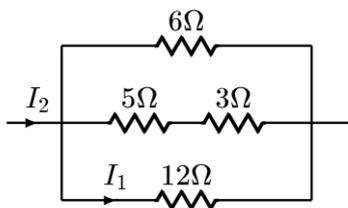


Fig. 3

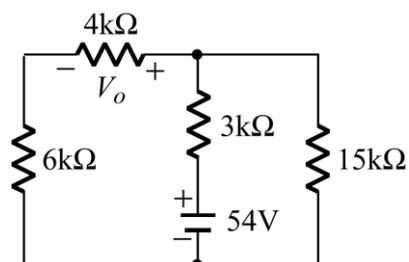


Fig. 4

P. 2

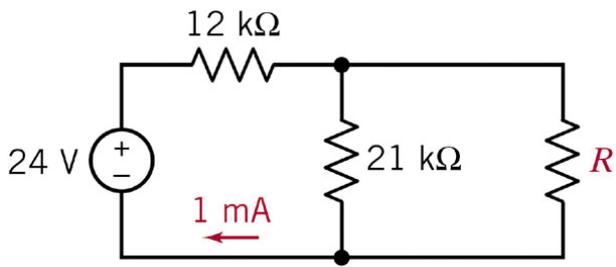


Fig.5

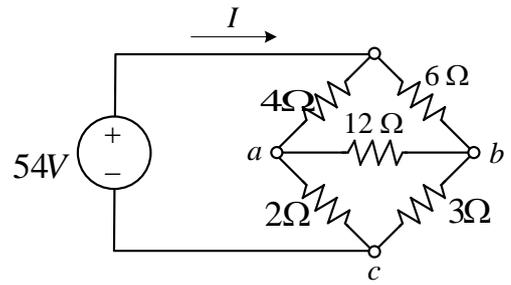


Fig.6

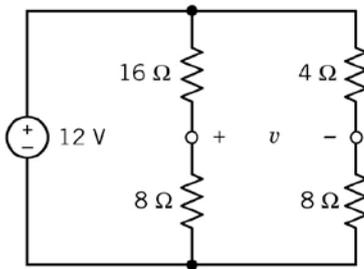


Fig.7

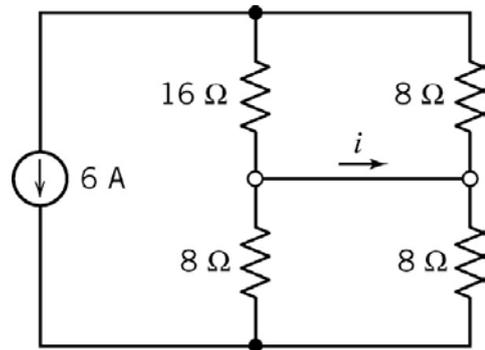


Fig.8

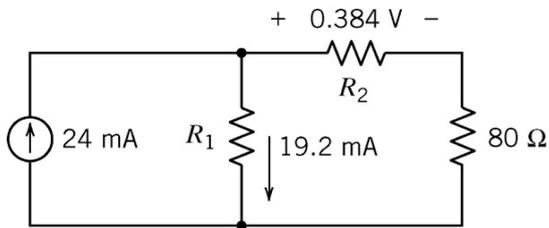


Fig.9

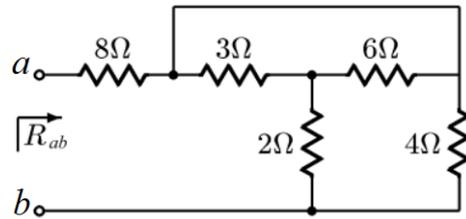


Fig.10

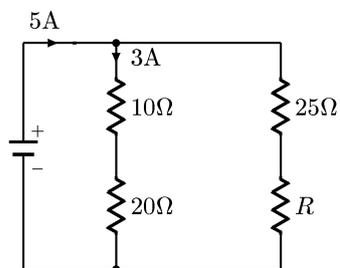


Fig.11

國立虎尾科技大學 105 學年度第一學期博士班資格考

試題

系別：動力機械系機械與機電工程博士班

第 1 頁

共 2 頁

科目：電路學

注意事項：

- (1) 本試題共有 7 題，每題 15 分，合計一百分。
- (2) 請依序作答於答案卷上並註明題號，若未註明選答題號及超過規定題數時，謹採計作答順序較前之題目計分。
- (3) 可使用計算機 open book

1. Find the  $I$  for the network of Fig.1

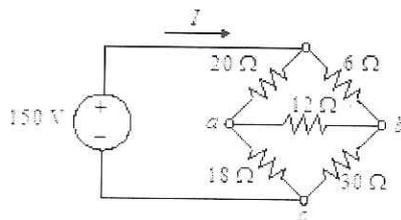


Fig.1

2. Find the  $i$  for the network of Fig.2

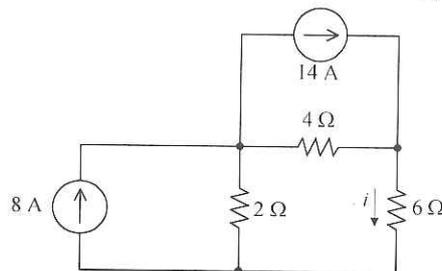


Fig.2

3. If  $V=36v$  , Find the  $i$  for the network of Fig.3

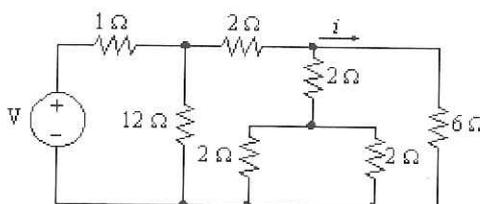


Fig.3

4. If  $R=5\ \Omega$ , Find the  $I$  through the  $R$  for the network of Fig.4

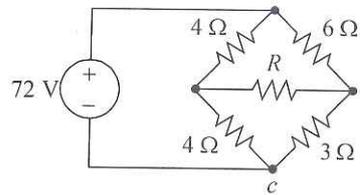


Fig.4

5. Find the  $i$  for the network of Fig.5

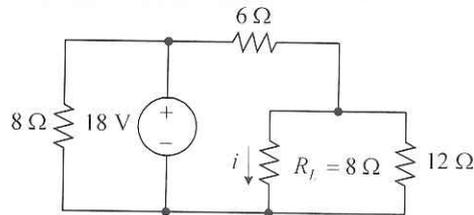


Fig.5

6. Find the  $I$  and  $R$  for the network of Fig.6

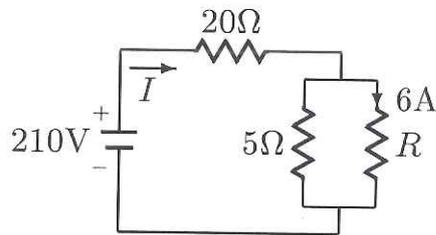


Fig.6

7. If  $i(0^-)=2\text{ A}$ , Find the  $i(t)$  of  $t > 0$  for the network of Fig.7

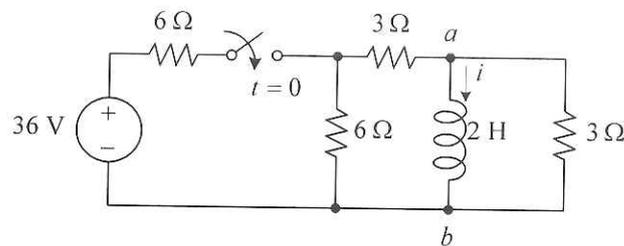


Fig.7

# 國立虎尾科技大學 105 學年度第二學期博士班資格考試題

系別：動力機械系機械與機電工程博士班

科目：電路學

注意事項：

- (1) 本試題共有 7 題，每題 15 分，合計一百分。
- (2) 請依序作答於答案卷上並註明題號，若未註明選答題號及超過規定題數時，謹採計作答順序較前之題目計分。
- (3) 可使用計算機 close-book exam

1. Find the  $i_1$  與  $i_2$  for the network of Fig.1

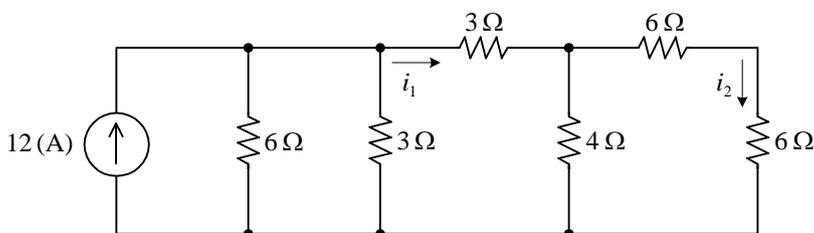


Fig.1

2. Find the  $R_{eq}$  and  $i_1$  when  $i=6A$  for the network of Fig.2

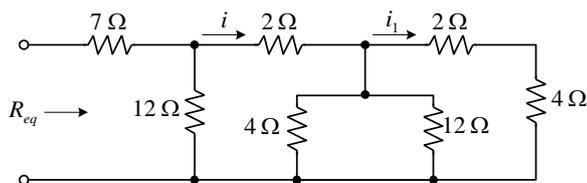


Fig.2

3. Find the  $v$  for the network of Fig.3

$$i(t) = \begin{cases} 0 & , -\infty < t < 0 \\ t & , 0 \leq t < 1 \\ -(t-2) & , 1 \leq t < 2 \\ 0 & , 2 \leq t < \infty \end{cases}$$

