



## Pool Canvas

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**Name** Chapter 2: Atoms, Molecules, and Ions  
**Description** Diploma exported pool  
**Instructions**

[Add Question Here](#)

Question 1  **Multiple Choice** **1 points**

**Question** According to the law of definite proportions,

- Answer**
- A. if the same two elements form two different compounds, they do so in the same ratio.
  - B. it is not possible for the same two elements to form more than one compound.
  - C. the ratio of the masses of the elements in a compound is always the same.
  - D. the total mass after a chemical change is the same as before the change.

[Add Question Here](#)

Question 2  **Multiple Choice** **1 points**

**Question** Which of the following pairs of compounds can be used to illustrate the law of multiple proportions?

- Answer**
- A.  $\text{NH}_3$  and  $\text{NBr}_3$
  - B.  $\text{ZnO}$  and  $\text{ZnCl}_2$
  - C.  $\text{H}_2\text{O}$  and  $\text{HBr}$
  - D.  $\text{NO}$  and  $\text{NO}_2$
  - E.  $\text{CH}_4$  and  $\text{CO}_2$

[Add Question Here](#)

Question 3  **Multiple Choice** **1 points**

**Question** How many of the following did Dalton *not* discuss in his atomic theory?

- I. isotopes
- II. ions
- III. protons
- IV. neutrons
- V. electrons

- Answer**
- A. 1
  - B. 2
  - C. 3
  - D. 4
  - E. 5

[Add Question Here](#)

Question 4  **Multiple Choice** **1 points**

**Question** When 2.0 L of oxygen gas ( $\text{O}_2$ ) reacts with 1.0 L of nitrogen gas ( $\text{N}_2$ ), 2.0 L of gaseous product is formed. All volumes of gases are measured at the same temperature and pressure. What is the formula of the product?

- Answer**
- A.  $\text{N}_2\text{O}$
  - B.  $\text{NO}_2$
  - C.  $\text{NO}_4$
  - D.  $\text{NO}$
  - E.  $\text{N}_2\text{O}_3$

[Add Question Here](#)

Question 5  **Multiple Choice** **1 points**

**Question** Which one of the following statements about atomic structure is false?

- Answer**
- A. The electrons occupy a very large volume compared to the nucleus.
  - B. Almost all of the mass of the atom is concentrated in the nucleus.
  - C. The protons and neutrons in the nucleus are very tightly packed.
  - D. The number of protons and the number of neutrons are always the same in the neutral atom.

[Add Question Here](#)

Question 6  **Multiple Choice** **1 points**

**Question** Which of the experiments listed below did *not* provide the information stated about the nature of the atom?

- Answer**
- A. The Rutherford experiment proved that the Thomson "plum pudding" model of the atom was essentially correct.
  - B. The Rutherford experiment determined the charge on the nucleus.
  - C. Millikan's oil-drop experiment showed that the charge on any particle was a simple multiple of the charge on the electron.
  - D. The cathode-ray tube proved that electrons have a negative charge.

[Add Question Here](#)

Question 7  **Multiple Choice** **1 points**

**Question** Which of the following atomic symbols is incorrect?

**Answer**

- A.  ${}^{19}_9\text{F}$
- B.  ${}^{34}_{17}\text{Cl}$
- C.  ${}^{31}_{15}\text{P}$
- D.  ${}^{39}_{19}\text{K}$
- E.  ${}^{14}_6\text{N}$

[Add Question Here](#)

Question 8 **Multiple Choice**

**1 points**

[Modify](#) [Remove](#)

**Question** The element rhenium (Re) exists as two stable isotopes and 18 unstable isotopes. Rhenium-185 has in its nucleus

**Answer**

- A. 75 protons, 75 neutrons.
- B. 75 protons, 130 neutrons.
- C. 130 protons, 75 neutrons.
- D. 75 protons, 110 neutrons.
- E. not enough information is given.

