

Name _____

HONORS CHEMISTRY

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Ionic Compounds Practice Test

Part I – Multiple Choice – Choose the best answer for each of the following. (2 points each)

1. _____ The melting point of MgO is higher than that of NaF. Explanations for this observation include which of the following?
I. Mg^{2+} is more positively charged than Na^+
II. O^{2-} is more negatively charged than F^-
III. The O^{2-} ion is smaller than the F^- ion
- (A) II only **(B) I and II only** (C) I and III only (D) II and III only (E) I, II, and III
2. _____ Which ionic compound has the highest melting point?
(A) KCl (B) K_2O (C) CaCl_2 **(D) CaO** (E) CaBr_2
3. _____ Which of the following solid substances can conduct electricity at room temperature?
I. Mg II. CuCl_2 III. Cu
- (A) II only (B) I and II only **(C) I and III only** (D) II and III only (E) I, II, and III
4. _____ What is the oxidation number of phosphorus in copper(II) phosphite?
(A) +2 **(B) +3** (C) -3 (D) +4 (E) +5
5. _____ Which of the following is true about ionic compounds?
I. They are mostly crystalline solids at room temperature.
II. They only conduct electricity when dissolved in water.
III. They have free moving electrons.
- (A) I only** (B) I and II only (C) I and III only (D) II and III only (E) I, II, and III
6. _____ When LiF is formed from its elements there are five steps. Which of the following steps is NOT endothermic?
I. Step 1: Sublimation of solid lithium. $\text{Li}(s) \rightarrow \text{Li}(g)$
II. Step 2: Ionization of lithium atom. $\text{Li}(g) \rightarrow \text{Li}^+(g) + e^-$
III. Step 4: Formation of fluoride ions. $\text{F}(g) + e^- \rightarrow \text{F}^-(g)$
- (A) II only (B) II only (C) I and II only (D) II and III only **(E) III only**
7. _____ Which of the following would likely have the highest melting point?
(A) LiCl **(B) LiF** (C) NaCl (D) NaF (E) KF
8. _____ What is the oxidation number of sulfur in aluminum sulfate?
(A) +3 (B) -2 (C) +2 (D) +4 **(E) +6**
9. _____ What is the oxidation number of manganese in MnO_2 ?
(A) +2 (B) +3 **(C) +4** (D) +6 (E) +7
10. _____ What is the oxidation number of ruthenium in RuO_3 ?
(A) +3 (B) +2 **(C) +6** (D) +4 (E) +8

Part II: Name each of the following. (2 points each)

1. ammonium carbonate $(\text{NH}_4)_2\text{CO}_3$

3. manganese(VI) sulfite $\text{Mn}(\text{SO}_3)_3$

5. magnesium nitrite $\text{Mg}(\text{NO}_2)_2$

7. mercury(I) permanganate $\text{Hg}_2(\text{MnO}_4)_2$

9. strontium fluoride SrF_2

11. iridium(II) chromate IrCrO_4

13. iron(III) nitride FeN

15. ruthenium(IV) perchlorate $\text{Ru}(\text{ClO}_4)_4$

17. tin(II) phosphite $\text{Sn}_3(\text{PO}_3)_2$

19. cadmium chlorate $\text{Cd}(\text{ClO}_3)_2$

2. thallium(III) sulfide Tl_2S_3

4. calcium iodide CaI_2

6. indium selenide In_2Se_3

8. potassium chlorite KClO_2

10. tungsten(II) silicate WSiO_3

12. lanthanum acetate $\text{La}(\text{C}_2\text{H}_3\text{O}_2)_3$

14. gallium phosphide GaP

16. vanadium(IV) oxide VO_2

18. lead(II) chloride PbCl_2

20. rhodium(II) sulfate RhSO_4

Part III: Write the formulas for each of the following. (2 points each). Please put a box around your answer.

1. radium dichromate

RaCr_2O_7

4. calcium perchlorate

$\text{Ca}(\text{ClO}_4)_2$

7. iron(III) nitride

FeN

10. plumbous bromide

PbBr_2

13. niobium(III) sulfate

$\text{Nb}_2(\text{SO}_4)_3$

16. aluminum acetate

$\text{Al}(\text{C}_2\text{H}_3\text{O}_2)_3$

2. francium iodide

FrI

5. rubidium sulfite

Rb_2SO_3

8. platinum(IV) nitrite

$\text{Pt}(\text{NO}_2)_4$

11. nickelous permanganate

$\text{Ni}(\text{MnO}_4)_2$

14. auric chlorate

$\text{Au}(\text{ClO}_3)_3$

17. cobalt(II) nitrate

$\text{Co}(\text{NO}_3)_2$

3. barium oxide

BaO

6. ammonium hydroxide

NH_4OH

9. nickel(II) chloride

NiCl_2

12. strontium chlorite

$\text{Sr}(\text{ClO}_2)_2$

15. potassium nitrite

KNO_2

18. ruthenium(VI) silicate

$\text{Ru}(\text{SiO}_3)_3$

19. mercurous phosphate

$(\text{Hg}_2)_3(\text{PO}_4)_2$

20. stannic hypochlorite

$\text{Sn}(\text{ClO})_4$