Practice Problems Set #3

**DIRECTIONS:**

* YOU MUST ANSWER **EVERY QUESTION** IN ORDER TO GET **ANY** CREDIT!!!
* **HIGHLIGHT EACH QUESTION NUMBER** ON YOUR NOTEBOOK PAPER SO I CAN QUICKLY SEE THAT YOU HAVE DONE ALL THE PROBLEMS. IF I CAN’T FIND AN ANSWER, YOU WON’T GET CREDIT FOR ANY OF THE PROBLEMS!!!!
* **HIGHLIGHT ANY QUESTION NUMBERS ON THIS PAGE THAT YOU WANT HELP WITH, HAVE QUESTIONS WITH, ETC‼!**

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| **Q #** | **QUESTION** |
| 1 | Write the formula for the following compounds. Don’t forget to cross over! Gallium Oxide, Calcium Chloride, Sodium Nitrate, Calcium Phosphite, Iron(III) Fluoride |
| 2 | Write the formula for the following molecules carbon tetrachloride, dinitrogen heptahydride, phosphorus triiodide |
| 3 | What is the definition of the octet rule? |
| 4 | What are the main exceptions to the octet rule? |
| 5 | Draw Lewis Structures for CO2, N2, O2, H2, H2O, NH3 |
| 6 | For the Lewis Structures you drew above, identify which have single bonds, double bonds, triple bonds. Which have lone pairs? How many lone pairs does each one of those have? |
| 7 | Draw a Lewis structure to figure out if each compound is held together with a single bond, a double bond, or a triple bond: HCl and N2 and CO |
| 8 | What are the main types of IMFs? |
| 9 | Look through your notebook and give two examples of compounds that have only London forces, two that have dipole-dipole, and two that have hydrogen bonding.  |
| 10 | What are the two main “real life biology” type examples of hydrogen bonding that you learned about? |
| 11 | Identify the main/dominant/strongest type of IMF present in each of the following: H2O, SiF4, CH3NH, CH3OH, H2S, O2, CH3COCH3 |
| 12 | What are three types of inter molecular forces and two types of intra molecular forces |
| 13 | What is polarity? What are three ways you can draw the polarity of a molecule (hint…it was in your notes!) |
| 14 | Label the following as either polar or non polar: H2O, H2S, CO2, SiO2, CH4, CH3OH, C2H6 |
| 15 | Why is it important to know that water is bent? Make sure your answer talks about polar vs non polar |
| 16 | Rank the following from highest to lowest surface tension: CH4, CH3OCH3 CH3OH |
| 17 | Which should have a higher boiling point? Why? CH3OCH3 or CH3CH2OH |
| 18 | In one paragraph explain the point of the lab you did on IMFs. Describe the results you found and how that relates to IMFs. Think of it like a conclusion for a miniature lab report.  |
| 19 | What are three examples of bulk solids that have unique properties due to the combination and interaction of inter and intra molecular forces? |
| 20 | What could you predict about the boiling point or melting point of a network covalent molecule? |
| 21 | What are two examples of network covalent molecules? (We talked about two during lecture). Which do you expect to have a higher melting point? |
| 22 | Balance the following equation:C3H8 + O2 🡪 CO2 + H2O |
| 23 | Balance the following equation: Al(OH)3 🡪 Al2O3 + H2O |
| 24 | What type of reactions are the following equations? (combustion, synthesis, etc)LiN3 + 3H2O → NH3 + 3LiOH Fe + CuO 🡪 Fe2O3 + CuCO + H2O → CH3OH C3H8 + 5 O2 → 3 CO2 + 4 H2O |
| 25 | Predict the products formed when Sodium reacts with Calcium Oxide. |
| 26 | Predict the products when C2H4 combusts. |
| 27 | Predict the products when Sodium Sulfate reacts with Calcium Sulfide. |
| 28 | What is the molar mass of K2SO4? What is the molar mass of Pb(OH)2? |
| 29 | How many moles are in 5.9 grams of Ar? |
| 30 | How many moles are in 12.65 grams of H2O? |
| 31 | How many grams is 2.7 x 1041 atoms of Nickel? |
| 32 | How many atoms are in 50mL of H2O? |