

Name \_\_\_\_\_

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

- 1) \_\_\_\_\_ is credited with developing the concept of atomic numbers. 1) \_\_\_\_\_
- A) Henry Moseley
  - B) Ernest Rutherford
  - C) Michael Faraday
  - D) Dmitri Mendeleev
  - E) Lothar Meyer
- 2) Elements in the modern version of the periodic table are arranged in order of increasing \_\_\_\_\_ 2) \_\_\_\_\_
- A) number of isotopes
  - B) oxidation number
  - C) average atomic mass
  - D) atomic number
  - E) atomic mass
- 3) The first ionization energies of the elements \_\_\_\_\_ as you go from left to right across a period of the periodic table, and \_\_\_\_\_ as you go from the bottom to the top of a group in the table. 3) \_\_\_\_\_
- A) increase, increase
  - B) increase, decrease
  - C) decrease, increase
  - D) decrease, decrease
  - E) are completely unpredictable
- 4) The \_\_\_\_\_ have the most negative electron affinities. 4) \_\_\_\_\_
- A) alkali metals
  - B) alkaline earth metals
  - C) halogens
  - D) transition metals
  - E) chalcogens

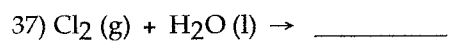
- 5) In general, as you go across a period in the periodic table from left to right: 5) \_\_\_\_\_
- (1) the atomic radius \_\_\_\_\_;
  - (2) the electron affinity becomes \_\_\_\_\_ negative; and
  - (3) the first ionization energy \_\_\_\_\_.
- A) decreases, increasingly, decreases
  - B) increases, increasingly, decreases
  - C) increases, increasingly, increases
  - D) decreases, increasingly, increases
  - E) decreases, decreasingly, increases
- 6) Element M reacts with chlorine to form a compound with the formula  $MCl_2$ . Element M is more reactive than magnesium and has a smaller radius than barium. This element is \_\_\_\_\_. 6) \_\_\_\_\_
- A) Be
  - B) Sr
  - C) Ra
  - D) Na
  - E) K
- 7) The oxide of which element below can react with hydrochloric acid? 7) \_\_\_\_\_
- A) nitrogen
  - B) selenium
  - C) sulfur
  - D) carbon
  - E) sodium
- 8) Metals can be \_\_\_\_\_ at room temperature. 8) \_\_\_\_\_
- A) solid, liquid, or gas
  - B) liquid only
  - C) solid only
  - D) solid or liquid
  - E) liquid or gas
- 9) Most of the elements on the periodic table are \_\_\_\_\_. 9) \_\_\_\_\_
- A) liquids
  - B) nonmetals
  - C) gases
  - D) metalloids
  - E) metals
- 10) Na reacts with element X to form an ionic compound with the formula  $Na_3X$ . Ca will react with X to form \_\_\_\_\_. 10) \_\_\_\_\_
- A)  $Ca_3X$
  - B)  $CaX_2$
  - C)  $Ca_3X_2$
  - D)  $CaX$
  - E)  $Ca_2X_3$
- 11) What is the coefficient of M when the following equation is completed and balanced if M is an alkali metal? 11) \_\_\_\_\_
- $$M(s) + H_2O(l) \rightarrow$$
- A) 1
  - B) 2
  - C) 3
  - D) 4
  - E) 0
- 12) The substance, \_\_\_\_\_ is always produced when an active metal reacts with water. 12) \_\_\_\_\_
- A)  $O_2$
  - B) NaOH
  - C)  $CO_2$
  - D)  $H_2O$
  - E)  $H_2$

- 13) The reaction of potassium metal with elemental hydrogen produces \_\_\_\_\_. 13) \_\_\_\_\_
- A)  $K_2H$
  - B) KH
  - C)  $KH_2$
  - D) None of the above; potassium will not react directly with hydrogen.
  - E) KOH
- 14) Which alkaline earth metal will not react with liquid water or with steam \_\_\_\_\_? 14) \_\_\_\_\_
- A) Ba
  - B) Mg
  - C) Ca
  - D) Be
  - E) They all react with liquid water and with steam.
- 15) What is the coefficient of  $H_2O$  when the following equation is completed and balanced? 15) \_\_\_\_\_
- $Ba(s) + H_2O(l) \rightarrow$
- A) 1
  - B) 2
  - C) 3
  - D) 5
  - E) Ba(s) does not react with  $H_2O(l)$ .
- 16) The element(s) \_\_\_\_\_ could be used to produce a red or crimson color in fireworks. 16) \_\_\_\_\_
- A) Ba
  - B) Mg or Ba
  - C) Sr
  - D) Ca, Sr, or Li
  - E) Na or K
- 17) Oxides of the active metals combine with water to form \_\_\_\_\_. 17) \_\_\_\_\_
- A) water and a salt
  - B) metal hydrides
  - C) metal hydroxides
  - D) oxygen gas
  - E) hydrogen gas