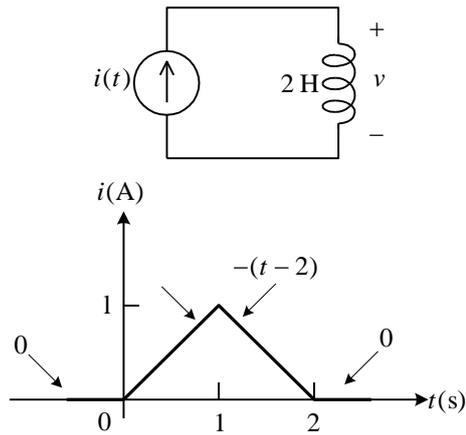


Fig.3

4. Find the  $I$  and  $v_{ab}$  for the network of Fig.4

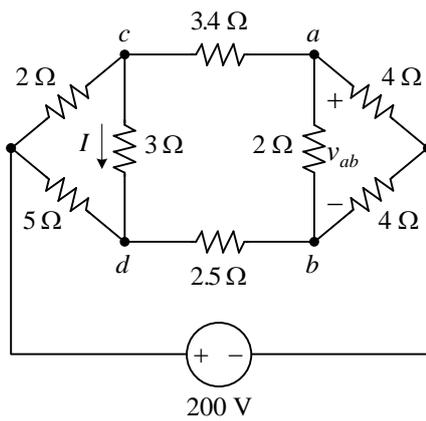


Fig.4

5. Find the  $R$  from A-C terminal for the network of Fig.5

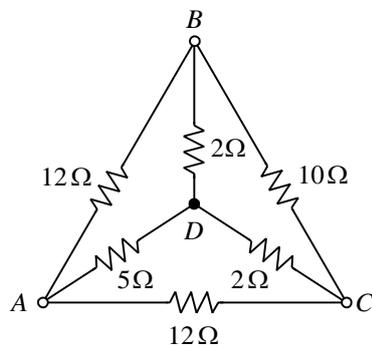


Fig.5

6. Find  $v(t)$  of  $t > 0$  if  $v(0^-) = 15(V)$  for the network of Fig.6

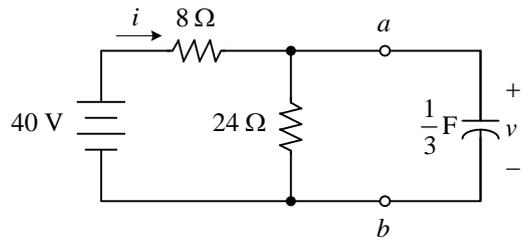


Fig.6

7. Find the  $v$  for the network of Fig.7

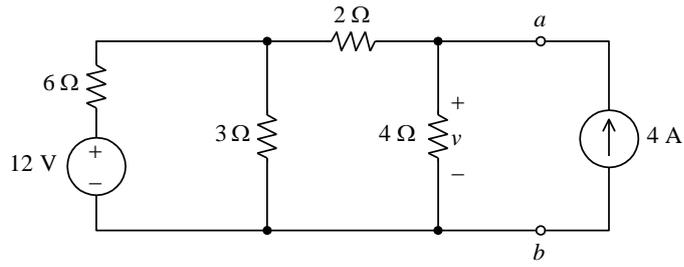


Fig.7

# 國立虎尾科技大學 106 學年度第一學期博士班資格考試題

系別：動力機械工程系機械與機電工程博士班

第 1 頁 共 2 頁

科目：電路學

注意事項：

- (1) 本試題共有 7 題，任選 5 題作答，每題 20 分，合計一百分。
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- (3) 可使用計算機 close book

