

Exam 2 (Practice)

Multiple Choice

Identify the choice that best completes the statement or answers the question.

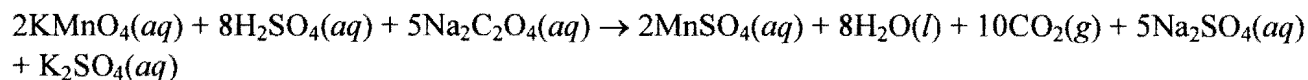
- _____ 1. A compound dissolves in water to form an aqueous solution that is a poor conductor of electricity. The compound may be composed of
- covalent molecules.
 - a strong base.
 - ions.
 - a soluble salt.
 - a strong acid.
- _____ 2. Which of the following compounds is insoluble in water?
- NH_4Br
 - KBr
 - ZnCl_2
 - PbBr_2
 - LiBr
- _____ 3. When a solution of lithium chloride and a solution of ammonium sulfate are mixed,
- a new salt is formed.
 - no reaction occurs.
 - a precipitate forms.
 - an acid and a base are formed.
 - a gas is evolved.
- _____ 4. Aqueous solutions of sodium sulfide and copper(II) chloride are mixed together. Which statement is correct?
- CuS will precipitate from solution.
 - NaCl will precipitate from solution.
 - No precipitate will form.
 - Both NaCl and CuS will precipitate from solution.
 - No reaction will occur.
- _____ 5. Which of the following reactions involves neither oxidation nor reduction?
- $\text{N}_2 + 3\text{H}_2 \rightarrow 2\text{NH}_3$
 - $\text{NH}_4\text{NO}_2 \rightarrow \text{N}_2 + 2\text{H}_2\text{O}$
 - $\text{Cu} + 2\text{Ag}^+ \rightarrow \text{Cu}^{2+} + 2\text{Ag}$
 - $2\text{CrO}_4^{2-} + 2\text{H}^+ \rightarrow \text{Cr}_2\text{O}_7^{2-} + \text{H}_2\text{O}$
 - $\text{C}_2\text{H}_4 + \text{H}_2 \rightarrow \text{C}_2\text{H}_6$

Name: _____

ID: A

- _____ 6. The sum of the oxidation numbers of all the atoms in the dichromate ion, $\text{Cr}_2\text{O}_7^{2-}$, is
- 0.
 - +4.
 - +2.
 - +6.
 - 2.
- _____ 7. Which of the following species would be expected to function as a reducing agent?
- Ba^{2+}
 - Zn^{2+}
 - ClO_4^-
 - Cs^+
 - V^{2+}
- _____ 8. All of the following reactions are described as decomposition reactions except
- $\text{PCl}_5(\text{g}) \rightarrow \text{PCl}_3(\text{g}) + \text{Cl}_2(\text{g})$.
 - $2\text{H}_2\text{O}(\text{g}) \rightarrow 2\text{H}_2(\text{g}) + \text{O}_2(\text{g})$.
 - $\text{BaCl}_2 \cdot 2\text{H}_2\text{O}(\text{s}) \rightarrow \text{BaCl}_2(\text{s}) + 2\text{H}_2\text{O}(\text{g})$.
 - $\text{CH}_4(\text{g}) + \text{Cl}_2(\text{g}) \rightarrow \text{CH}_3\text{Cl}(\text{g}) + \text{HCl}(\text{g})$.
 - $\text{CaCO}_3(\text{s}) \rightarrow \text{CaO}(\text{s}) + \text{CO}_2(\text{g})$.
- _____ 9. In basic solution, H_2O_2 oxidizes Cr^{3+} to CrO_4^{2-} and is reduced to OH^- . What is the lowest whole-number coefficient for OH^- in the balanced net ionic equation?
- 6
 - 10
 - 4
 - 16
 - 8
- _____ 10. A 29.0-g sample of NaOH is dissolved in water, and the solution is diluted to give a final volume of 1.60 L. The molarity of the final solution is
- 18.1 M.
 - 0.453 M.
 - 0.725 M.
 - 0.0552 M.
 - 0.862 M.

