Chaper 1

P1.3-1 3.5 nC

P1.3-3 3.204 nA

P1.5-1 (a) A and D, (b) B and C, (c) 60mW, (d) -60mW, (e) 60mW

P1.7-3 The reference direction of the resistor between node b and d has been reversed.

Chaper 2

P2.4-5 i_1=4A, i_1=-8A, R_1 absorbs 800W and R_2 absorbs 1600W.

P2.4-6 V_1=-0.4V, V_2=0.8V, R_1 absorbs 20mW, R_2 absorbs 40mW.

P2.6-5 (a) V_R=165A
(b) 30Ω resistor supplies -750W,
5A current source supplies 825W,
15V voltage source supplies -75W

P2.6-6 (The resistor changes to 30 Ω, the voltage source changes 15V)
(a) i_R=-1.5A
(b) 30Ω resistor supplies -7.5W,
2A current source supplies 30W,
15V voltage source supplies -22.5W

P2.6-7 V_b = 5V

Chaper 3

P3.2-4 The 5 Ω resistor absorbs 80W,
the 6 Ω resistor absorbs 24W,
the 9 Ω resistor absorbs 81W.

P3.2-6 The 4mA current source supplies -8mW,
the 2mA current source supplies 20mW.

P3.2-14 (The answer is dependent on the reference directions that one chooses.)
The 10 Ω resistor on the top: i_1=-1.5A, V_1=-15V
The 10 Ω resistor in the middle: i_5=1A, V_5=10V
The 10 Ω resistor on the bottom: i_8=-0.5A, V_5=-5V
The 25 Ω resistor on the left: i_4=-0.4A, V_4=-10V
The 5V voltage source: i_4=1.1A
The 15V voltage source: i_6=0.1A
The 1.5A current source: i_3=20V
The 0.5A current source: i_7=10V

P3.2-27 V_6=-12V

P3.3-4 V=-8V

P3.6-1 (a) R=64 Ω,
(b) i=1/2A, V=32V,
(c) i=1/3A.

P3.6-4 (a) R_1=12 Ω, R_2=8 Ω,
(b) i_a=3A, i_b=2.25A,
(c) i_2=1.125A, V_1=-20V

Chaper 4

P4.2-4 R_1=250 Ω, R_2=500 Ω.

P4.3-6 (a) R=12kΩ, (b) 1.4V.

P4.4-8 The power supplied by the dependent source is 1.04W.

P4.4-23 V_1=88V, V_2=-40V, V_3=-16V.

P4.5-4 i_a=-5.4mA, i_b=-7.8mA

P4.5-6 (a) The power supplied by 12V source is 0.48W;
the power supplied by 8V source is 0.32W.
(b) The power absorbed by the 30Ω resistor is 0.048W.

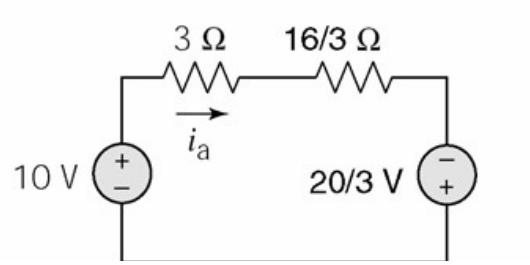
P4.6-4 V_c=-7.95V

P4.7-12 i_x= -0.29 A [corrected 2013-02-12; previously had 0.146A]

P4.11-5 The mesh currents are not correct.

Chaper 5

5.5-2 I_a=2 A



5.2-9 P= 117.72W

5.3-1 A=1/4 , b=3/5

5.3-4 $v=v_1+v_2=40+60=100$

5.3-8 $i_x=i_1+i_2=2/3-1/2=1/6$

5.4-4 v_{oc}=12 V , R_t=6Ω

5.4-6 v_{oc}=18 V , I_{sc}= -6 A, R_t= -3Ω

5.5-3 I_{sc}= -7.5 A, R_t= 2Ω

5.6-5 v_{oc}=3 V , I_{sc}= 1 A, R_t= 3Ω=R_L , P_{max}=3/4

5.6-8 v_{oc}= -27 V , R=R_t=196Ω , P_{max}=0.93

Chaper 6

6.3-7 $i_o = \frac{R_2 + R_3}{R_1 R_3} v_S$ $v_o = \frac{R_2 R_4}{R_1 R_3} v_S$

6.3-10 $\frac{v_o}{i_s} = R_1 + R_3 + \frac{R_1 R_3}{R_2}$

for having $\frac{v_o}{i_s} = 20 \frac{V}{mA}$, e.g. $R_1 =$ 5 k Ω and $R_2 = R_3 =$ 10 k Ω

6.4-5

6.4-6 v_a= -24/13 , v_c= -30/13

6.4-7 v_o=12 V, i_o= - 0.7 mA

6.4-11 v_o= 4 v_s