

Name: _____

Final Test

8. Which atom has the largest atomic radius? (4 points)
A) Sr B) Mg C) Be D) Ag E) Xe
9. How many neutrons does ^{23}Na have? (4 points)
A) 34 B) 23 C) 12 D) 11 E) 1
10. Which anion forms soluble salts regardless of the cation present? (4 points)
A) OH^- B) SO_3^{2-} C) ClO^- D) NO_2^- E) NO_3^-
11. What is the hybridization of the oxygen atom in H_2O ? (4 points)
A) sp B) sp^2 C) sp^3 D) sp^4 E) sp^3d
12. How many bonds does a nitrogen atom normally form in neutral molecules? (4 points)
A) 0 B) 1 C) 2 D) 3 E) 4

13. Write the formula or name of the following compounds and indicate the solubility. (16 points)

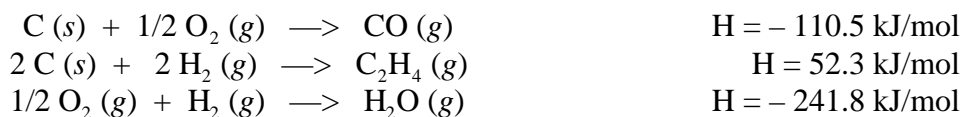
CaCO_3 _____ _____

NaMnO_4 _____ _____

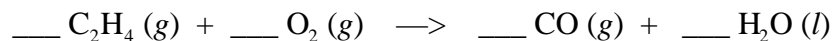
_____ iron (II) hypobromite _____

_____ potassium hydroxide _____

14. Given the following data enthalpies of reaction:



Calculate the heat released when excess C_2H_4 (g) reacts with 4.0 moles of O_2 to produce H_2O (l) and CO (g). (15 points)



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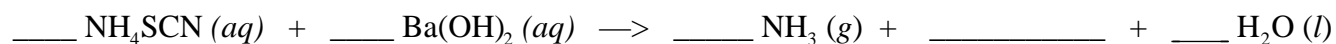
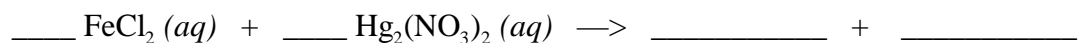
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15. A compound containing only chromium, Cr, and oxygen was created by burning 25.56 g of Cr in exactly 31.57 g of oxygen. Write the empirical formula for this compound. (10 points)

16. Describe why the first ionization energy of Na is much larger than the second ionization energy of Na using electron configuration and effective charge arguments. (10 points)

17. Suppose you analyze a 1.321 g unknown sample for phosphorus by a precipitation reaction producing 3.811 g of $\text{NH}_4\text{MgPO}_4 \cdot 6\text{H}_2\text{O}$. What is the percentage of phosphorus in the unknown sample? (6 points)

18. Balance the following two equations and write out a final net ionic equations. (12 points)



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23. Suppose that mixing 3.51 g of dry ice (solid CO_2) causes 100.0 g of H_2O to drop from 25.2 °C to 12.1 °C (heat capacity of water, $C_{\text{water}} = 4.184 \text{ J / g K}$) when mixed and the dry ice evaporates. What is the ΔH (kJ / mol) for the evaporation of the dry ice (assume that all of the CO_2 leaves the mixture as a gas)? (15 points)
24. Describe a neutron and what its role is in the nucleus of an atom such as ^{56}Fe . (15 points)
25. What is the chloride ion concentration if 0.813 g of NaCl and 0.221 g of FeCl_2 is dissolved in 250.0 mL of distilled water. (15 points)