1. Find the  $V_1$ 、 $V_3$  and  $V_{ab}$  for the network of Fig.1

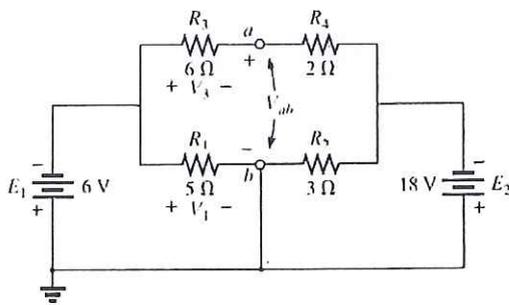


Fig.1

2. Calculate the indicated currents and voltage for the network of Fig.2

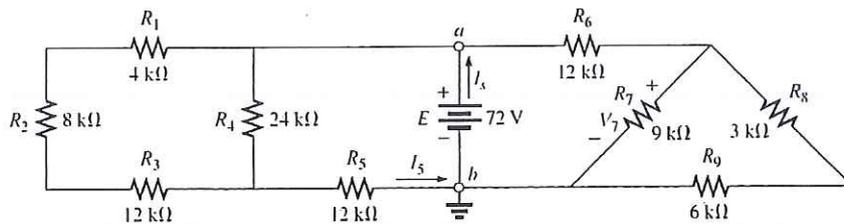


Fig.2

3. Find the  $i$  for the network of Fig.3

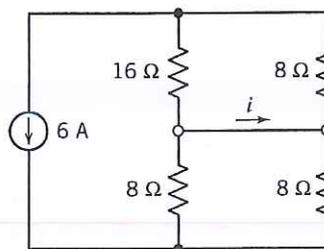


Fig.3

4. Find the  $v$  for the network of Fig.4

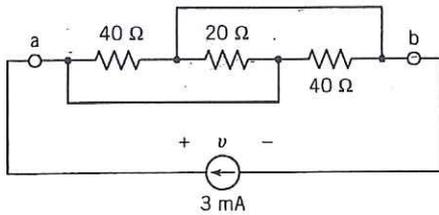


Fig.4

5. Find the  $R$ , given that  $R_{eq} = 9 \Omega$  for the network of Fig.5

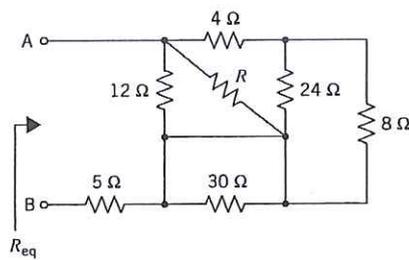


Fig.5

6. Find the  $R$  for the network of Fig.6

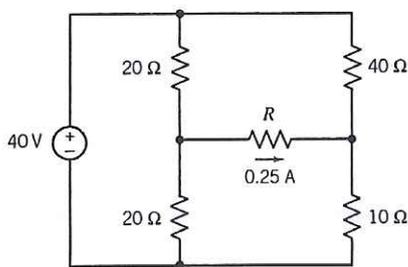


Fig.6

7. Find the  $v_1$ ,  $v_2$  and  $i_a$ ,  $i_b$  for the network of Fig.7

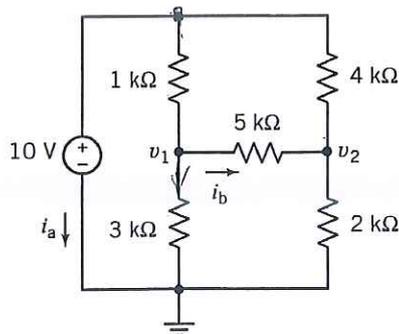


Fig.7

# 國立虎尾科技大學 106 學年度第二學期博士班資格考試題

系別：動力機械工程系機械與機電工程博士班

第 1 頁 共 3 頁

科目：電路學

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- (3) 可使用計算機 close book

1. Find the indicated currents for the network of Fig.1

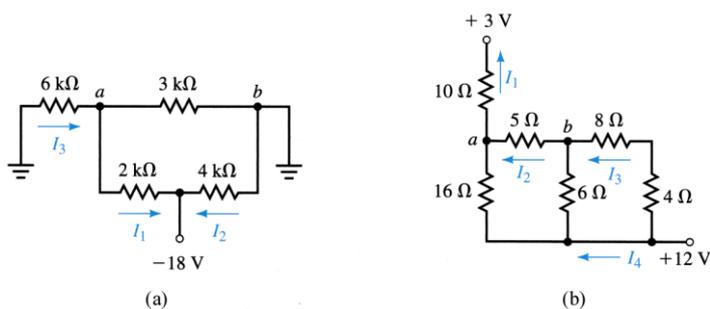


Fig.1

2. Find the  $R_{ab}$  and  $R_{bc}$  for the network of Fig.2

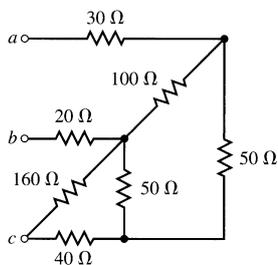


Fig.2

3. Find the indicated currents for the network of Fig.3

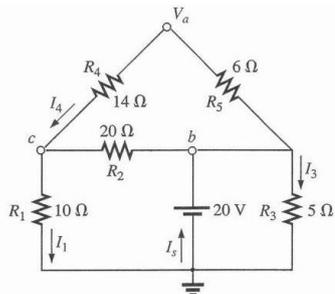


Fig.3

4. Find the  $I$  for the network of Fig.4

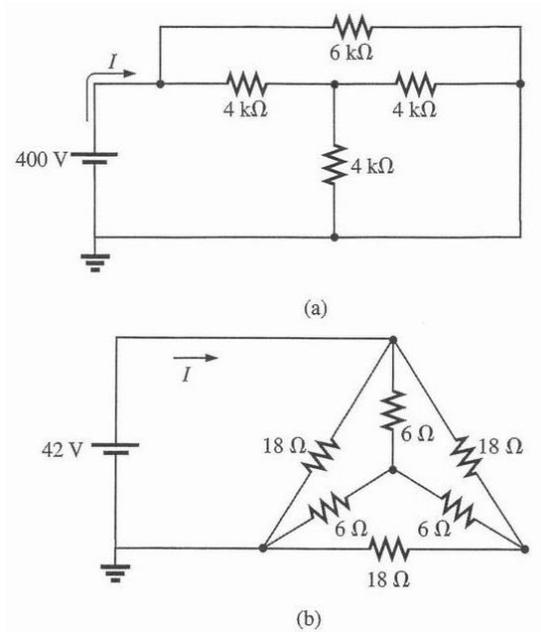


Fig.4

5. Find the  $I_{R_1}$  through  $R_1$  for the network of Fig.5

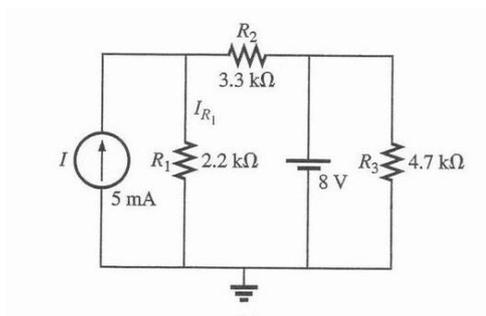


Fig.5

6. Find the  $v_1$  for the network of Fig.6

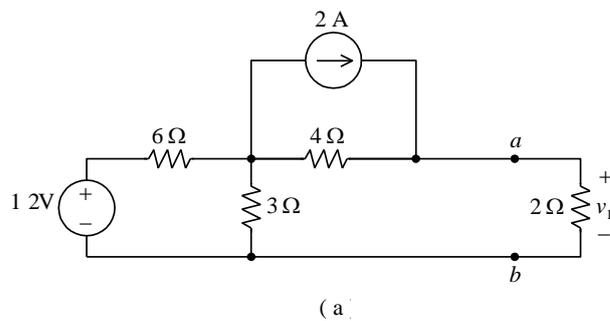


Fig.6

7. Find the  $v$  if  $R_L = \frac{1}{3} \Omega$  for the network of Fig.7

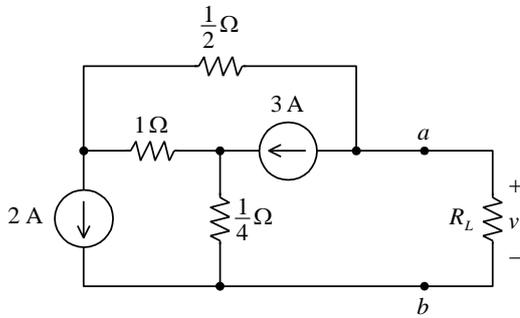


Fig.7

# 國立虎尾科技大學 107 學年度第一學期博士班資格考試題

系列：動力機械系機械與機電工程博士班  
 科目：電路學

注意事項：

- (1) 本試題共有 8 題，答對每題 15 分，合計一百分。
- (2) 請依序作答於答案卷上並註明題號，若未註明選答題號及超過規定題數時，謹採計作答順序較前之題目計分。
- (3) 可使用計算機 close-book exam

1. Determine the values of  $R_1$ ,  $R_2$  and  $R_3$  in Fig. 1 if  $R_2=2R_1$ ,  $R_3=2R_2$  and the total resistance is  $16\text{k}\Omega$ .

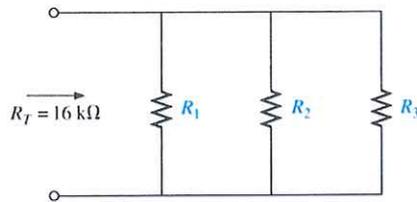


Fig. 1

2. Find the  $I$  for the network of Fig.2

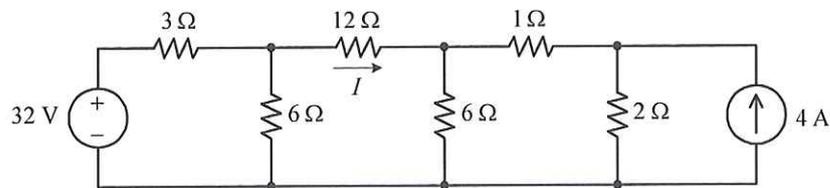


Fig.2

3. Find the  $I$  for the network of Fig.3

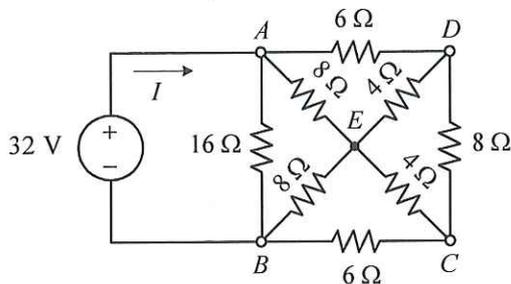


Fig.3

4. Find the Current flow the  $R$  of Fig.4 ( $R=5\Omega$ )

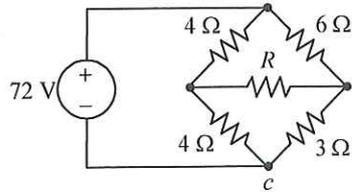


Fig.4

5. if  $v(0) = 0$ , find the  $v(t)$  and  $i(t)$  when  $t > 0$  of Fig.5

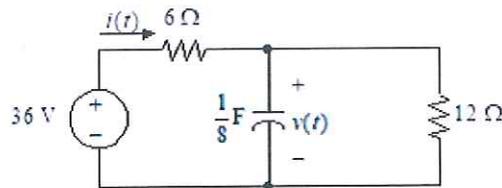


Fig.5

6. if  $i(0^-) = 2\text{ A}$ , find the  $i(t)$  when  $t > 0$  of Fig.6

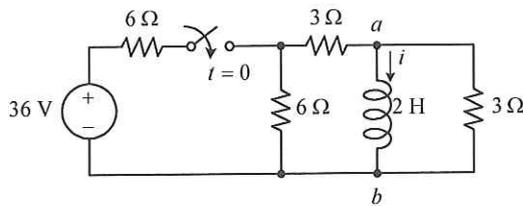
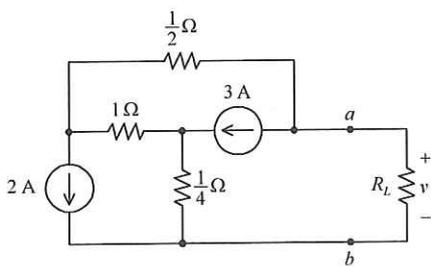


Fig.6

7. Find  $v$  when  $R_L = \frac{1}{3}\Omega$  of Fig.7



8. Find the  $I$  for the network of Fig.8

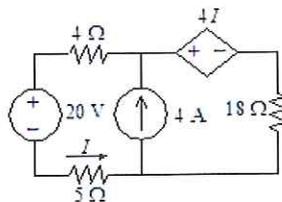


Fig.8

# 國立虎尾科技大學 108 學年度第一學期博士班資格考試題

系別：動力機械系機械與機電工程博士班

科目：電路學

注意事項：

- (1) 本試題共有 10 題，答對每題 10 分，合計一百分。
- (2) 請依序作答於答案卷上並註明題號，若未註明選答題號及超過規定題數時，謹採計作答順序較前之題目計分。
- (3) 可使用計算機 close-book exam

