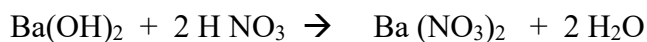


Name _____ Print Name _____

Please show work on all questions for partial credit even on questions which do not specify. (20 total pts)

1. What volume of 0.525 M Ba(OH)₂ neutralizes 50.0 mL of a 0.256 M HNO₃ solution? (5 pts)



2. Assign the oxidation states of the following highlighted in bold. Briefly explain why you chose your number. If you need to do some algebra to get the oxidation state, please briefly show your algebra. (4 pts)

a. **H**₂ _____

b. K **Mn**O₄ _____

3. If n = 5, what are the possible values of l? (4 pts)

5 a. Give the electron configuration of **As** in the format 1s², 2s², etc. (must show starting with 1s) (2 pts)

b. give the **valence** electron configuration of the element **As** (1 pt)

b. Give the **valence orbital filling diagram** for the element **As** using lines to represent orbitals (& arrows for electrons) (2 pt)

4. Circle the one **Larger** element for each letter. (no explanation needed) (2 pts)

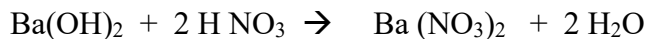
(a) C vs F

(b) C vs. Sn

Name _____ Print Name _____

Please show work on all questions for partial credit even on questions which do not specify. (20 total pts)

5. What volume of 1.26 M Ba(OH)₂ neutralizes 152.2 mL of a 0.367 M HNO₃ solution? (5 pts)



6. Assign the oxidation states of the following highlighted in bold. Briefly explain why you chose your number. If you need to do some algebra to get the oxidation state, please briefly show your algebra. (4 pts)

c. **H**₂O _____

b. **S**O₄⁻² _____

7. If $l = 2$, what are the possible values of m_l ? (4 pts)

5 a. Give the electron configuration of **Sr** in the format $1s^2, 2s^2$, etc. (must start with 1s) (2 pts)

c. give the **valence** electron configuration of **Sr** (1 pt)

d. Give the **valence orbital filling diagram** for **Sr** using lines to represent orbitals. (& arrows for electrons) (2 pt)

8. Circle the one **Larger** atom in each letter. (no explanation needed) (2 pts)

(c) Ca vs. Ba

(d) F vs. B

Name _____ Print Name _____

Please show work on all questions for partial credit even on questions which do not specify. (20 total pts)

9. You are doing a titration in which you use 0.525 M KOH to neutralize 250.2 mL of a 1.52 M solution of HF. How many mL of the KOH will you need to do your titration? $M_aV_a=M_bV_b$ (4 pts)

10. Assign the oxidation states of the following circled. Briefly explain why you chose your number. If you need to do some algebra to get the oxidation state, please briefly SHOW your algebra. (4 pts)

d. Cu _____

b. H_2S _____

11. If $n = 4$ what are the possible values of l ? For the l values that you gave, assign the spdf designation for the l . (4 pts)

$l = \underline{\hspace{1cm}}$ is [(s) or (p) or (d) or (f)] (circle one)

$l = \underline{\hspace{1cm}}$ is [(s) or (p) or (d) or (f)] (circle one)

$l = \underline{\hspace{1cm}}$ is [(s) or (p) or (d) or (f)] (circle one)

$l = \underline{\hspace{1cm}}$ is [(s) or (p) or (d) or (f)] (circle one)

12. Fill the letters into the blank. (a) s block (b) p block (c) d block (d) f block (e) shell # 5 (2 pt)

5 a. Give the **electron configuration** of **Sn** in the format $1s^2, 2s^2$, etc. (show noble gas **abbreviation**) (2 pts)

b. Give the **valence** orbital filling diagram for the element **Sn** using lines for orbitals & arrows for electrons (1 pt)

c. How many **valence** electrons does the element **Sn** have? _____ (1 pt)

13. Circle the one **smaller** atom in each letter. (no explanation needed) (2 pts)

(e) Si vs Pb

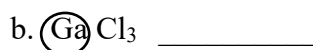
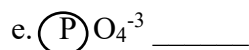
(b) Pb vs. Rn

Name _____ Print Name _____

Please show work on all questions for partial credit even on questions which do not specify. (20 total pts)

14. You are doing a titration in which you use 3.21 M KOH to neutralize 120.2 mL of a 0.523 M solution of HF. How many mL of the KOH will you need to do your titration? $M_a V_a = M_b V_b$ (4 pts)

15. Assign the oxidation states of the following circled. Briefly explain why you chose your number. If you need to do some algebra to get the oxidation state, please briefly SHOW your algebra. (4 pts)



16. If $n = 3$, what are the possible values of l ? For the l values that you gave, assign the spdf designation for your l . (4 pts)

$l = \underline{\quad}$ is [(s) or (p) or (d) or (f)] (circle one)

$l = \underline{\quad}$ is [(s) or (p) or (d) or (f)] (circle one)

$l = \underline{\quad}$ is [(s) or (p) or (d) or (f)] (circle one)

17. Fill the letters into the blank. (a) s block (b) p block (c) d block (d) f block (e) shell # 2 (2 pts)

5 a. Give the electron configuration of **Br** in the format $1s^2, 2s^2$, etc. (show noble gas **abbreviation**) (2 pts)

d. Give the orbital filling diagram for the **valence** electrons for the element **Br** use lines for orbitals & arrows for electrons (1 pt)

e. How many **valence** electrons does the element **Br** have? _____ (1 pt)

18. Circle the one **smaller** atom in each letter. (no explanation needed) (2 pts)

(f) Be vs. Sr

(b) Ge vs Kr

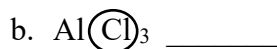
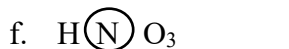
Name _____ Print Name _____

Please show work on all questions for partial credit even on questions which do not specify. (20 total pts)

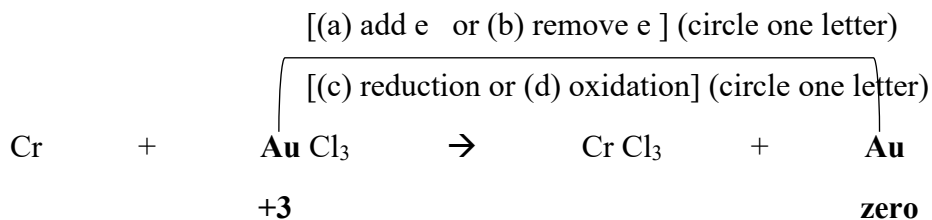
19. Complete the following acid base reaction. (you do not need to balance the reaction) (4 pts)



20. Assign the oxidation states of the following circled. Briefly explain why you chose your number. If you need to do some algebra to get the oxidation state, please briefly SHOW your algebra. (4 pts)



21. Given the oxidation states which I have provided, circle 2 letters associated with the bracket (the bracket should get either) [(a) or (b)] & [(c) or (d)] (e = my abbreviation for electron)



22. If $l = 3$, what are the possible values of m_l ? (4 pts)

23. Match the following: n _____ l _____ m_l _____ m_s _____
 (a) Subshell (b) spin quantum number (c) shell (d) orbital (4 letters, 4 blanks)

5 a. Give the electron configuration of Se in the format $1s^2, 2s^2$, etc. (must show starting with 1s) (2 pts)

g. Give the **valence orbital filling diagram** for the element Se using lines to represent orbitals (& arrows for electrons) (2 pt)

24. Circle the one **larger** element for each letter. (no explanation needed) (2 pts)

(g) Ca vs. Ba

(b) F vs. B