

# Final Exam Review

1. 5 SF

2. C - Flammability, tendency to rust

P - Boiling point, Density, specific gravity

3. C - Combustion, decomposition

P - melting, evaporation

4. - Formation of precipitate

- " " gas

- Color change

- energy change

5 a. M

b. C

c. E

d. C

6.  $p^+$  (+),  $n^0$  (neutral) in nucleus

$e^-$ , in electron cloud

7. different # of  $n^0$ ,  $\therefore$  different masses, but same # of  $p^+$  and  $e^-$ .

8. Use formula

$$\text{AVG atomic mass} = \sum_{\text{each isotope}} (\text{mass amu}) \times (\text{fractional abundance})$$

9. 82  $p^+$ ,  $206 - 82 = 124 n^0$ ,  $82 - 2 = 80 e^-$ ; cation

$$10. \frac{100 \text{ g CO}_2}{44.01 \text{ g CO}_2} \times \frac{1 \text{ mol CO}_2}{44.01 \text{ g CO}_2} = \textcircled{2.27} \rightarrow 2 \text{ moles CO}_2 \text{ if using 1 SF}$$

$$11. \frac{2.27 \text{ moles CO}_2}{6.02 \times 10^{23} \text{ molecules}} = 1.37 \times 10^{24} \text{ molecules}$$

$$12. \frac{2.27 \text{ mol CO}_2 \left| \begin{array}{l} 2 \text{ mol O atoms} \\ \hline \text{mol CO}_2 \text{ molecules} \end{array} \right. \left| \begin{array}{l} 6.02 \times 10^{23} \text{ atm} \\ \hline \text{mol atm} \end{array} \right.}{\text{atoms}} = 2.73 \times 10^{24} \text{ atoms}$$

$$13. 1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^6 6s^2 4f^{14} 5d^{10}$$

14. Bromine

15. Magnesium

16. Left of stair step

17. B, Si, Ge, As, Sb, Te

18. +2, -2

19. same # valence e<sup>-</sup> (same ending e<sup>-</sup> configuration)  
∴ similar chemical behavior.

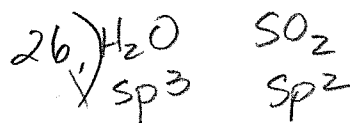
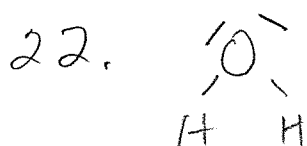
20. Elements that are never found as single atoms.  
If they are not in a compound, they occur in pairs. H<sub>2</sub> O<sub>2</sub> N<sub>2</sub> Cl<sub>2</sub> Br<sub>2</sub> I<sub>2</sub> F<sub>2</sub>  
(end in gen or ine)

21 NO<sub>2</sub> = Polar Covalent (PC)

H<sub>2</sub>O = PC

Cl<sub>2</sub> = Non PC

NaCl = IONIC



23. Bent

24. 109.5

PC

trigonal planar

120°

PC

27.)  $1.00 \text{ g CO}_2$

a)  $\frac{1.00 \text{ g CO}_2}{44.01 \text{ g CO}_2} \times 1 \text{ mol CO}_2 = 0.0227 \text{ mol CO}_2$

b)  $\frac{0.0227 \text{ mol CO}_2}{1 \text{ mol}} \times 6.02 \times 10^{23} \text{ molecules} = 1.37 \times 10^{22} \text{ molecules CO}_2$

c)  $\frac{1.37 \times 10^{22} \text{ molecules}}{1 \text{ molecule CO}_2} \times 2 \text{ O atoms} = 2.74 \times 10^{22} \text{ O atoms}$

d)  $\text{mass \% O} = \frac{\text{g O}}{\text{g CO}_2} = \frac{2(16.00 \text{ g/mol})}{2(16.00 \text{ g/mol}) + 1(12.01 \text{ g/mol})} \times 100 = 72.7\% \text{ O}$



32  
12

Multiple Choice Problem

- |      |       |
|------|-------|
| 1. A | 9. C  |
| 2. A | 10. B |
| 3. E | 11. D |
| 4. D | 12. D |
| 5. A | 13. B |
| 6. C | 14. D |
| 7. A | 15. A |
| 8. A |       |