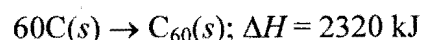
- _____ 11. In a volumetric analysis experiment, a solution of sodium oxalate ($\text{Na}_2\text{C}_2\text{O}_4$) in acidic solution is titrated with a solution of potassium permanganate (KMnO_4) according to the following balanced chemical equation:



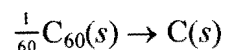
It required 25.0 mL of 0.0448 M KMnO_4 to reach the endpoint. What mass of $\text{Na}_2\text{C}_2\text{O}_4$ was present initially?

- a. 2.40 g
 - b. 0.0600 g
 - c. 15.0 g
 - d. 0.150 g
 - e. 0.375 g
- _____ 12. The energy associated with a motionless rock on the top of Mount Shasta is
- a. potential energy.
 - b. temperature.
 - c. heat.
 - d. internal energy.
 - e. kinetic energy.
- _____ 13. For which of the following reactions is ΔH not equal to ΔU ?
- a. $\text{C}(s) + \text{O}_2(g) \rightarrow \text{CO}_2(g)$
 - b. $\text{Hg}(s) \rightarrow \text{Hg}(l)$
 - c. $2\text{HF}(g) \rightarrow \text{H}_2(g) + \text{F}_2(g)$
 - d. $\text{CH}_4(g) + \text{C}_3\text{H}_8(g) \rightarrow 2\text{C}_2\text{H}_6(g)$
 - e. $\text{I}_2(s) \rightarrow \text{I}_2(g)$

- _____ 14. Given:



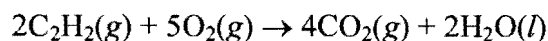
what is ΔH for the following thermochemical equation?



- a. +38.7 kJ
- b. +2320 kJ
- c. -139 MJ
- d. -2320 kJ
- e. -38.7 kJ

- _____ 15. It is relatively easy to change the temperature of a substance that
- is very massive.
 - is an insulator.
 - has a high specific heat capacity.
 - has a low specific heat capacity.
 - is brittle.
- _____ 16. How much heat is gained by iron when 22.6 g of iron is warmed from 20.7°C to 65.9°C? The specific heat of iron is 0.449 J/(g · °C).
- 2.10×10^2 J
 - 29.59 J
 - 20.29 J
 - 4.59×10^2 J
 - 6.69×10^2 J
- _____ 17. A 170.0-g sample of metal at 79.0°C is added to 170.0 g of H₂O(l) at 17.0°C in an insulated container. The temperature rises to 19.9°C. Neglecting the heat capacity of the container, what is the specific heat of the metal? The specific heat of H₂O(l) is 4.18 J/(g · °C).
- 4.18 J/(g · °C)
 - 84.8 J/(g · °C)
 - 0.206 J/(g · °C)
 - 0.206 J/(g · °C)
 - 20.3 J/(g · °C)
- _____ 18. What is ΔH° for the following phase change?
- NaCl(s) → NaCl(l)
- | Substance | ΔH°_f (kJ/mol) |
|-----------|-----------------------------|
| NaCl(s) | -411.12 |
| NaCl(l) | -385.92 |
- 797.04 kJ
 - 25.20 kJ
 - 797.04 kJ
 - 25.20 kJ
 - 0 kJ

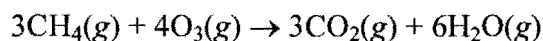
____ 19. What is ΔH° for the following reaction?



Substance	ΔH°_f (kJ/mol)
$\text{C}_2\text{H}_2(\text{g})$	+226.7
$\text{CO}_2(\text{g})$	-393.5
$\text{H}_2\text{O}(\text{l})$	-285.8

- a. +1692.2 kJ
- b. -452.6 kJ
- c. -1692.2 kJ
- d. +2599.0 kJ
- e. -2599.0 kJ

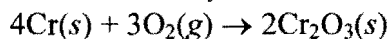
____ 20. What is the standard enthalpy change for the following reaction?