[Add Question Here](#)

Question 9 **Multiple Choice**

**1 points**

[Modify](#) [Remove](#)

**Question** Which of the following statements is(are) true?

- I. O and F have the same number of neutrons.
- II. C and N are isotopes of each other because their mass numbers are the same.
- III.  $\text{O}^{2-}$  has the same number of electrons as Ne.

**Answer**

- A. I only
- B. II only
- C. III only
- D. I and II only
- E. I and III only

[Add Question Here](#)

Question 10 **Multiple Choice**

**1 points**

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**Question** Which among the following represent a set of isotopes? Atomic nuclei containing

- I. 20 protons and 20 neutrons.
- II. 21 protons and 19 neutrons.
- III. 22 neutrons and 18 protons.
- IV. 20 protons and 22 neutrons.
- V. 21 protons and 20 neutrons.

**Answer**

- A. I, II, III
- B. III, IV
- C. I, V
- D. I, IV and II, V
- E. No isotopes are indicated.

[Add Question Here](#)

Question 11 **Multiple Choice**

**1 points**

[Modify](#) [Remove](#)

**Question** How many protons, neutrons, and electrons does the atom  ${}^{39}\text{K}$  have?

**Answer**

- A. 19 protons, 19 neutrons, 39 electrons
- B. 20 protons, 20 neutrons, 19 electrons
- C. 19 protons, 19 neutrons, 19 electrons
- D. 20 protons, 19 neutrons, 20 electrons
- E. 19 protons, 20 neutrons, 19 electrons

[Add Question Here](#)

Question 12 **Multiple Choice**

**1 points**

[Modify](#) [Remove](#)

**Question** An ion is formed

- I. by either adding protons to or subtracting protons from the atom.
- II. by either adding electrons to or subtracting electrons from the atom.
- III. by either adding neutrons to or subtracting neutrons from the atom.

**Answer**

- A. Only I is true.
- B. Only II is true.
- C. Only III is true.
- D. All of the statements are true.
- E. Two of the statements are true.

[Add Question Here](#)

Question 13 **Multiple Choice**

**1 points**

[Modify](#) [Remove](#)

**Question** Which is the symbol for the isotope of nitrogen that has 7 protons and 8 neutrons?

**Answer**

- A.  ${}^7_8\text{N}$
- B.  ${}^8_7\text{N}$
- C.  ${}^{15}_7\text{N}$
- D.  ${}^7_{15}\text{N}$

[Add Question Here](#)

Question 14 - Multiple Choice 1 points

[Modify](#) [Remove](#)

**Question** Which of the following represents a pair of isotopes?

**Answer**

- A.  $^{14}_6\text{C}$ ,  $^{14}_7\text{N}$
- B.  $^{12}_6\text{C}$ ,  $^{13}_6\text{C}$
- C.  $^{18}_8\text{O}$ ,  $^{19}_9\text{F}$
- D.  $\text{O}_2$ ,  $\text{O}_3$
- E.  $^{32}_{16}\text{S}$ ,  $^{32}_{16}\text{S}^{2-}$

[Add Question Here](#)

Question 15 - Multiple Choice 1 points

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**Question** Which of the following statements is(are) true?

- I. The number of protons is the same for all neutral atoms of an element.
- II. The number of electrons is the same for all neutral atoms of an element.
- III. The number of neutrons is the same for all neutral atoms of an element.

**Answer**

- A. I, II, and III are all true.
- B. Only I and II are true.
- C. Only II and III are true.
- D. Only I and III are true.
- E. I, II, and III are all false.

[Add Question Here](#)

Question 16 - Multiple Choice 1 points

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**Question** The ion  $^{31}\text{P}^{3-}$  has

**Answer**

- A. 15 protons, 15 neutrons, 15 electrons
- B. 15 protons, 15 neutrons, 12 electrons
- C. 15 protons, 15 neutrons, 3 electrons
- D. 15 protons, 16 neutrons, 18 electrons
- E. 15 protons, 31 neutrons, 15 electrons

[Add Question Here](#)

Question 17 - Multiple Choice 1 points

[Modify](#) [Remove](#)

