Test 2 - Answers/Review

Table of Contents

[CH101-008 UA Fall 2016](/CH101-008/)

[About](/CH101-008/about/)

# Test 2 - Answers/Review

Oct 10, 2016

## Questions

* How many different values of ml are possible in the 5d sublevel?
  + 2
  + 5
  + 4
  + 1
  + 8
* In which orbital below would an electron (on average) be farthest from the nucleus?
  + 1s
  + 3d
  + 3s
  + 5f
  + 2p
* Predict the charge of the most stable ion of magnesium
  + 2+
  + 1-
  + +
  + 2-
  + 3+
* Give the ground state electron configuration for Rb+
  + [Ar]4s24p6
  + [Kr]5s1
  + [Kr]5s24d2
  + [Kr]5s2
  + [Ar]4s23d 104p6
* Place the following in order of decreasing magnitude of lattice energy
  + KF MgS RbI
  + RbI > KF > MgS
  + RbI > MgS > KF
  + MgS > KF > RbI
  + KF > RbI > MgS
  + MgS > RbI > KF
* What is the empirical formula for C8H16O4?
  + C2H4O
  + CHO
  + CH2O
  + CHO2
  + C2H5O
* What is the mass of 9.00 x 10^22 molecules of NH3?
  + 0.00878 g
  + 2.55 g
  + 0.393 g
  + 114g
* Place the following elements in order of increasing electronegativity
  + Li Fr P
  + P < Li < Fr
  + Fr < Li < P
  + Fr < P < Li
  + Li < P < Fr
  + P < Fr < Li
* Place the following in order of increasing X-A-X bond angle, where A represents the central atom and X represents the outer atoms in each molecule
  + HCN H2O H3O+
  + H2O < H3O+ < HCN
  + H3O+ < H2O < HCN
  + HCN < H3O+ < H2O
  + H2O < HCN < H3O+
  + HCN < H2O < H3O+
* Determine the electron geometry, molecular geometry and polarity of HBrO2.
  + eg = trigonal bipyramidal, mg = trigonal planar, nonpolar
  + eg = octahedral, mg = square planar, nonpolar
  + eg = tetrahedral, mg = linear, nonpolar
  + eg = tetrahedral, mg = bent, polar
  + eg = linear, mg = linear, polar
* Combustion analysis of an unknown compound containing only carbon and hydrogen produced 2.277 g of CO2 and 1.161 g of H2O. What is the empirical formula of the compound?
  + C5H2
  + CH2
  + C4H10
  + C2H5
* What is the mass of 0.500 mol of trichlorofluoromethane, CCl3F?
  + 275 g
  + 3.64 \* 10^-3 g
  + 137 g
  + 68.7 g
* Use Lewis theory to determine the chemical formula for the compound formed between Mg and N
  + Mg2N3
  + MgN
  + MgN2
  + Mg2N
  + Mg3N2
* Place the following in order of decreasing radius
  + Te2- F- O2-
  + F— > O2- > Te2-
  + F- > Te2- > O2-
  + Te2- > F- > O2-
  + Te2- > O2- > F-
  + O2- > F- > Te2-
* Which one of the following elements is a poor conductor of heat and electricity?
  + copper
  + iron
  + iodine
  + lead
* How many electrons are in the ion, S2-?
  + 14
  + 34
  + 30
  + 18
* Identify the correct values for a 2p sublevel
  + n = 3, l = 1, ml = 0
  + n = 2, l = 1, ml = 0
  + n = 1, l = 0, ml = 0
  + n = 2, l = 1, ml = +2
  + n = 4, l = -1, ml = +2
* Which of the following transitions (in a hydrogen atom) represent absorption of the smallest frequency photon?
  + n = 1 to n = 4
  + n = 5 to n = 1
  + n = 3 to n = 1
  + n = 5 to n = 6
  + n = 1 to n = 2
* What is the energy of light associated with a transition from 3s to 8p in a hydrogen atom? Does this represent absorption or emission of a photon? The Rydberg constant is 1.097 x 10^-2
  + 2.08 x 10^-19 J, emission
  + 2.08 x 10^-19 J, absorption
  + 4.54 x 10^-19 J, absorption
  + 4.54 x 10^-19 .1, emission
  + 6.81 x 10^-20 J, absorption
* Identify an anion
  + An atom that has lost an electron
  + an atom that has lost a neutron and a proton
  + an atom that has gained an electron
  + an atom that has gained a neutron and a proton
* Neon belongs to the **\_\_** of the periodic table
  + alkali metal
  + noble gas
  + halogen
  + alkaline earth metal
* Which species has the highest ionization energy?
  + Al2+
  + Mg+
  + Mg
  + Al+
  + Mg2+
* Choose the compound below that should have the highest melting point according to the ionic bonding model
  + CaS
  + MgO
  + LiF
  + AlN
  + RbF
* Give the structure for lithium chlorate
  + LiClO3
  + LiClO4
  + LiClO
  + LiClO2
* What is the empirical formula of a compound that is 48.6% C, 8.2% H, and 43.2% 0 by mass?
  + C3H6O2
  + C6HO5
  + C6H12O4
  + C4H8O3
  + C3HO2
* Give the number of valence electrons for SI4
  + 28
  + 34
  + 32
  + 30
* Draw the best Lewis structure for CH3+1. What is the formal charge on the C?
  + -1
  + 0
  + 1
  + 2

Please enable JavaScript to view the [comments powered by Disqus.](https://disqus.com/?ref_noscript)

## CH101-008 UA Fall 2016

* CH101-008 UA Fall 2016
* [jmbeach1@crimson.ua.edu](mailto:jmbeach1@crimson.ua.edu)
* jmbeach
* hey\_beach

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