1. Determine the values of  $V$ .

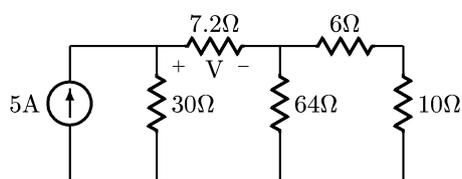


Fig. 1

2. Find the  $I$  for the network of Fig.2

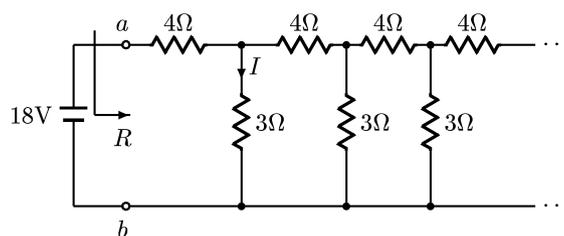


Fig.2

3. If  $V_A = -60V$ , Find the  $V_3$  and  $R_1$  for the network of Fig.3

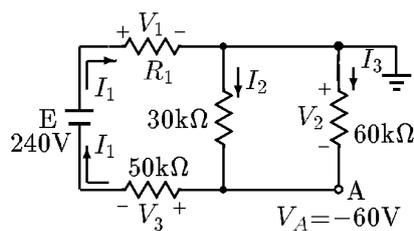


Fig.3

4. Find the Current flow the  $\text{\textcircled{A}}$  and  $E$  of Fig.4

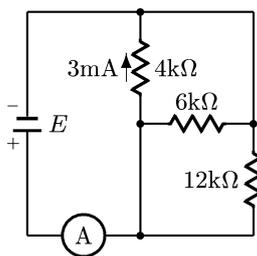


Fig.4

5. Find the  $V_{ab}$  of Fig.5

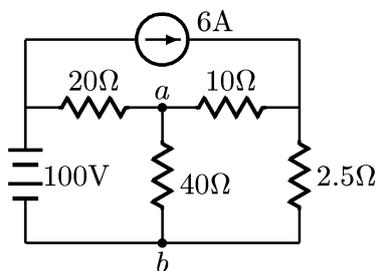


Fig.5

6. Find the  $V_{AB}$  of Fig.6

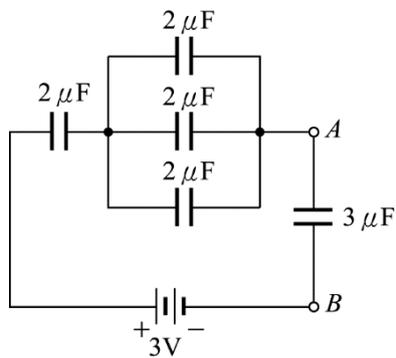


Fig.6

7. If  $v(0^-) = 0V$ , find the  $I$  when  $t > 0$  of Fig.7

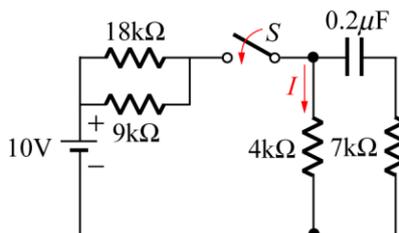


Fig.7

8. If  $S$  is opened when  $t=0$ , find the  $V_L$  when  $t=0.2$  of Fig.8

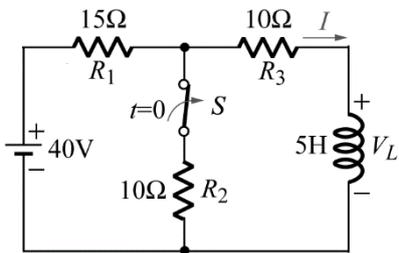


Fig.8

9. Find the  $I$  for the network of Fig.9

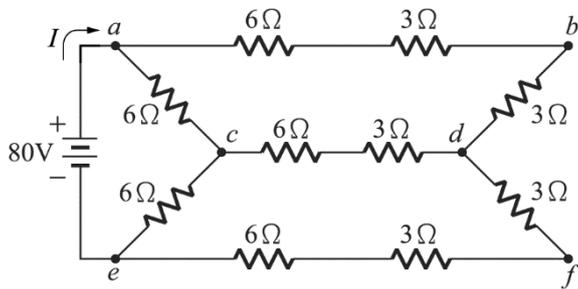


Fig.9

10. Find the values of  $R$  for maximum power transfer to  $R$  for the Fig. 10

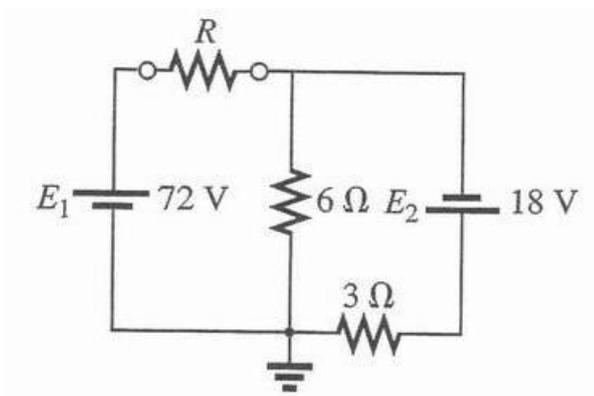


Fig.10

# 國立虎尾科技大學 108 學年度第 2 學期博士班資格考試題

系別：動力機械工程系機械與機電工程博士班

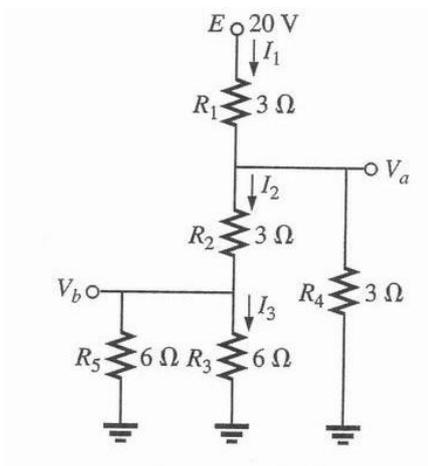
第○頁 共○頁

科目：電路學

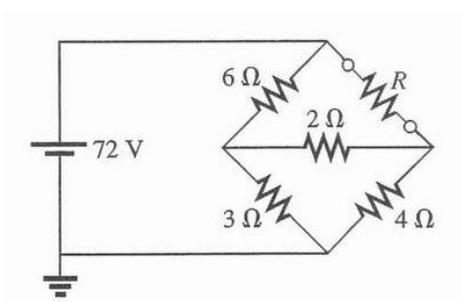
注意事項：

- (1) 本試題共有 11 題，任選 10 題作答，每題 10 分，合計一百分。
- (2) 請依序作答於答案卷上並註明題號，若未註明選答題號及超過規定題數時，謹採計作答順序較前之題目計分。
- (3) 可使用計算機 close book

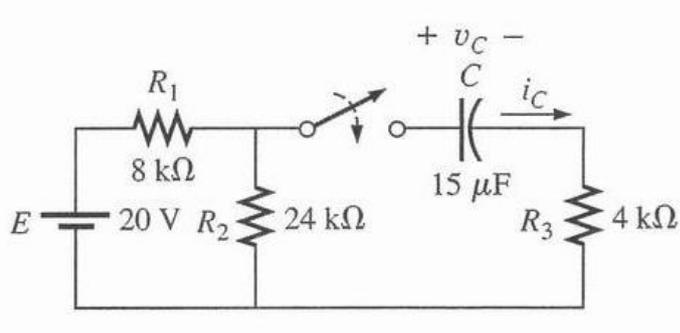
1. Find  $I_1$  ,  $I_2$  ,  $I_3$  ,  $V_a$  ,  $V_b$



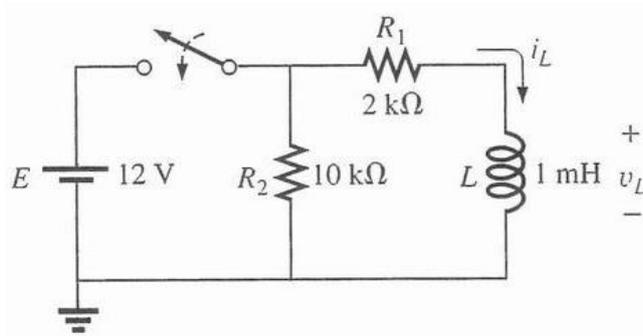
2. Find the current through R If  $R=5\Omega$



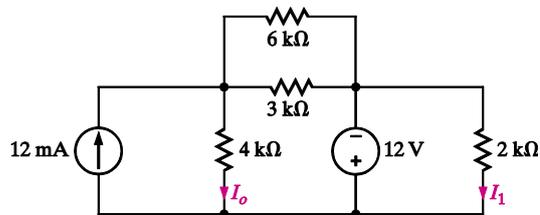
3. Find the mathematical expressions for the transient behavior of the  $v_c$  and  $i_c$  following the closed of the switch..



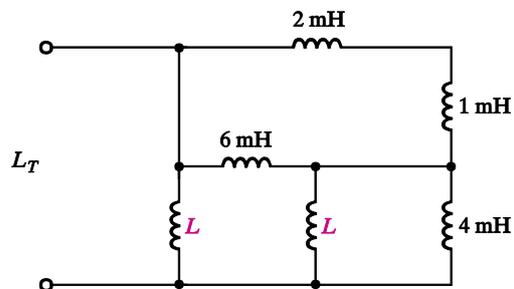
4. a. Determine the time constant.  
 b. Write the mathematical expressions for the  $v_L$  and  $i_L$  when the switch is closed.