**Question** The ion  $^{127}\text{I}^-$  has

**Answer**

- A. 53 protons, 74 neutrons, 54 electrons
- B. 53 protons, 74 neutrons, 53 electrons
- C. 53 protons, 74 neutrons, 52 electrons
- D. 53 protons, 127 neutrons, 54 electrons
- E. 53 protons, 53 neutrons, 53 electrons

[Add Question Here](#)

Question 18 - Multiple Choice 1 points

[Modify](#) [Remove](#)

**Question** An element's most stable ion forms an ionic compound with chlorine having the formula  $\text{XCl}_2$ . If the mass number of the ion is 24 and it has 10 electrons, what is the element and how many neutrons does it have?

**Answer**

- A. Ne, 14 neutrons
- B. Ne, 16 neutrons
- C. O, 16 neutrons
- D. Mg, 12 neutrons
- E. Na, 11 neutrons

[Add Question Here](#)

Question 19 - Multiple Choice 1 points

[Modify](#) [Remove](#)

**Question** Which element does *not* belong to the family or classification indicated?

**Answer**

- A. Br, halogen
- B. Kr, noble gas
- C. Co, transition metal
- D. K, alkali metal
- E. In, lanthanides

[Add Question Here](#)

Question 20 - Multiple Choice 1 points

[Modify](#) [Remove](#)

**Question** Which are alkaline earth halides?

**Answer**

- A.  $\text{NaI}$ ,  $\text{KBr}$ ,  $\text{LiF}$
- B.  $\text{CaF}_2$ ,  $\text{MgBr}_2$ ,  $\text{SrI}_2$
- C.  $\text{PbI}_2$ ,  $\text{PbBr}_2$ ,  $\text{CdF}_2$
- D.  $\text{MgO}$ ,  $\text{MgS}$ ,  $\text{CaO}$
- E.  $\text{Al}_2\text{O}_3$ ,  $\text{In}_2\text{O}_3$ ,  $\text{Ga}_2\text{S}_3$

[Add Question Here](#)

Question 21 - Multiple Choice 1 points

[Modify](#) [Remove](#)

**Question** Select the group of symbols that would correctly complete the following statements, respectively.

\_\_\_ is the heaviest noble gas.

\_\_\_ is the transition metal that has 24 electrons as a 3+ ion.

\_\_\_ is the halogen in the third period.  
\_\_\_ is the alkaline earth metal that has 18 electrons as a stable ion.

- Answer**
- A. Rn, Cr, Br, Ca
  - B. Ra, Co, Cl, K
  - ✓ C. Rn, Co, Cl, Ca
  - D. Ra, Sc, Br, K

[Add Question Here](#)

[Modify](#) [Remove](#)

Question 22 **Multiple Choice** 1 points

**Question** \_\_\_\_\_ form ions with a 2+ charge when they react with nonmetals.

- Answer**
- A. Alkali metals
  - ✓ B. Alkaline earth metals
  - C. Halogens
  - D. Noble gases
  - E. None of these choices

[Add Question Here](#)

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Question 23 **Multiple Choice** 1 points

**Question** Which of the following formulas is *not* correct?

- Answer**
- A.  $\text{ZnSO}_4$
  - B.  $\text{Ca}(\text{OH})_2$
  - ✓ C. NaO
  - D. CsF
  - E.  $\text{NH}_4\text{I}$

[Add Question Here](#)

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Question 24 **Multiple Choice** 1 points

**Question** Which of the following is *not* the correct chemical formula for the compound named?

- Answer**
- A. LiOH lithium hydroxide
  - ✓ B.  $\text{Fe}_3\text{PO}_4$  iron(III) phosphate
  - C. HF hydrogen fluoride
  - D.  $\text{BaI}_2$  barium iodide
  - E.  $\text{Zn}_3\text{P}_2$  zinc phosphide

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Question 25 **Multiple Choice** 1 points

**Question** Which of the following is *not* the correct name for the formula given?

- Answer**
- A.  $\text{Fe}_2\text{S}_3$  iron(III) sulfide
  - B.  $\text{PBr}_5$  phosphorus pentabromide
  - C. CoO cobalt(II) oxide
  - ✓ D.  $\text{CaSO}_3$  calcium sulfate
  - E.  $\text{HClO}_2$  chlorous acid

