

Grudge Ball!

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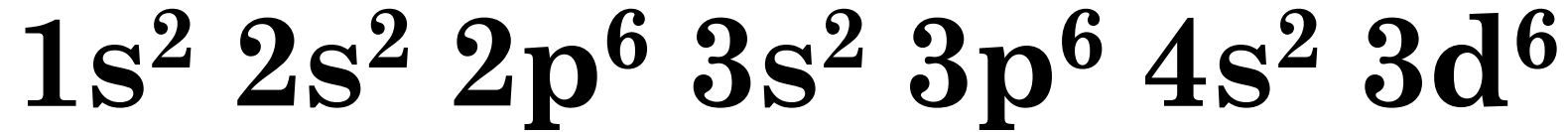
Spring Final Exam Review
Semester 1 + Chapter 8

#1 - How many atoms are in one molecule of $\text{Mg}_3(\text{PO}_4)_2$?

#2 - What particle did Thompson discover and name his experiment that proved it.

#3 - What is the empirical formula for the following molecule: $\text{C}_{12}\text{H}_{22}\text{O}_{11}$?

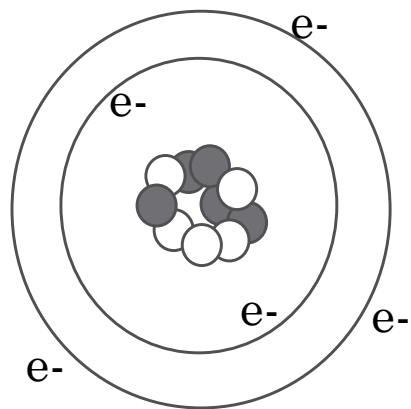
#4 - This is the electron configuration for what element?



#5 - This is the electron configuration for what ion?

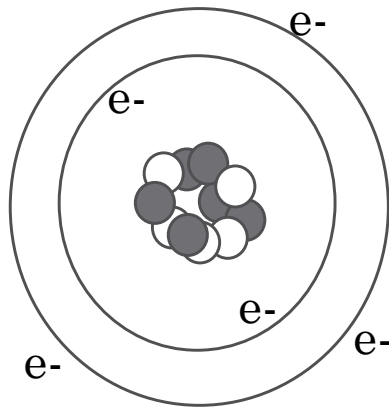


#6 - Do any of the following atoms represent isotopes of Atom A? If so, which one(s) and why?



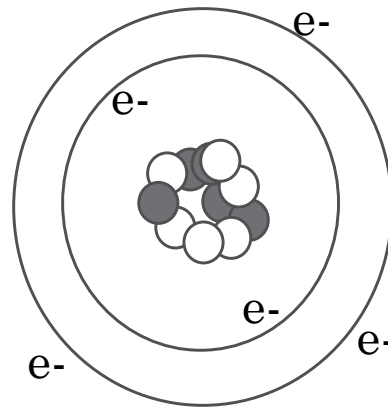
Atom A

5 protons
5 neutrons
5 electrons



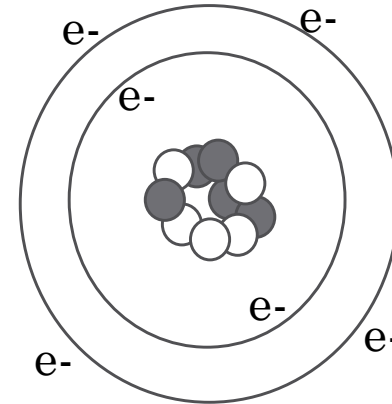
Atom B

6 protons
5 neutrons
5 electrons



Atom C

5 protons
6 neutrons
5 electrons

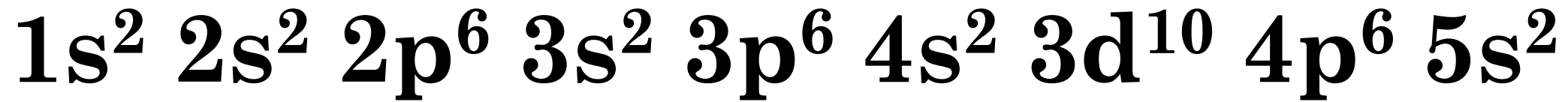


Atom D

5 protons
5 neutrons
6 electrons

#7 - What is the percent composition of CH₄?

#8 - Give the name and write out the noble gas notation for the element below.

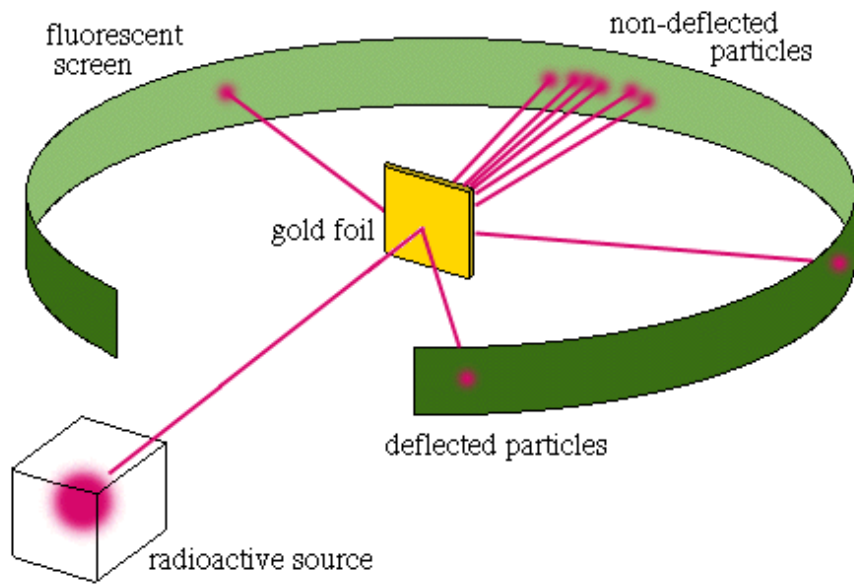


#9 - Adipic acid contains 49.32% C, 43.84% O, and 6.85% H by mass. What is the empirical formula of adipic acid?