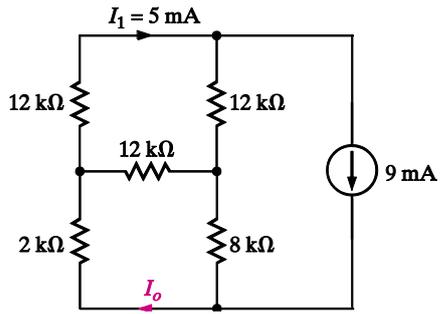
5. Find  $I_o$  and  $I_1$



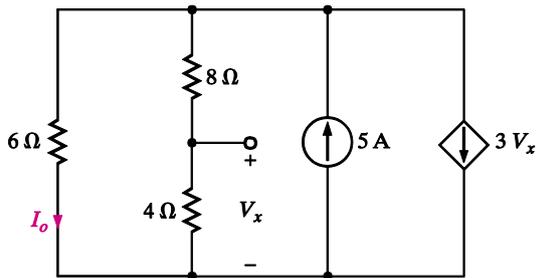
6. Find  $L$  if  $L_T = 2$  mH



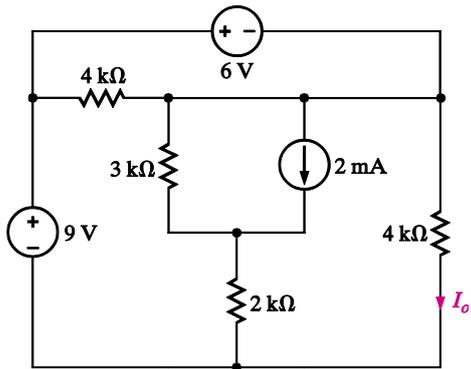
7. Find  $I_o$



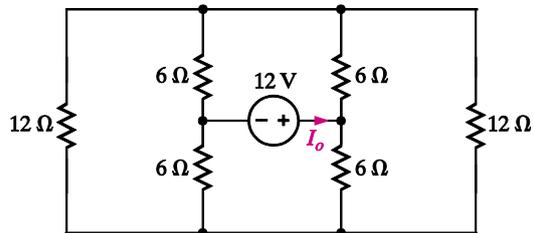
8. Find  $I_o$



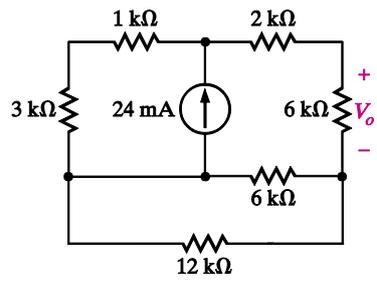
9. Find  $I_o$



10. Find  $I_o$



11. Find  $V_o$



# 國立虎尾科技大學 109 學年度第 1 學期博士班資格考試題

系別：動力機械工程系機械與機電工程博士班

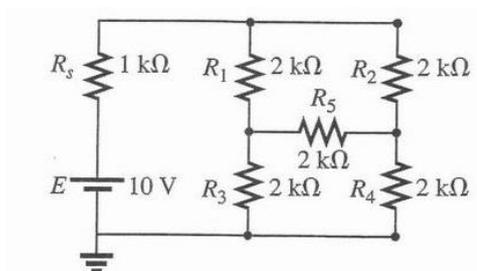
第○頁 共○頁

科目：電路學

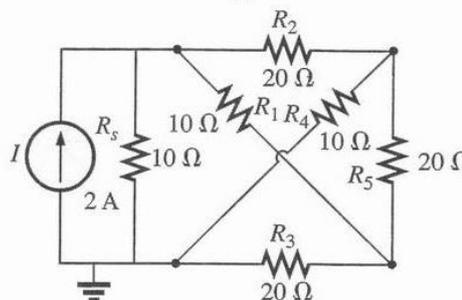
注意事項：

- (1) 本試題共有 10 題，每題 10 分，合計一百分。
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- (3) 可使用計算機 close book

1. Find the current through the  $R_s$

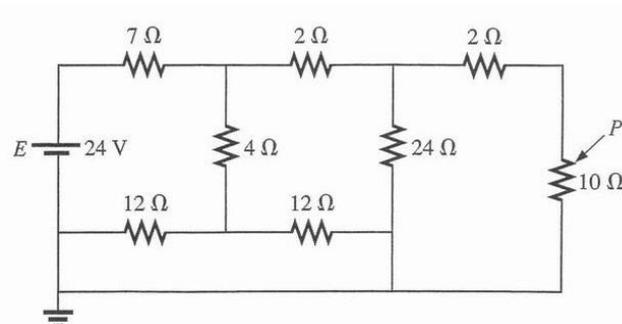


(a)

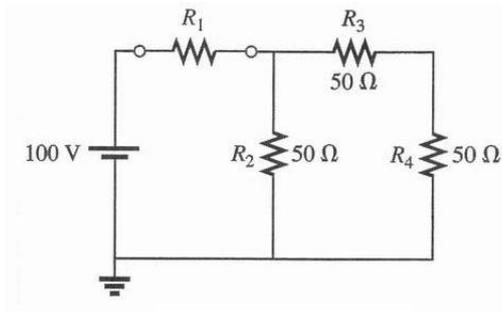


(b)

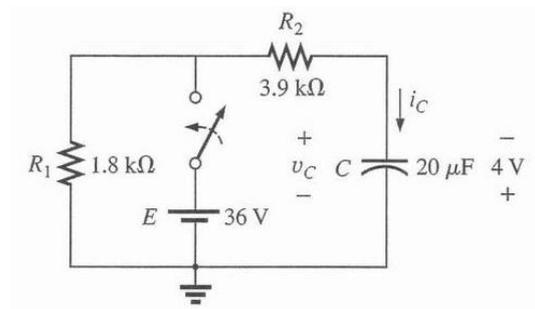
2. Find the power  $P$  from  $10\Omega$



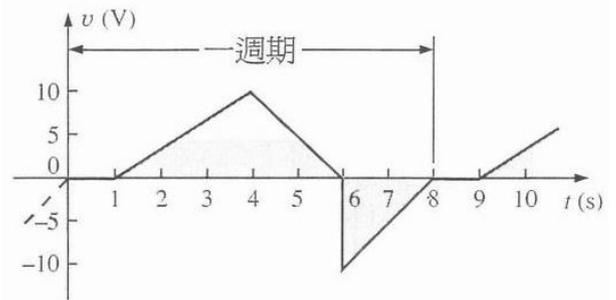
3. Find  $R_1$  such that the  $R_4$  will receive maximum power



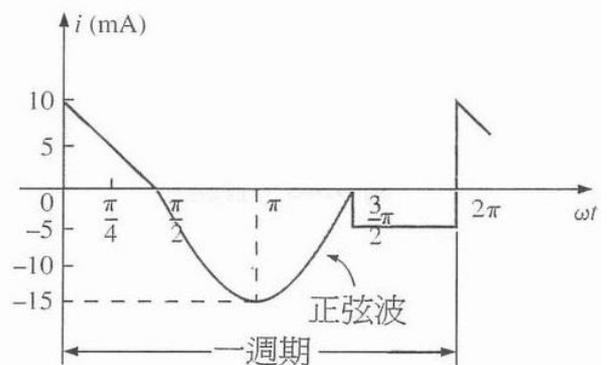
4. The  $C$  is initially charged to 4V with the polarity shown. Write the mathematical expressions for the  $v_C$  and  $i_C$  when the switch is closed.



5. Find the average value of the periodic waveform in Fig. over one full cycle.

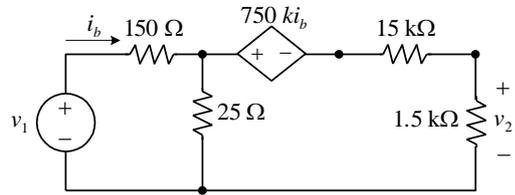


(a)

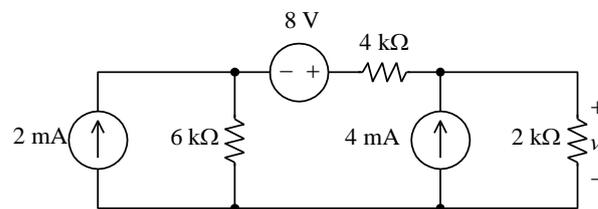


(b)

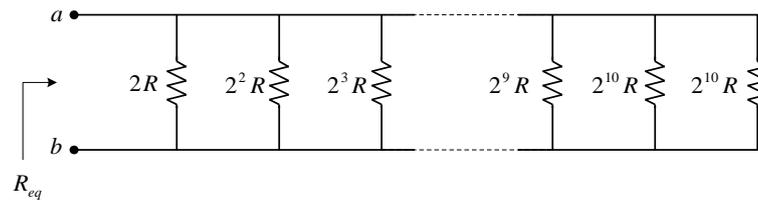
6. Find  $\frac{v_2}{v_1}$



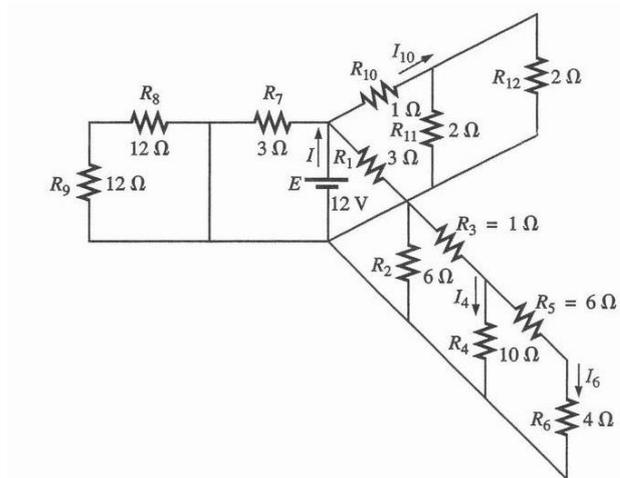
7. Find  $v$



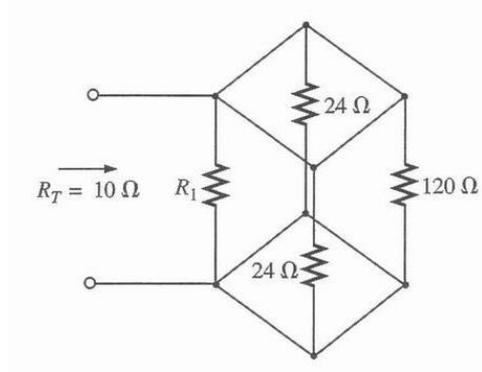
8. Find  $R_{eq}$



9. Find  $I$  and  $I_4$



10. Find  $R_1$



# 國立虎尾科技大學 109 學年度第 2 學期博士班資格考試題

系別：動力機械工程系機械與機電工程博士班

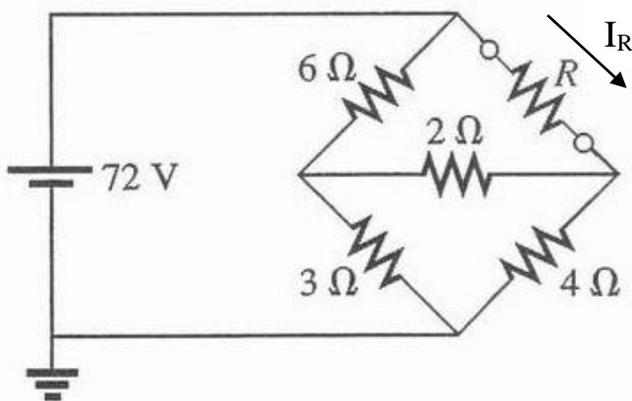
第 1 頁 共 2 頁

科目：電路學

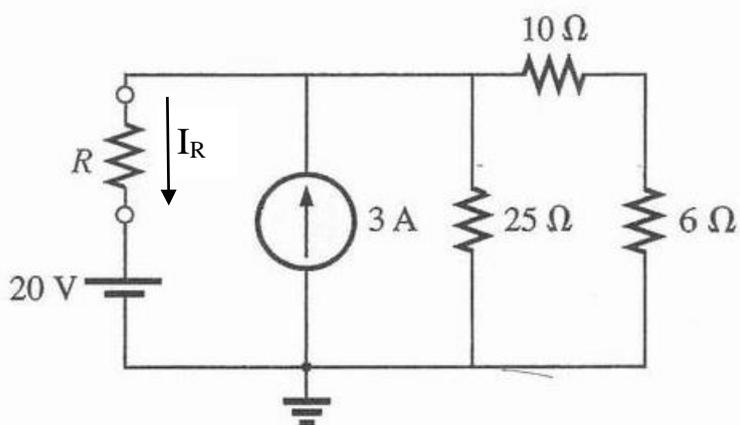
注意事項：

- (1) 本試題共有 5 題，每題 20 分，合計一百分。
- (2) 請依序作答於答案卷上並註明題號，若未註明選答題號及超過規定題數時，謹採計作答順序較前之題目計分。
- (3) 可使用計算機 close book and use calculator