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Question 26 **Multiple Choice** 1 points

**Question** Which is *not* the correct chemical formula for the compound named?

- Answer**
- A. potassium sulfate  $\text{K}_2\text{SO}_4$
  - B. copper(II) oxide CuO
  - C. calcium carbonate  $\text{CaCO}_3$
  - ✓ D.

sodium sulfide	NaS
E. barium nitrite	Ba(NO <sub>2</sub> ) <sub>2</sub>

[Add Question Here](#)

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Question 27 **Multiple Choice** 1 points

**Question** What is the correct formula for aluminum carbonate?

- Answer**
- A. AlCO<sub>3</sub>
  - B. Al<sub>2</sub>(CO<sub>3</sub>)<sub>3</sub>
  - C. Al<sub>3</sub>(CO<sub>3</sub>)<sub>2</sub>
  - D. Al<sub>2</sub>CO<sub>3</sub>
  - E. Al<sub>3</sub>CO<sub>3</sub>

[Add Question Here](#)

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Question 28 **Multiple Choice** 1 points

**Question** Which of the following is *not* the correct chemical formula for the compound named?

- Answer**
- A.  
Li<sub>2</sub>O      lithium oxide
  - B.  
Fe<sub>3</sub>PO<sub>4</sub>      iron(III) phosphate
  - C.  
HF      hydrogen fluoride
  - D.  
BaCl<sub>2</sub>      barium chloride
  - E.  
Mg<sub>3</sub>N<sub>2</sub>      magnesium oxide

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Question 29 **Multiple Choice** 1 points

**Question** Which formula is *not* correct?

- Answer**
- A. NH<sub>4</sub>C<sub>2</sub>H<sub>3</sub>O<sub>2</sub>
  - B. MgO
  - C. Ca(NO<sub>2</sub>)<sub>2</sub>
  - D. ZnCl
  - E. LiI

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Question 30 **Multiple Choice** 1 points

**Question** What is the correct formula for tin(IV) oxide?

- Answer**
- A. SnO<sub>4</sub>
  - B. Sn<sub>4</sub>O
  - C. SnO<sub>2</sub>
  - D. SnO
  - E. SnO<sub>3</sub>

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Question 31 **Multiple Choice** 1 points

**Question** Which of the following is *not* the correct name for the formula given?

- Answer**
- A.  
Fe<sub>2</sub>O<sub>3</sub>      iron(III) oxide
  - B.  
PCl<sub>5</sub>      phosphorus pentachloride
  - C.  
CoO      cobalt(II) oxide
  - D.  
BaSO<sub>3</sub>      barium sulfate
  - E.  
HClO      hypochlorous acid

[Add Question Here](#)

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Question 32 **Multiple Choice** 1 points

**Question** Which of the following is *not* the correct chemical formula for the compound named?

- Answer** ✓ A.  
 $\text{Na(OH)}_2$  sodium hydroxide
- B.  
 $\text{LiSCN}$  lithium thiocyanate
- C.  
 $\text{Co}_2\text{O}_3$  cobalt(III) oxide
- D.  
 $\text{ZnS}$  zinc sulfide
- E.  
 $\text{Ca(C}_2\text{H}_3\text{O}_2)_2$  calcium acetate

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Question 33 · **Multiple Choice** 1 points

**Question** Which is the correct formula for gold(I) sulfide?

- Answer**
- A. AuS
- ✓ B.  $\text{Au}_2\text{S}$
- C.  $\text{AuS}_2$
- D.  $\text{Au}_2\text{S}_2$
- E.  $\text{Au}_2\text{S}_3$

[Add Question Here](#)

[Modify](#) [Remove](#)

Question 34 · **Essay** 1 points

**Question** Complete the following table.

Symbol	Number of Protons	Number of Neutrons	Number of Electrons	Net Charge
$^{206}_{82}\text{Pb}$				
	31	38		3+
	52	75	54	
$^{54}_{25}\text{Mn}^{2+}$		29		2+