#10 - Name the **FOUR** states of matter (not phases!)

#11 - Name the SIX phase changes
Bonus X: give an example of each.

#12 - Draw a diagram for Rutherford's Experiment and Explain what it proved about the atomic model.



#13 - What does Hund's Rule say about electron orbitals?

#14 - Name an element with similar properties to Magnesium.

#15 - How do you calculate mass number?

#16 - How many valance
Electrons do the alkali metal
elements have?

#17 – Draw the energy level diagram for carbon and say how many unpaired electrons it has.

#18 - Compare and Contrast a chemical and physical change and give an example of each.

#19 - If you have 29.5 moles of sodium and 27.0 moles of chlorine gas, how many moles of sodium chloride can you produce?

#20 - Classify all of the following Substances as Pure (element or compound) or a mixture (homogenous or heterogeneous).

- | | |
|-----------------------------------|---------------------|
| 1. Calcium | 5. Neon |
| 2. Cookies and Cream
Ice cream | 6. Kool aid |
| 3. Carbon Dioxide | 7. H ₂ O |
| 4. Tap Water | 8. Salad dressing |

#21 - What is an alpha particle?
Provide the symbol, mass, charge,
and an example of an element
undergoing an alpha decay.

#22 - How many orbitals in the
s,p,d,f shapes?

#23 - How many valence electrons do the halogens have and what is the charge of their ions?

#24 - What radioactive emission changes a proton into a neutron?

#25 - The half-life of thorium-227 is 18.72 days How many days are required for three-fourths of a given amount to decay?

37.44 days

SKIP

#26 - What radioactive emission changes a neutron into a proton?

#27 - How many protons and neutrons are in the nuclei of Tl-204 atoms?

#28 - What does the Pauli Exclusion Principle say?

#29 - How many unpaired electrons are in gold?

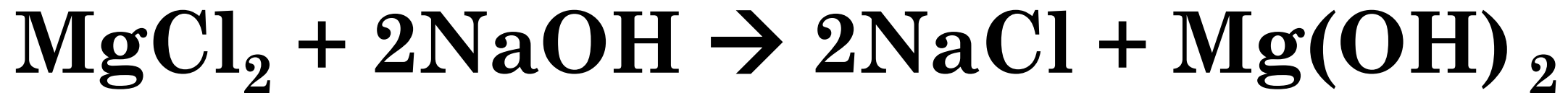
#30 - Magnesium chloride reacts with sodium hydroxide. Predict the products, identify what type of reaction is taking place, and balance the reaction.

#31 - Neutron initiated fission of U-235 results in the release of 4 beta particles, the formation of Sr-90 and the release of another nucleus. What is the other nucleus?

#32 - What is the highest energy level in the electron config below.



#33 - 2.5 grams of MgCl_2 is used in the following reaction. How many grams of sodium chloride can you make?



#34 - What is nuclear fission?

#35 - A substance is known to have a density of 1.39g/ml . If you have 10g of this substance, what volume in L would you have?

#36 - Which element might form
a ion by losing electrons from the
s and d orbitals F, S, Li, Ti

#37 - How many decigrams are in 437 kilograms? Write answer in scientific notation!

#38 - How many significant figures are in the following values?

612 kg

0.00067 ml

309.4 g

#39 - What is the atomic radius and its trend on the periodic table? Explain

#40 - Order these elements from smallest to largest?

Se, S, Cl Na

#41 - Of the elements in the
alkaline earth metals which has
the highest electronegativity

#42 - Why does it take less energy to remove an electron as you move down a group?

#43 - Describe the trend for reactivity of halogens.

#44 - What is the sum of the charges from the following atoms when they form ions?
Calcium, nitrogen, and strontium

#45 - What is the molar mass for
the hydrocarbon
 $\text{C}_{24}\text{H}_{37}\text{O}_6$

#46 - Which molecule has covalent bonding and does not require a double or triple bond?

CO_2 , CO , N_2 , CF_4

#47 - What is the formula for copper (IV) sulfate?

#48 - What is the name of the compound SrO ?

#49 - What type of bond forms between two non metals share electrons?

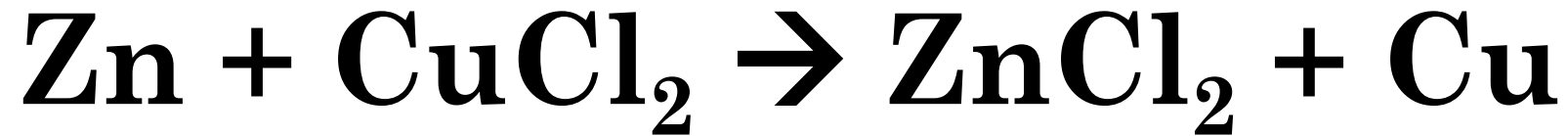
#50 - What happens to the electrons during a metallic bond?

#51 - Draw the Lewis dot structure for BrO_3^-

#52 - Draw the Lewis dot structure for CH_4

#53 - What pathway must you take in order to convert grams of substance A to moles of substance B?

#54 - What kind of reaction is taking place below?



#55 - Sodium chloride comes apart. Name the type of reaction, predict the products, and balance the reaction.

#56 - What kind of reaction is taking place below?