1. Find the current ( $I_R$ ) through R, If  $R=5\ \Omega$



2. Find the current ( $I_R$ ) through R, If  $R=5\ \Omega$



3. Use mesh equations to find  $V_o$  in the circuit in Fig. 1.

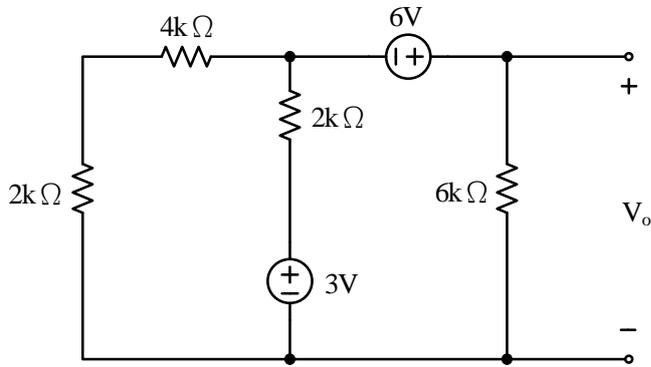


Fig.1

4. Let us find  $I_o$  in the network in Fig. 2.

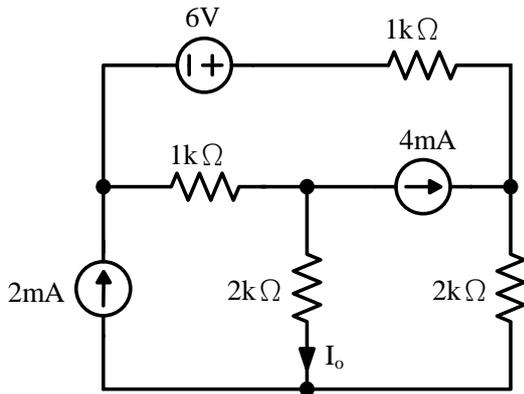


Fig.2

5. Find  $R_L$  for maximum transfer and the maximum power transferred to  $R_L$  in Fig.3

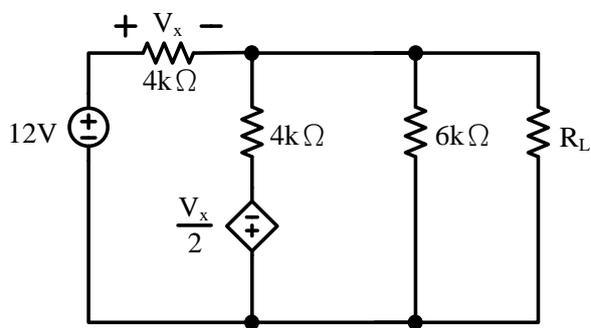


Fig.3

# 國立虎尾科技大學 110 學年度第 1 學期博士班資格考試題

系別：動力機械工程系機械與機電工程博士班

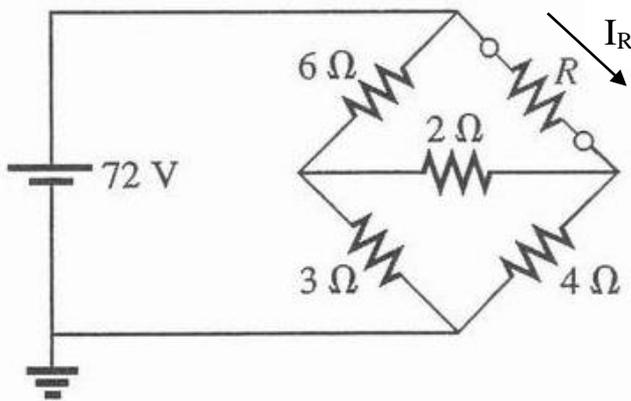
Page 1 / 2

科目：電路學 Electric Circuit Theory

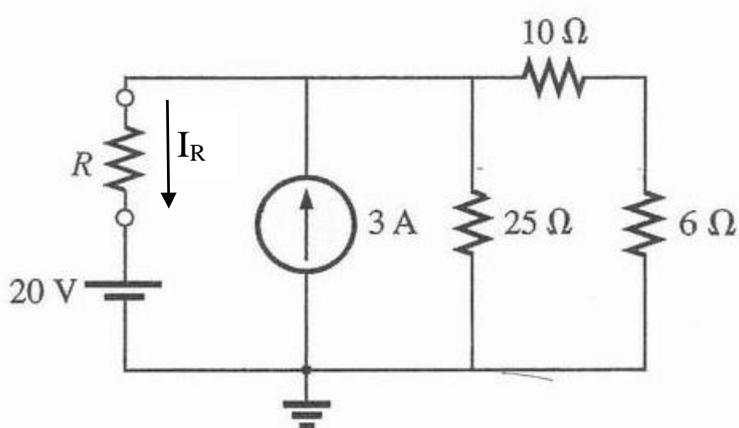
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- (3) 可使用計算機 **close book and use calculator**

