

# Chemistry: study guide

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\* Question 1 10 out of 10 points | | | According to VSEPR theory, which one of the following molecules should have a bent shape? Answer | | | | Selected

Answer: |  $\text{Cl}_2\text{O}$  | | | | \* Question 2 10 out of 10 points | | | According to the VSEPR theory, the molecular shape of  $\text{SiCl}_4$  is Answer | | | | Selected Answer: | tetrahedral. | | | | \* Question 3 10 out of 10 points | | | According to the

VSEPR theory, the shape of the  $\text{SO}_3$  molecule is Answer | | | | Selected

Answer: | trigonal planar. | | | | \* Question 4 10 out of 10 points | | Balance

the following equation using the smallest set of whole numbers, then add together the coefficients. Don't forget to count coefficients of one. \_\_\_ Al +

\_\_\_  $\text{H}_2\text{SO}_4 >$  \_\_\_  $\text{Al}_2(\text{SO}_4)_3$  + \_\_\_  $\text{H}_2$  The sum of the coefficients is Answer | | |

| | Selected Answer: | 9. | | | | \* Question 5 10 out of 10 points | | | Consider

the species  $\text{Cl}_2^+$ ,  $\text{Cl}_2$ , and  $\text{Cl}_2^-$ . Which of these species will be

paramagnetic? Answer | | | | Selected Answer: |  $\text{Cl}_2^+$  and  $\text{Cl}_2^-$  | | | | \*

Question 6 10 out of 10 points | | | How many O atoms are there in 51.4 g  $\text{CaSO}_4$ ?

Answer | | | | Selected Answer: | 9.09 ? 1023 | | | | \* Question 7 10 out of

10 points | | | How many covalent bonds will a nitrogen atom usually form?

Answer | | | | Selected Answer: | 3 | | | | \* Question 8 10 out of 10 points | | |

How many grams of  $\text{Cl}_2$  can be prepared from the reaction of 16.0 g of  $\text{MnO}_2$  and 30.0 g of  $\text{HCl}$  according to the following chemical equation?

$\text{MnO}_2 + 4\text{HCl} > \text{MnCl}_2 + \text{Cl}_2 + 2\text{H}_2\text{O}$  Answer | | | | Selected Answer: | 13.

0g | | | | \* Question 9 10 out of 10 points | | | How many grams of sodium are there in 10. g of sodium sulfate,  $\text{Na}_2\text{SO}_4$ ?

Answer | | | | Selected Answer: | 3.2 | | | | \* Question 10 10 out of 10 points |

| | In which of the following would the bonding be weakened with the addition

of an electron to form the negative molecular ion? Answer| | | | Selected Answer:| N<sup>2-</sup>| | | | \* Question 11 0 out of 10 points | | | In which of these pairs of atoms would the bond have the greatest percent ionic character (i. e. , most polar)? Answer| | | | Selected Answer:| c-o s-o f--f| | | | \* Question 12 10 out of 10 points | | | Indicate the type of hybrid orbitals used by the central atom in PCl<sub>3</sub>.

Answer| | | | Selected Answer:| sp<sup>3</sup>| | | | Question 13 10 out of 10 points | | | The F-S-F bond angles in SF<sub>6</sub> are Answer| | | | Selected Answer:| 90° and 180°. | | | | \* Question 14 10 out of 10 points | | | The Lewis dot symbol for the a lead atom is Answer| | | | Selected Answer:| | Not A| | | | \* Question 15 10 out of 10 points | | | The Lewis structure for CS<sub>2</sub> is: Answer| | | | Selected Answer:| | | | | \* Question 16 10 out of 10 points | | | The number of pi bonds in the molecule below is Answer| | | | Selected Answer:| 3| | | | Question 17 10 out of 10 points | | | The number of resonance structures for the nitrate ion that satisfies the octet rule is Answer| | | | Selected Answer:| 3| | | | Question 18 Question 18 10 out of 10 points | | | The shape of the CS<sub>2</sub> molecule is best described as Answer| | | | Selected Answer:| linear. | | | | | \* Question 19 0 out of 10 points | | | What is the formal charge on sulfur in the best Lewis structure for the SCN<sup>-</sup> (thiocyanate) ion? Answer| | | | Selected Answer:| ? 1 +2 -2+1| | | | \* Question 20 10 out of 10 points | | | What type of chemical bond holds the atoms together within a water molecule? Answer| | | | Selected Answer:| Polar covalent bond Question 21 10 out of 10 points | | | When 22. 0 g NaCl and 21. 0 g H<sub>2</sub>SO<sub>4</sub> are mixed and react according to the equation below, which is the limiting reagent? 2NaCl + H<sub>2</sub>SO<sub>4</sub> > Na<sub>2</sub>SO<sub>4</sub> + 2HCl Answer| | | |

| Selected Answer:| | | | | | | | | \* Question 22 10 out of 10 points | | | Which of the following correctly lists species in order of increasing bond length? Answer| | | | Selected Answer:| O<sub>2</sub><sup>+</sup> ; O<sub>2</sub> ; O<sub>2</sub>? | | | | \* Question 23 0 out of 10 points | | | Which of these atom is the most electronegative? Answer| | | | Selected Answer:| P| | | | Question 24 10 out of 10 points | | | Which of these compounds is most likely to be ionic? Answer| | | | Selected Answer:| KF| | | | \* Question 25 10 out of 10 points | | | Which of these elements is most likely to exhibit an expanded octet in its compounds? Answer| | | | Selected Answer:| s| | | | \* Question 26 0 out of 10 points | | | Which of these ionic solids would have the largest lattice energy? Answer| | | | Selected Answer:| CaBr<sub>2</sub>NaF, NaCl| | | | \* Question 27 10 out of 10 points | | | Which of these pairs of elements would be most likely to form an ionic compound? Answer| | | | Selected Answer:| Cl ; Mg| | | | \* Question 28 10 out of 10 points | | | Which of these substances will display an incomplete octet in its Lewis structure? Answer| | | | NO| | | | Question 29 10 out of 10 points | | | Which response includes all the molecules below that do not follow the octet rule? (1) H<sub>2</sub>S (2) BCl<sub>3</sub> (3) PH<sub>3</sub> (4) SF<sub>4</sub> Answer| | | | Selected Answer:| (2) and (4)| | | |