Answers to 430 Extra Practice

1. C
2. C
3. D
4. D
5. B
6. C
7. C (divide the # of electrons by the the # of electrons per coulonmb; this gives coulombs. Then divide coulombs by seconds.
8. C (3 + 3x = 0)
9. D (notice the equation must first be balanced and the actual answer is 6250, not 6230)
10. C

11\. 0.378% = 0.00378

$0.00378(50.0) = 0.189$ g of HNO_3

0.189 g(mole/63g) = 0.003 moles of HNO_3

Original concentration = 0.003 moles of HNO_3/ 0.050 L = 0.06 moles/L

$C_1V_1 = C_2V_2$

$0.06V_1 = 0.02(0.150)$

$V_1 = 0.050$ L

1. Pipette 50 ml of the original solution
2. Transfer it to a 150 mL volumetric flask
3. Add water to white lone and mix.

12\. 0.4889(64) + 0.2781(66) + 0.0411(67) + 0.1857(68) +0.0062(70) = 65.46 amu

13\. The 4Ω resistor to the left of the 1 Ω resistor will only draw ¼(4) = 1A because it is 4 times bigger. (Remember $I_1R_1 = I_2R_2$ for parallel circuits, since voltage is constant.) The voltage for the triangular parallel = 1(4) = **4V**

So the total current = 4A+ 1A = **5A**

The voltage for the mixed parallel branch = 16 – **4V** = **12 V**.

The bottom part of that branch receives 12 V/4Ω = 3A, so the top must receive **5A** – 3A = **2A**.

Since the voltages of the 2Ω and R_2 resistors have to ad up to **12 V,** then

$I_{top}R + I_{top}R_2 =$ **12 V**

2(2) + 2 R_2 =12

$R_2 = 4\ \Omega$

14. $VIt = mc\Delta T$, but $VI = P$, so

$3000 J/s(15\ min)(60 s/min) = m(4.19\ J/(g^oC)(60 - 12)^oC$
$m = 13425\ g$
$= 13\ 425\ ml = 13.4\ L$

15. $10^{23}/6.02 \times 10^{23} = 0.166$ moles of O_2
0.166 moles of O_2 ($3\ CO_2 / 5\ O_2$)(44 g/mole) = 4.4 g CO_2
0.166 moles of O_2 ($4\ H_2O / 5\ O_2$)(18 g/mole) = 1.1 g H_2O

Total mass of gas produced = 5.5 g