1. Find the current ( $I_R$ ) through R, If  $R=5\ \Omega$



2. Find the current ( $I_R$ ) through R, If  $R=5\ \Omega$



3. Find the node voltages,  $V_1$  and  $V_2$ , in the circuit in Fig. 1.

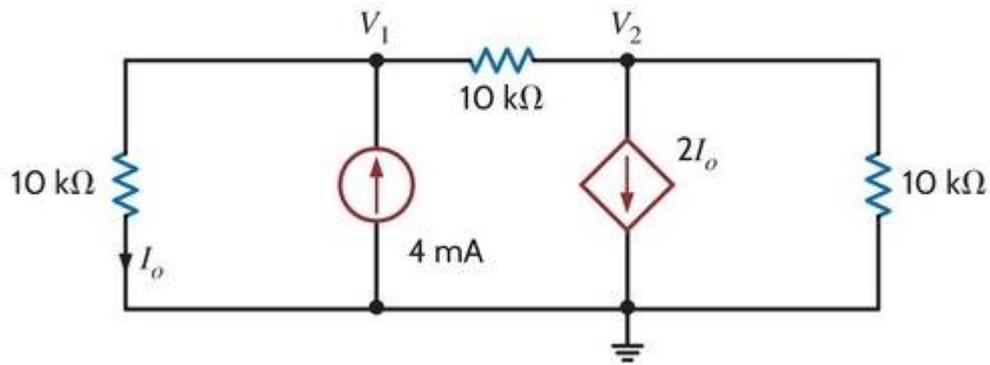


Fig.1

4. Find  $V_o$  in the network in Fig. 2.

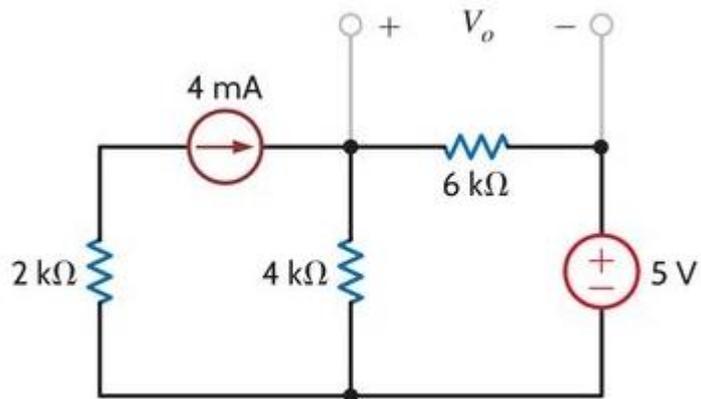


Fig. 2

5. Find  $V_o$  in the circuit in Fig. 3 using Thévenin's theorem.

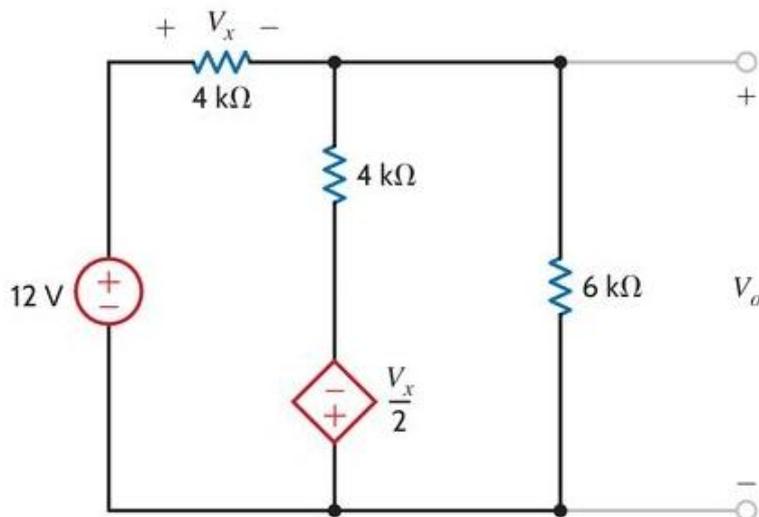


Fig. 3

# 國立虎尾科技大學 110 學年度第 2 學期博士班資格考試題

系別：動力機械工程系機械與機電工程博士班

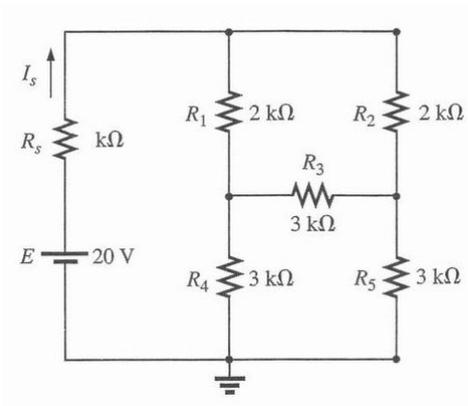
第 1 頁 共 3 頁

科目：電路學

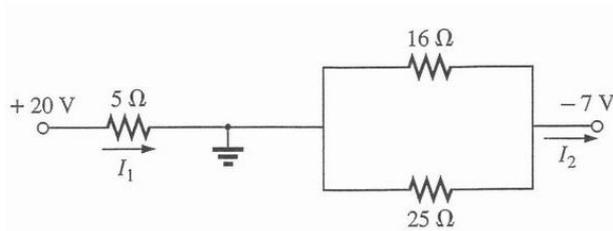
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- (3) 可使用計算機 close book

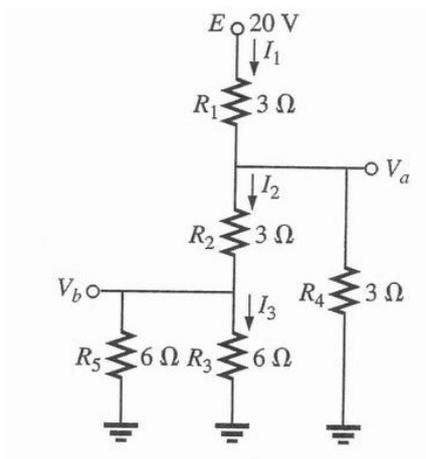
1 Find the  $I_s$



2. Find  $I_1$  and  $I_2$



3 Find  $I_1$  ,  $I_2$  ,  $I_3$  ,  $V_a$  ,  $V_b$



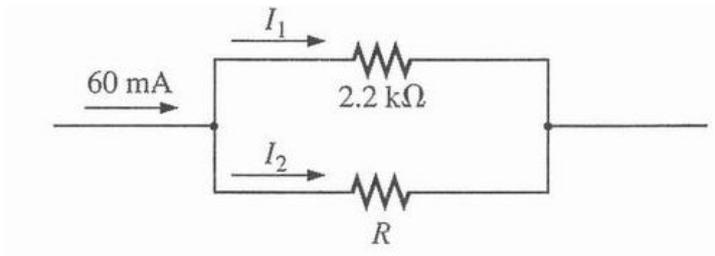
國立虎尾科技大學 110 學年度第 2 學期博士班資格考試題

系別：動力機械工程系機械與機電工程博士班

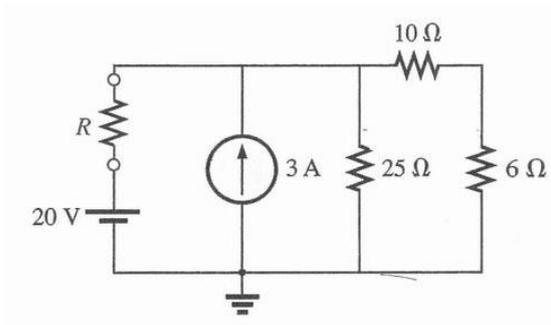
第 2 頁 共 3 頁

科目：電路學

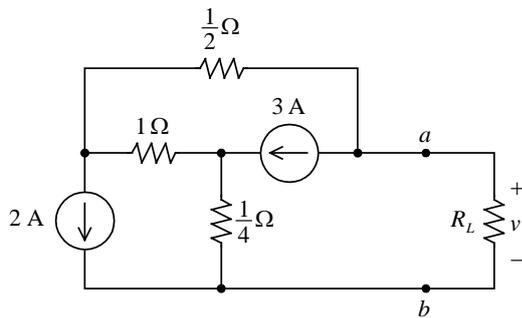
4. Find the  $R$  , If  $I_1 = 3I_2$



5. Find the current through  $R$  If  $R=10\Omega$



6. Find  $v$  when  $R_L = \frac{1}{3}\Omega$



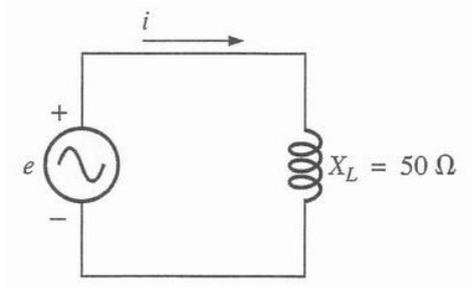
# 國立虎尾科技大學 110 學年度第 2 學期博士班資格考試題

系列：動力機械工程系機械與機電工程博士班

第 3 頁 共 3 頁

科目：電路學

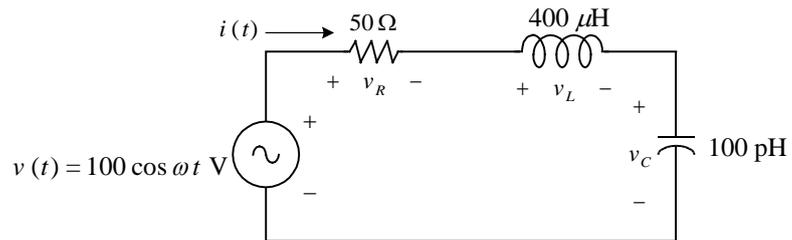
7. If  $e = 100 \sin(157t + 30^\circ)$



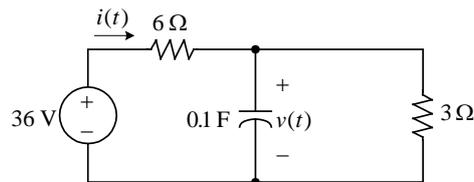
Find :

- a.  $i$
- b.  $L$

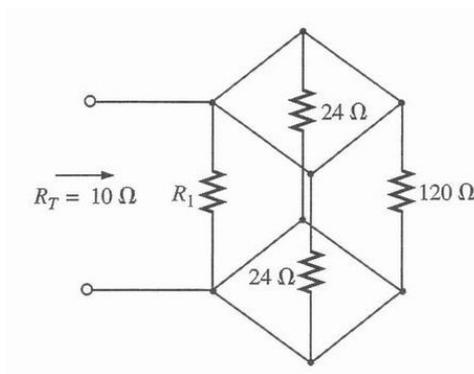
8. Find  $v_R(t)$  ,  $v_L(t)$  ,  $v_C(t)$



9. If  $i(0) = 1 \text{ A}$  , Find  $v(t)$  when  $t > 0$  .



10. Find  $R_1$



# 國立虎尾科技大學 111 學年度第 2 學期博士班資格考試題

系別：動力機械工程系機械與機電工程博士班

Page 1 / 3

科目：電路學

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- (3) 閉書考、可使用計算機  
Close book and Engineering calculator is allowable.