Substance	ΔH°_f (kJ/mol)
$\text{CH}_4(\text{g})$	-74.87
$\text{O}_3(\text{g})$	+142.7
$\text{CO}_2(\text{g})$	-393.5
$\text{H}_2\text{O}(\text{g})$	-241.8

- a. -2285.1 kJ
- b. -2977.5 kJ
- c. +2977.5 kJ
- d. +2285.1 kJ
- e. -3426.5 kJ






____ 21. Calculate the change in enthalpy when 52.0 g of solid chromium at 25°C and 1 atm pressure is oxidized. (ΔH°_f for $\text{Cr}_2\text{O}_3(\text{s})$ is -1135 kJ/mol.)



- a. -1135 kJ
- b. -284 kJ
- c. -568 kJ
- d. +1135 kJ
- e. +568 kJ

____ 22. A photon of red light has a ____ frequency and a ____ wavelength than a photon of blue light.

- a. lower, longer
- b. higher, shorter
- c. lower, shorter
- d. higher, longer
- e. lower, lower

- _____ 23. Which of the following statements is a valid conclusion from the Heisenberg uncertainty principle?
- The square of the wave function is proportional to the probability of finding a particle in space.
 - Particles can exhibit wavelike behavior.
 - The orbits proposed by Bohr's model of the atom are correct.
 - An electron in a 2p orbital is always closer to the nucleus than an electron in a 3p orbital.
 - The act of measuring a particle's position changes its momentum, and vice versa.
- _____ 24. All the following statements about the quantum numbers are true except
- m_l has $2l + 1$ possible values.
 - n may take integral values from 1 to ∞ .
 - m_l may take integral values of $+l$ to $-l$, including zero.
 - l may take integral values from 1 to $n - 1$.
 - m_s may take only the values of $+\frac{1}{2}$ and $-\frac{1}{2}$.
- _____ 25. Which of the following is a representation of a 1s orbital?
- 
 - 
 - 
 - 
 - 

Exam 2

Answer Section

MULTIPLE CHOICE

1. ANS: A PTS: 1 DIF: easy REF: 4.1
 OBJ: Explain how an electrolyte makes a solution electrically conductive.
 TOP: chemical reactions | ions in aqueous solution KEY: electrolyte | nonelectrolyte
 MSC: general chemistry
2. ANS: D PTS: 1 DIF: moderate REF: 4.1
 OBJ: Use the solubility rules. (Example 4.1)
 TOP: chemical reactions | ions in aqueous solution KEY: solubility rules
 MSC: general chemistry
3. ANS: B PTS: 1 DIF: difficult REF: 4.3
 OBJ: Recognize precipitation (exchange) reactions.
 TOP: chemical reactions | types of chemical reactions KEY: precipitation reaction
 MSC: general chemistry
4. ANS: A PTS: 1 DIF: easy REF: 4.3
 OBJ: Decide whether a precipitation reaction will occur. (Example 4.3)
 TOP: chemical reactions | types of chemical reactions KEY: precipitation reaction
 MSC: general chemistry
5. ANS: D PTS: 1 DIF: moderate REF: 4.5
 OBJ: Define an oxidation-reduction reaction.
 TOP: chemical reactions | types of chemical reactions KEY: oxidation-reduction reaction
 MSC: general chemistry
6. ANS: E PTS: 1 DIF: moderate REF: 4.5
 OBJ: Learn the oxidation-number rules. TOP: chemical reactions | types of chemical reactions
 KEY: oxidation-reduction reaction MSC: general chemistry
7. ANS: E PTS: 1 DIF: moderate REF: 4.5
 OBJ: Determine the species undergoing oxidation and reduction.
 TOP: chemical reactions | types of chemical reactions
 KEY: oxidation-reduction reaction | oxidation number MSC: general chemistry
8. ANS: D PTS: 1 DIF: easy REF: 4.5
 OBJ: Recognize combination reactions, decomposition reactions, displacement reactions, and combustion reactions. TOP: chemical reactions | types of chemical reactions
 KEY: oxidation-reduction reaction | common oxidation-reduction reactions
 MSC: general chemistry
9. ANS: B PTS: 1 DIF: difficult REF: 4.6
 OBJ: Balance simple oxidation-reduction reactions by the half-reaction method. (Example 4.8)
 TOP: chemical reactions | types of chemical reactions
 KEY: balancing oxidation-reduction equations | half-reaction method
 MSC: general chemistry
10. ANS: B PTS: 1 DIF: easy REF: 4.7
 OBJ: Calculate the molarity from mass and volume. (Example 4.9)
 TOP: chemical reactions | working with solutions KEY: concentration
 MSC: general chemistry

