Week 13 - Day 2

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# Week 13 - Day 2

Nov 9, 2016

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# 3rd Tests

* Chapters 6.10 - 10.3
* Nonprogrammable calculator
* Pencil
* Eraser
* If you arrive after 7pm, you have taken your drop grade.

# Review Day

* Clicker 1
* Audio 0:04:25.997870
* Which of the following signs on q and w represent a system that is doing work on the surroundings, as well as gaining heat from the surroundings?
  + A) q=+, w=-
  + B) q = -, w = +
  + C) q = +, w = +
  + D) q = -, w = -
  + E) None of these represent the system referenced

A

* Audio 0:06:45.527461

## clicker 2

* Which of the following signs on q and w represent a system that the surroundings are doing work on, as well as gaining heat from the surroundings?
  + A) q = +, w = -
  + B) q = -, w = +
  + C) q = +, w = +
  + D) q = -, w = -
  + E) None of these represent the system referenced

C

## Clicker 3

* How many of the following molecules are polar?
* PCl5 COS XeO3 SeBr2
  + A) 2
  + B) 0
  + C) 1
  + D) 3
  + E) 4

D

## Clicker 4

* Audio 0:14:22.599679
* When an aqueous solution of manganese (II) nitrate is combined with an aqueous solution of ammonium sulfide, what should precipitate out?
  + A) MnS
  + B) Mn(SO3)2
  + C) Mn(SO4)2
  + D) Mn2SO3
  + E) Mn2SO4

Answer: A. Sulfides accept for sodium. Sulfide is 2- so it just goes into the Mn.

## Clicker 5

* Audio 0:17:34.714245
* Give the net ionic equation for the reaction (if any) that occurs when aqueous solutions of K2S and Fe(NO3)2 are mixed.
  + A) K+(aq) + NO3 - (aq) → KNO3(s)
  + B) Fe2+(aq) + S2-(aq) + 2 K+(aq) + 2 NO3 - (aq) → FeS(s) + 2 K+(aq) + 2 NO3 - (aq)
  + C) Fe2+(aq) + S2-(aq) + 2 K+(aq) + 2 NO3 - (aq) → Fe2+(aq) + S2-(aq) + 2 KNO3(s)
  + D) Fe2+(aq) + S2-(aq) → FeS(s)
  + E) No reaction occurs.

Answer: D

## Clicker 6

* Audio 0:20:52.685314
* Determine the reducing agent in the following reaction. 2 Li(s) + Fe(C2H3O2)2(aq) → 2 LiC2H3O2(aq) + Fe(s)
  + A) O
  + B) H
  + C) C
  + D) Fe
  + E) Li

Answer: E. Lithium is the substance that is losing its electrons and causing the reaction to be reduced

## Clicker 7

* Audio 0:26:39.117323
* Draw the appropriate molecular orbital diagram and determine which of the following are paramagnetic.
  + A) B2^2+
  + B) B2^2-
  + C) N2^2+
  + D) C2^2-
  + E) B2

Answer: E. Looking for six or twelve valence electrons

## Clicker 8

* Audio 0:30:33.281519
* How many moles of nitrogen are formed when 58.6 g of KNO3 decomposes according to the following reaction? The molar mass of KNO3 is 101.11 g/mol
  + 4KNO3(s) -> 2K2O(s) + 2N2(g) + 5O2(g)
  + A) 0.290 mol N2
  + B) 0.580 mol N2
  + C) 18.5 mol N2
  + D) 0.724 mol N2
  + E) 1.73 mol N2

Answer: A

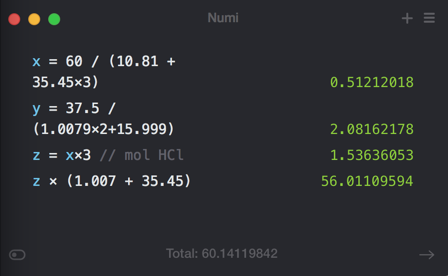
## Clicker 9

* Audio 0:34:13.545160
* According to the following reaction, how many grams of sulfur are formed when 37.4 g of water are formed? (S: 32.07, H: 1.0079, O: 15.999)
  + 2H2S(g) + SO2(g) -> 3 S(s) + 2H2O
  + A) 99.8 g S
  + B) 66.6 g S
  + C) 56.1 g S
  + D) 44.4 g S
  + E) 14.0 g S



## Clicker 10

* Audio 0:37:15.066241
* Determine the theoretical yield of HCl if 60.0 g of BCl3 and 37.5 g of H2O are reacted according to the following balanced reaction. (molar mass of BCl3 = 117.16 g/mol, B: 10.81, Cl:35.45, O:15.999, H:1.0079)
  + BCl3(g) + 3 H2O(l) → H3BO3(s) + 3 HCl(g)
  + A) 75.9 g HCl
  + B) 132 g HCl
  + C) 187 g HCl
  + D) 56.0 g HCl
  + E) 25.3 g HCl



## Clicker 11

* Audio 0:45:58.730799
* Calcium oxide reacts with water in a combination reaction to produce calcium hydroxide:
  + CaO(s) + H2O(l) → Ca(OH)2(s)
* A 5.00-g sample of CaO is reacted with 4.83 g of H2O. How many grams of water remain after the reaction is complete? (Ca:40.08, O:15.999, H:1.0079)
  + A) 0.00
  + B) 0.00991
  + C) 3.22
  + D) 1.04
  + E) 0.179



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Notes and study materials for The University of Alabama's Chemistry 101 course offered Fall 2016.