1. If  $V_A = -60V$  , Find the  $V_3$  and  $R_1$  for the network of Fig.1

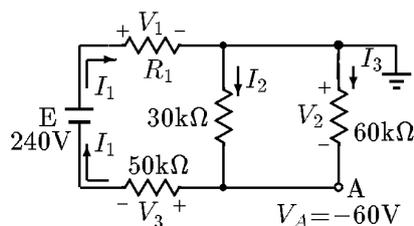


Fig.1

2. Determine the values of  $V$ . for the network of Fig.2

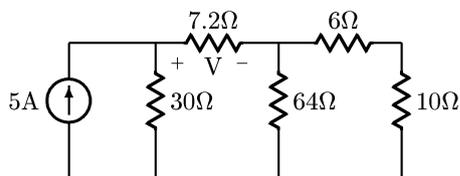


Fig.2

3. Find the current through the  $R_5$  for the network of Fig.3

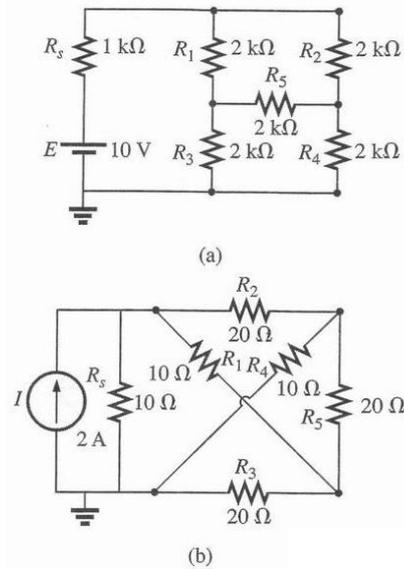


Fig.3

4. Find the Current flow the  $R = 2 \Omega$  of Fig.4

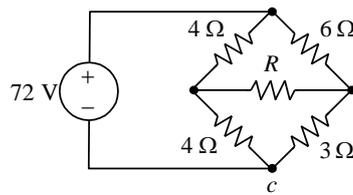


Fig.4

5. if  $i(0^-) = 2 \text{ A}$ , find the  $i(t)$  when  $t > 0$  of Fig.5

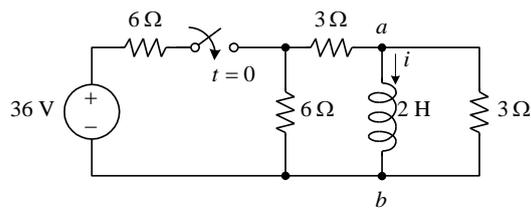


Fig.5

6. Find  $R_T$  of Fig.6

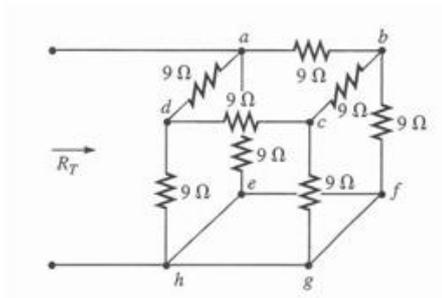


Fig.6

7. Find  $I$ ,  $I_1$ ,  $I_2$ ,  $I_3$  of Fig.7

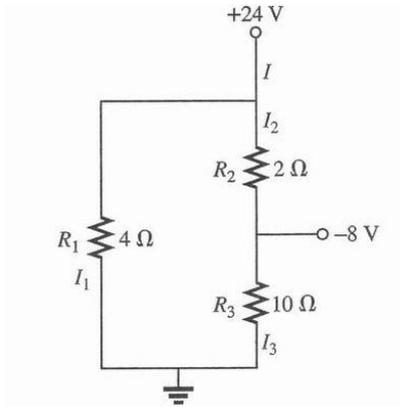


Fig.7

8. Find the mathematical expressions for the transient behavior of the  $v_c$  and  $i_c$  following the closed of the switch.. for the network of Fig.8

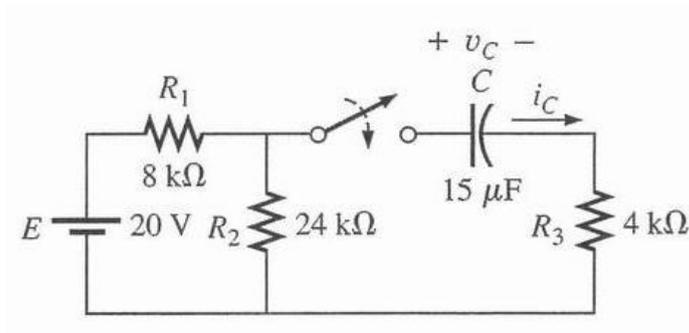


Fig.8

9. Find  $R_1$  such that the  $R_4$  will receive maximum power for the network of Fig.9

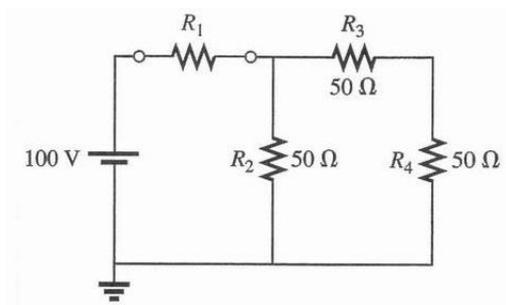


Fig.9

10. Find the Current flow the (A) and  $E$  of Fig.10

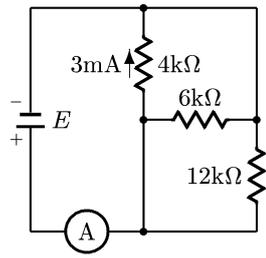


Fig.10

# 國立虎尾科技大學 113 學年度第 2 學期博士班資格考試題

系別：動力機械工程系機械與機電工程博士班

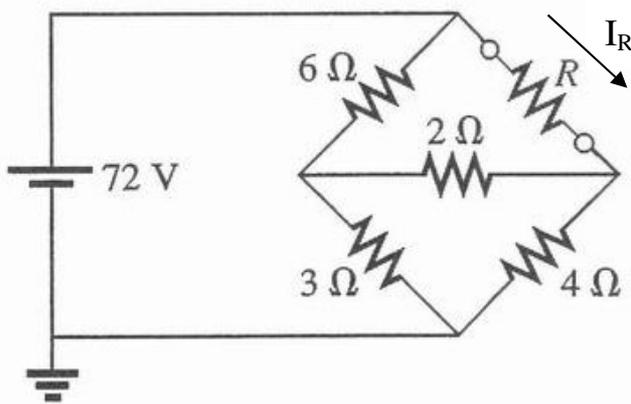
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科目：電路學

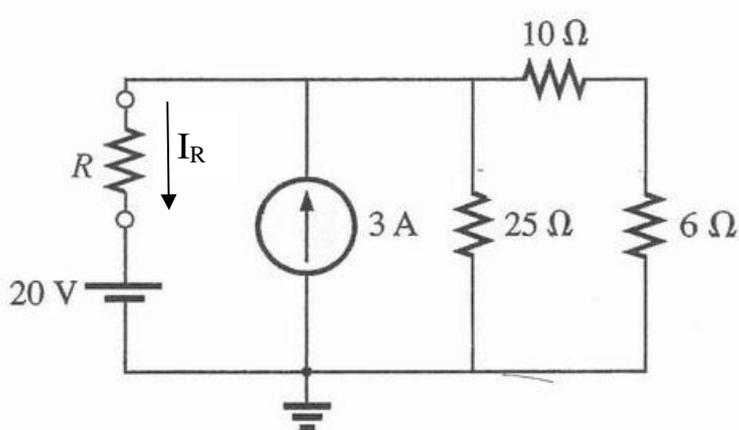
注意事項：

- (1) 本試題共有 4 題，每題 25 分，合計 100 分。
- (2) 請依序作答於答案卷上並註明題號，若未註明選答題號及超過規定題數時，謹採計作答順序較前之題目計分。
- (3) 閉書考、可使用計算機  
Close book and Engineering calculator is allowable.

1. Find the current ( $I_R$ ) through R, If  $R=5\ \Omega$



2. Find the current ( $I_R$ ) through R, If  $R=5\ \Omega$



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科目：電路學

3. Find  $V_o$  in Fig. 1.

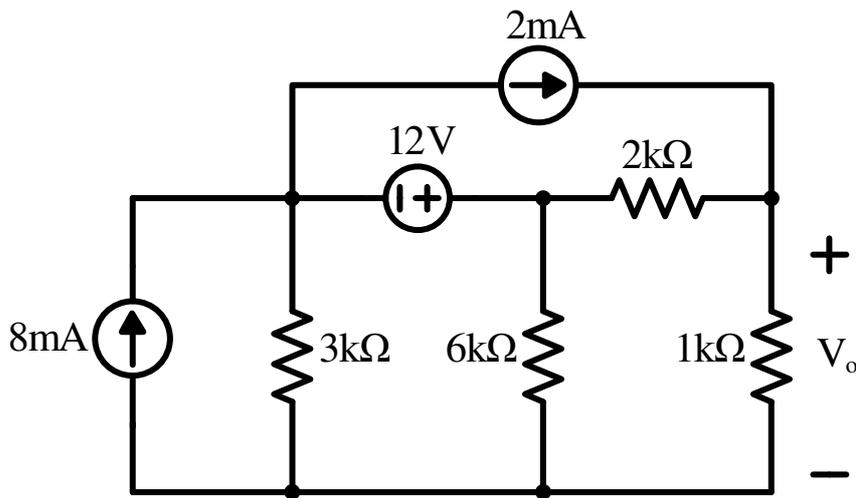


Fig. 1

4. Find  $V_o$  in the circuit in Fig. 2 using Thévenin's theorem.

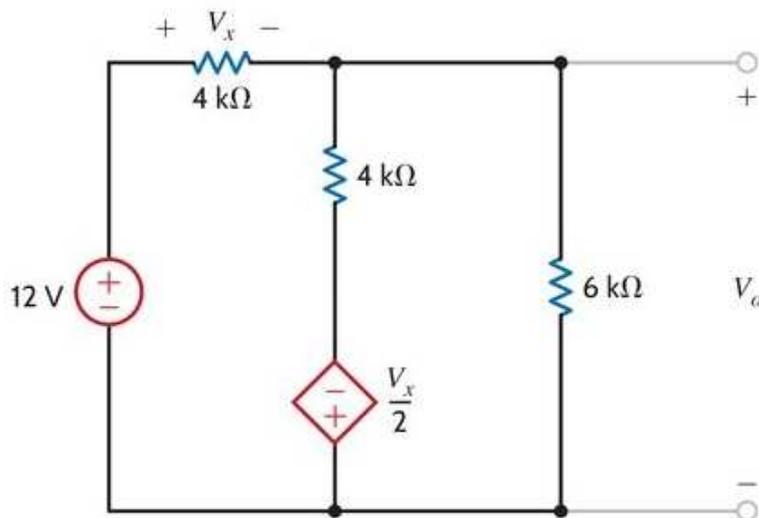


Fig. 2