

Name Kay print N/A = not attempted Name _____ sign _____

For long answer type questions, you must show all work for partial credit. Please write legibly. (I cannot grade what I cannot read.) Please print your name on the top back of the quiz so that I can return the quiz in a self serve fashion. (2 pts. for writing name on the back)

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 1) Elements _____ exhibit similar physical and chemical properties. 1) A
- A) in the same group of the periodic table
 - B) with similar atomic masses
 - C) in the same period of the periodic table
 - D) with similar chemical symbols
 - E) on opposite sides of the periodic table
- Group IA to IIIA
charge # = group #

- 2) There are 54 electrons, 54 protons, and 78 neutrons in an atom of 2) D
- $^{132}_{54}\text{Xe}$. Atomic # gives # electrons + protons
- A) 78, 78, 54 (unless atom has charge - in which case may have different # electrons)
 - B) 54, 54, 132
 - C) 78, 78, 132
 - D) 54, 54, 78 # neutrons = mass # - atomic # = 132 - 54 = 78
 - E) 132, 132, 54

- 3) Which species below is the sulfate ion? 3) E
- A) HS⁻
 - B) SO₃⁻²
 - C) SO₂⁻²
 - D) S²⁻
 - E) SO₄⁻²

- 4) The ions Ca²⁺ and PO₄³⁻ form a salt with the formula 4) _____
- A) CaPO₄
 - B) Ca₂(PO₄)₃
 - C) Ca₂PO₄
 - D) Ca₃(PO₄)₂
 - E) Ca(PO₄)₂
- LA - each 1 pt., - 1/2 math, - 1/2 did not show work
- formula unit must be neutral
positive charge must equal negative charge
(+2)(#) = (-3)(#) 3 Ca²⁺ + 2 PO₄³⁻

- 5) Elements in Group IA are known as the 5) D
- A) alkaline earth metals
 - B) noble gases
 - C) halogens
 - D) alkali metals
 - E) chalcogens
- to balance equations
- 1) leave subscripts alone
 - 2) change coefficients only
 - 3) # reactant atoms = # product atoms

- 6) Barium forms an ion with a charge of 6) D
- A) 3+
 - B) 3-
 - C) 1+
 - D) 2+
 - E) 2-

Ba in Group IIA → + charge = group #

Long Answer. Write your answer in the space provided. Please show work for full credit and to receive partial credit for incorrect final answers. (write legibly please) (from chapter 3 - 2 pts extra credit)

7) Balance the following reaction: Ca²⁺ + 2Cl⁻ → CaCl₂

reactant - 2Ca + 2Cl
product - 2Ca + 2Cl

Coefficient

subscript

8) Give the molecular weight of CaCl₂

MW = 40.1 + 2(35.5) = 111.1

Ca atomic weight of elements

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MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question. (3 pts each)

1) Which species below is the nitrate ion?

- A) NO_2^{-2} B) N^{3-} C) HN^- D) NO_3^{-1} E) SO_4^{-2}

1) D

2) In the periodic table, the elements are arranged in _____.

- A) reverse alphabetical order
B) order of increasing metallic properties
C) alphabetical order
D) order of increasing neutron content
E) order of increasing atomic number

NA = not attempted
LA - each 1 pt.
- 1/2 did not show work
1/2 math

2) E

3) Elements in Group II A are known as the _____.

- A) chalcogens
B) halogens
C) noble gases
D) alkaline earth metals
E) alkali metals

Group VIA to VII A
charge = (GP #) - 8
0 in group VIA
6 - 8 = -2

3) D

4) Predict the charge of the most stable ion of oxygen.

- A) 1+ B) 3+ C) 2- D) 1- E) 2+

4) C

5) Which isotope has 36 electrons in an atom?

- A) $^{78}_{34}\text{Se}$ B) $^{80}_{35}\text{Br}$ C) $^{36}_{80}\text{Hg}$ D) $^{80}_{36}\text{Kr}$ E) $^{34}_{17}\text{Cl}$

Neutral atoms atomic # = # e

5) D

6) The ions Na^+ and SO_4^{-2} forms a salt with the formula _____.

- A) Na_2SO_4
B) $\text{Na}(\text{SO}_4)_2$
C) $\text{Na}_2(\text{SO}_4)_3$
D) NaSO_4
E) $\text{Na}_2(\text{SO}_4)$

formula unit must be neutral
positive charge must equal negative charge
(+1)(#) = (-2)(#)
2 → Na_2SO_4
E has a coefficient inside formula

6) A

Long Answer. Write your answer in the space provided. Please show work for full credit and to receive partial credit for incorrect final answers. (write legibly please) (from chapter 3 - 2 pts extra credit)

7) Balance the following reaction: $\text{Al}^{+3} + 3\text{Br}^- \rightarrow \text{AlBr}_3$

coefficient subscript

8) The molecular weight for AlBr_3 is _____.

$\text{MW} = 27.0 + 3(80.0) = 267$
↑ Al Br
use atomic weights of elements

to balance eqn.
① leave subscripts alone
② change coefficient only
③ # reactant atom = # product atom

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MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question. (3 pts each)

1) The ions Na^+ and SO_4^{2-} forms a salt with the formula _____ 1) E
 A) $\text{Na}_2(\text{SO}_4)_3$ formula unit must be neutral
 B) NaSO_4 positive charge must equal negative charge
 C) $\text{Na}(\text{SO}_4)_2$
 D) $\text{Na}_2(\text{SO}_4)$ (+1)(#) = (-2)(#) Na_2SO_4 (D) has a coefficient inside formula
 E) Na_2SO_4

2) Predict the charge of the most stable ion of oxygen. 2) B
 A) 1- B) 2- C) 1+ D) 3+ E) 2+

3) Which species below is the nitrate ion? 3) D
 A) HN^- B) SO_4^{2-} C) N^{3-} D) NO_3^{-1} E) NO_2^{-2}

4) Elements in Group II A are known as the _____ 4) _____
 A) halogens
 B) chalcogens
 C) noble gases
 D) alkaline earth metals
 E) alkali metals
 GP. VIA to VIIA
 charge = (GP#) - 8, 0 group VIA
 charge = 6 - 8 = -2

5) In the periodic table, the elements are arranged in _____ 5) C
 A) order of increasing metallic properties
 B) reverse alphabetical order
 C) order of increasing atomic number
 D) order of increasing neutron content
 E) alphabetical order
 to balance eqn
 ① leave subscripts alone
 ② change coefficients only
 ③ # reactant = # product atoms

6) Which isotope has 36 electrons in an atom? 6) E
 A) $^{78}_{34}\text{Se}$ B) $^{36}_{80}\text{Hg}$ C) $^{80}_{35}\text{Br}$ D) $^{34}_{17}\text{Cl}$ E) $^{80}_{36}\text{Kr}$

neutral atoms \rightarrow atomic # = # electrons
 Long Answer. Write your answer in the space provided. Please show work for full credit and to receive partial credit for incorrect final answers. (write legibly please) (from chapter 3 - 2 pts extra credit)

7) Balance the following reaction: $\text{Al}^{+3} + 3\text{Br}^- \rightarrow \text{AlBr}_3$
 coefficient \rightarrow subscript

8) The molecular weight for AlBr_3 is 267
 $\text{MW} = 27.0 + 3(80.0) = 267$
 Al Br
 use atomic weight of elements