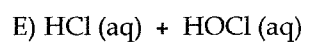
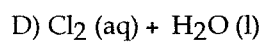
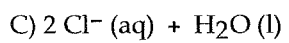
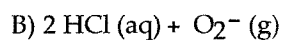
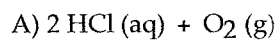
- 18) Oxides of the active metals combine with acid to form \_\_\_\_\_. 18) \_\_\_\_\_
- A) metal hydrides
  - B) metal hydroxides
  - C) water and a salt
  - D) oxygen gas
  - E) hydrogen gas
- 19) Oxides of most nonmetals combine with water to form \_\_\_\_\_. 19) \_\_\_\_\_
- A) an acid
  - B) a base
  - C) hydrogen gas
  - D) water and a salt
  - E) water
- 20) Oxides of most nonmetals combine with base to form \_\_\_\_\_. 20) \_\_\_\_\_
- A) a base
  - B) hydrogen gas
  - C) water
  - D) an acid
  - E) water and a salt
- 21) An alkaline earth metal forms a compound with oxygen with the formula \_\_\_\_\_. 21) \_\_\_\_\_  
(The symbol M represents any one of the alkaline earth metals.)
- A) MO                  B) MO<sub>3</sub>                  C) MO<sub>2</sub>                  D) M<sub>2</sub>O<sub>2</sub>                  E) M<sub>2</sub>O
- 22) An alkali metal forms a compound with chlorine with the formula \_\_\_\_\_. 22) \_\_\_\_\_  
(The symbol M represents any one of the alkali metals.)
- A) M<sub>2</sub>Cl<sub>2</sub>                  B) MCl<sub>3</sub>                  C) M<sub>2</sub>Cl                  D) MCl<sub>2</sub>                  E) MCl
- 23) Element X reacts with chlorine to form a compound with the formula XCl<sub>2</sub>. The oxide of element X 23) \_\_\_\_\_  
is basic. Element X is \_\_\_\_\_.
- A) Al                  B) H                  C) P                  D) Ca                  E) Rb
- 24) The reaction of a metal with a nonmetal produces a(n) \_\_\_\_\_. 24) \_\_\_\_\_
- A) oxide                  B) salt                  C) base                  D) hydroxide                  E) acid

- 25) Which nonmetal exists as a diatomic solid? 25) \_\_\_\_\_
- A) antimony
  - B) iodine
  - C) phosphorus
  - D) bromine
  - E) boron
- 26) The most common and stable allotrope of sulfur is \_\_\_\_\_. 26) \_\_\_\_\_
- A) S<sub>4</sub>
  - B) S<sub>8</sub>
  - C) S<sub>2</sub>
  - D) S
  - E) Sulfur does not form allotropes.
- 27) Which group 6A element is a metal? 27) \_\_\_\_\_
- A) tellurium
  - B) tellurium and polonium
  - C) selenium
  - D) polonium
  - E) sulfur
- 28) The most common sulfur ion has a charge of \_\_\_\_\_. 28) \_\_\_\_\_
- A) +6
  - B) +4
  - C) -1
  - D) -2
  - E) Sulfur does not form ions.
- 29) The element phosphorus exists in two forms in nature called white phosphorus and red phosphorus. These two forms are examples of \_\_\_\_\_. 29) \_\_\_\_\_
- A) allotropes
  - B) metalloids
  - C) oxidation
  - D) isotopes
  - E) noble gases

- 30) Which periodic table group contains only nonmetals \_\_\_\_\_? 30) \_\_\_\_\_  
A) 2A                      B) 5A                      C) 7A                      D) 8A                      E) 6A
- 31) Of the hydrogen halides, only \_\_\_\_\_ is a weak acid. 31) \_\_\_\_\_  
A) HCl (aq)  
B) HBr (aq)  
C) HI (aq)  
D) HF (aq)  
E) They are all weak acids.
- 32) The first noble gas to be incorporated into a compound was \_\_\_\_\_. 32) \_\_\_\_\_  
A) Ne                      B) Kr                      C) Xe                      D) Ar                      E) He
- 33) All the elements in group 8A are gases at room temperature. Of all the groups in the periodic table, only group \_\_\_\_\_ contains examples of elements that are gas, liquid, and solid at room temperature. 33) \_\_\_\_\_  
A) 1A                      B) 6A                      C) 7A                      D) 5A                      E) 2A
- 34) Of the halogens, which are gases at room temperature and atmospheric pressure? 34) \_\_\_\_\_  
A) fluorine, chlorine, and bromine  
B) fluorine, chlorine, bromine, and iodine  
C) fluorine, bromine, and iodine  
D) fluorine and chlorine  
E) fluorine, chlorine, and iodine
- 35) The only noble gas that does not have the  $ns^2np^6$  valence electron configuration is \_\_\_\_\_. 35) \_\_\_\_\_  
A) neon  
B) helium  
C) radon  
D) krypton  
E) All noble gases have the  $ns^2np^6$  valence electron configuration.
- 36)  $2 F_2 (g) + 2 H_2O (l) \rightarrow$  \_\_\_\_\_. 36) \_\_\_\_\_  
A)  $2 HF (aq) + 2 HFO (aq)$   
B)  $2 F^- (aq) + 2 H^+ (aq) + H_2O_2 (aq)$   
C)  $4 HF (aq) + 2 O^{2-} (aq)$   
D)  $2 HF_2 (aq) + 2 OH^- (aq)$   
E)  $4 HF (aq) + O_2 (g)$



37) \_\_\_\_\_



Answer Key

Testname: SAMPLE QUESTIONS CHAPTER 7

- 1) A
- 2) D
- 3) A
- 4) C
- 5) D
- 6) B
- 7) E
- 8) D
- 9) E
- 10) C
- 11) B
- 12) E
- 13) B
- 14) D
- 15) B
- 16) C
- 17) C
- 18) C
- 19) A
- 20) E
- 21) A
- 22) E
- 23) D
- 24) B
- 25) B
- 26) B
- 27) D
- 28) D
- 29) A
- 30) D
- 31) D
- 32) C
- 33) C
- 34) D
- 35) B
- 36) E
- 37) E