**Answer**

Symbol	Number of Protons	Number of Neutrons	Number of Electrons	Net Charge
$^{206}_{82}\text{Pb}$	82	124	82	0
$^{69}_{31}\text{Ga}^{3+}$	31	38	28	3+
$^{127}_{52}\text{Te}^{2-}$	52	75	54	2-
$^{54}_{25}\text{Mn}^{2+}$	25	29	23	2+

[Add Question Here](#)

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Question 35 · **Essay** 1 points

**Question** Complete the following table.

<b>Symbol</b>	$^{56}\text{Fe}^{2+}$	
Number of protons		35
Number of neutrons		45
Number of electrons		
Atomic number		
Mass number		
Net charge		1-

**Answer**

<b>Symbol</b>	$^{56}\text{Fe}^{2+}$	$^{80}\text{Br}^-$
Number of protons	26	35
Number of neutrons	30	45
Number of electrons	24	36
Atomic number	26	35
Mass number	56	80
Net charge	2+	1-

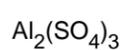
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Question 36 · **Fill in the Blank** 1 points

**Question** Name the following compounds:

Reference: Ref 2-1



**Answer** aluminum sulfate

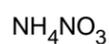
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Question 37 · **Fill in the Blank** 1 points

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**Question** Name the following compounds:

**Reference:** Ref 2-1



**Answer** ammonium nitrate

[Add Question Here](#)

Question 38 · **Fill in the Blank** 1 points

[Modify](#) [Remove](#)

**Question** Name the following compounds:

**Reference:** Ref 2-1



**Answer** sodium hydride

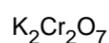
[Add Question Here](#)

Question 39 · **Fill in the Blank** 1 points

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**Question** Name the following compounds:

**Reference:** Ref 2-1



**Answer** potassium dichromate

[Add Question Here](#)

Question 40 · **Fill in the Blank** 1 points

[Modify](#) [Remove](#)

**Question** Name the following compounds:

**Reference:** Ref 2-1



**Answer** carbon tetrachloride

[Add Question Here](#)

Question 41 · **Fill in the Blank** 1 points

[Modify](#) [Remove](#)

**Question** Name the following compounds:

**Reference:** Ref 2-1



**Answer** silver chloride

[Add Question Here](#)

Question 42 · **Fill in the Blank** 1 points

[Modify](#) [Remove](#)

**Question** Name the following compounds:

**Reference:** Ref 2-1



**Answer** calcium sulfate

[Add Question Here](#)

Question 43 · **Fill in the Blank** 1 points

[Modify](#) [Remove](#)

**Question** Name the following compounds:

**Reference:** Ref 2-1



**Answer** nitric acid

[Add Question Here](#)

Question 44 · **Fill in the Blank** 1 points

[Modify](#) [Remove](#)

**Question** Name the following compounds:

**Reference:** Ref 2-1



**Answer** dinitrogen trioxide

[Add Question Here](#)

Question 45 · **Fill in the Blank** 1 points

[Modify](#) [Remove](#)

**Question** Name the following compounds:

**Reference:** Ref 2-1



**Answer** tin(II) iodide

[Add Question Here](#)

Question 46 · **Essay** 1 points

[Modify](#) [Remove](#)

**Question** Write the formula for:

**Reference:** Ref 2-2

sodium dichromate

**Answer**  $\text{Na}_2\text{Cr}_2\text{O}_7$

[Add Question Here](#)

