

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!!!

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 CO ₂ , N ₂ , O ₂ , H ₂ , H ₂ O, NH ₃
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 N ₂ 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: H ₂ O, SiF ₄ , CH ₃ NH, CH ₃ OH, H ₂ S, O ₂ , CH ₃ COCH ₃
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: H ₂ O, H ₂ S, CO ₂ , SiO ₂ , CH ₄ , CH ₃ OH, C ₂ H ₆
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: CH ₄ , CH ₃ OCH ₃ , CH ₃ OH
17	Which should have a higher boiling point? Why? CH ₃ OCH ₃ or CH ₃ CH ₂ OH
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: C ₃ H ₈ + O ₂ → CO ₂ + H ₂ O
23	Balance the following equation: Al(OH) ₃ → Al ₂ O ₃ + H ₂ O
24	What type of reactions are the following equations? (combustion, synthesis, etc) $\text{LiN}_3 + 3\text{H}_2\text{O} \rightarrow \text{NH}_3 + 3\text{LiOH}$ $\text{Fe} + \text{CuO} \rightarrow \text{Fe}_2\text{O}_3 + \text{Cu}$ $\text{CO} + \text{H}_2\text{O} \rightarrow \text{CH}_3\text{OH}$ $\text{C}_3\text{H}_8 + 5\text{O}_2 \rightarrow 3\text{CO}_2 + 4\text{H}_2\text{O}$
25	Predict the products formed when Sodium reacts with Calcium Oxide.
26	Predict the products when C ₂ H ₄ combusts.
27	Predict the products when Sodium Sulfate reacts with Calcium Sulfide.
28	What is the molar mass of K ₂ SO ₄ ? 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 H ₂ O?
31	How many grams is 2.7 x 10 ⁴¹ atoms of Nickel?
32	How many atoms are in 50mL of H ₂ O?