Question 47	Essay	1 points	<a href="#">Modify</a> <a href="#">Remove</a>
<p><b>Question</b> Write the formula for:  Reference: Ref 2-2</p> <p>iron(III) oxide</p> <p><b>Answer</b> <math>\text{Fe}_2\text{O}_3</math></p>			
<a href="#">Add Question Here</a>			
Question 48	Essay	1 points	<a href="#">Modify</a> <a href="#">Remove</a>
<p><b>Question</b> Write the formula for:  Reference: Ref 2-2</p> <p>dinitrogen trioxide</p> <p><b>Answer</b> <math>\text{N}_2\text{O}_3</math></p>			
<a href="#">Add Question Here</a>			
Question 49	Essay	1 points	<a href="#">Modify</a> <a href="#">Remove</a>
<p><b>Question</b> Write the formula for:  Reference: Ref 2-2</p> <p>cobalt(II) chloride</p> <p><b>Answer</b> <math>\text{CoCl}_2</math></p>			
<a href="#">Add Question Here</a>			
Question 50	Essay	1 points	<a href="#">Modify</a> <a href="#">Remove</a>
<p><b>Question</b> Write the formula for:  Reference: Ref 2-2</p> <p>aluminum hydroxide</p> <p><b>Answer</b> <math>\text{Al}(\text{OH})_3</math></p>			
<a href="#">Add Question Here</a>			
Question 51	Essay	1 points	<a href="#">Modify</a> <a href="#">Remove</a>
<p><b>Question</b> Write the formula for:  Reference: Ref 2-2</p> <p>hydrosulfuric acid</p> <p><b>Answer</b> <math>\text{H}_2\text{S}</math></p>			
<a href="#">Add Question Here</a>			
Question 52	Essay	1 points	<a href="#">Modify</a> <a href="#">Remove</a>
<p><b>Question</b> Write the formula for:  Reference: Ref 2-2</p> <p>sulfurous acid</p> <p><b>Answer</b> <math>\text{H}_2\text{SO}_3</math></p>			
<a href="#">Add Question Here</a>			
Question 53	Essay	1 points	<a href="#">Modify</a> <a href="#">Remove</a>
<p><b>Question</b> Write the formula for:  Reference: Ref 2-2</p> <p>nitric acid</p> <p><b>Answer</b> <math>\text{HNO}_3</math></p>			
<a href="#">Add Question Here</a>			
Question 54	Essay	1 points	<a href="#">Modify</a> <a href="#">Remove</a>
<p><b>Question</b> Write the formula for:  Reference: Ref 2-2</p> <p>phosphoric acid</p> <p><b>Answer</b> <math>\text{H}_3\text{PO}_4</math></p>			
<a href="#">Add Question Here</a>			
Question 55	Essay	1 points	<a href="#">Modify</a> <a href="#">Remove</a>
<p><b>Question</b> Write the formula for:  Reference: Ref 2-2</p> <p>acetic acid</p> <p><b>Answer</b> <math>\text{HC}_2\text{H}_3\text{O}_2</math></p>			
<a href="#">Add Question Here</a>			
Question 56	Essay	1 points	<a href="#">Modify</a> <a href="#">Remove</a>
<p><b>Question</b> Write the chemical formulas for the following compounds or ions.</p> <p>a) nitrate ion</p> <p>_____</p>			

- b) aluminum oxide \_\_\_\_\_
- c) ammonium ion \_\_\_\_\_
- d) perchloric acid \_\_\_\_\_
- e) copper(II) bromide \_\_\_\_\_

**Answer**

- a)  $\text{NO}_3^-$
- b)  $\text{Al}_2\text{O}_3$
- c)  $\text{NH}_4^+$
- d)  $\text{HClO}_4$
- e)  $\text{CuBr}_2$

[Add Question Here](#)

Question 57

**Essay**

**1 points**

[Modify](#)

[Remove](#)

**Question** Write the names of the following compounds:

- a)  $\text{FeSO}_4$  \_\_\_\_\_
- b)  $\text{NaC}_2\text{H}_3\text{O}_2$  \_\_\_\_\_
- c)  $\text{KNO}_2$  \_\_\_\_\_
- d)  $\text{Ca(OH)}_2$  \_\_\_\_\_
- e)  $\text{NiCO}_3$  \_\_\_\_\_

**Answer**

- a) iron(II) sulfate
- b) sodium acetate
- c) potassium nitrite
- d) calcium hydroxide
- e) nickel(II) carbonate

[Add Question Here](#)

OK