11. ANS: E PTS: 1 DIF: moderate REF: 4.10
 OBJ: Calculate the quantity of substance in a titrated solution. (Example 4.14)
 TOP: chemical reactions | quantitative analysis KEY: volumetric analysis
 MSC: general chemistry
12. ANS: A PTS: 1 DIF: easy REF: 6.1
 OBJ: Define energy, kinetic energy, potential energy, and internal energy.
 TOP: thermochemistry | heats of reaction KEY: energy | potential energy
 MSC: general chemistry
13. ANS: E PTS: 1 DIF: moderate REF: 6.3
 OBJ: Explain how enthalpy and internal energy are related. TOP: thermochemistry | heats of reaction
 KEY: enthalpy | enthalpy and internal energy MSC: general chemistry
14. ANS: E PTS: 1 DIF: easy REF: 6.4
 OBJ: Manipulate a thermochemical equation using these rules. (Example 6.3)
 TOP: thermochemistry | heats of reaction KEY: thermochemical equation
 MSC: general chemistry
15. ANS: D PTS: 1 DIF: easy REF: 6.6
 OBJ: Relate the heat absorbed or evolved to the specific heat, mass, and temperature change.
 TOP: thermochemistry | heats of reaction KEY: calorimetry | specific heat
 MSC: general chemistry
16. ANS: D PTS: 1 DIF: moderate REF: 6.6
 OBJ: Calculate using this relation between heat and specific heat. (Example 6.5)
 TOP: thermochemistry | heats of reaction
 KEY: calorimetry | measuring heats of reaction MSC: general chemistry
17. ANS: C PTS: 1 DIF: difficult REF: 6.6
 OBJ: Calculate using this relation between heat and specific heat. (Example 6.5)
 TOP: thermochemistry | heats of reaction KEY: calorimetry | specific heat
 MSC: general chemistry
18. ANS: B PTS: 1 DIF: moderate REF: 6.8
 OBJ: Calculate the heat of a phase transition using standard enthalpies of formation for the different phases.
 (Example 6.8) TOP: thermochemistry | heats of reaction
 KEY: standard enthalpies of formation MSC: general chemistry
19. ANS: E PTS: 1 DIF: moderate REF: 6.8
 OBJ: Calculate the heat (enthalpy) of reaction from the standard enthalpies of formation of the substances
 in the reaction. (Example 6.9) TOP: thermochemistry | heats of reaction
 KEY: standard enthalpies of formation MSC: general chemistry
20. ANS: B PTS: 1 DIF: moderate REF: 6.8
 OBJ: Calculate the heat (enthalpy) of reaction from the standard enthalpies of formation of the substances
 in the reaction. (Example 6.9) TOP: thermochemistry | heats of reaction
 KEY: standard enthalpies of formation MSC: general chemistry
21. ANS: C PTS: 1 DIF: moderate REF: 6.8
 OBJ: Calculate the heat (enthalpy) of reaction from the standard enthalpies of formation of the substances
 in the reaction. (Example 6.9) TOP: thermochemistry | heats of reaction
 KEY: standard enthalpies of formation MSC: general chemistry
22. ANS: A PTS: 1 DIF: moderate REF: 7.1
 OBJ: Describe the different regions of the electromagnetic spectrum.
 TOP: atomic theory | light KEY: electromagnetic radiation
 MSC: general chemistry

23. ANS: E PTS: 1 DIF: moderate REF: 7.4
OBJ: State Heisenberg's uncertainty principle. TOP: atomic theory | quantum mechanics
KEY: wave functions | Heisenberg's uncertainty principle MSC: general chemistry
24. ANS: D PTS: 1 DIF: easy REF: 7.5
OBJ: State the rules for the allowed values for each quantum number.
TOP: atomic theory | quantum mechanics KEY: quantum numbers
MSC: general chemistry
25. ANS: C PTS: 1 DIF: easy REF: 7.5
OBJ: Describe the shapes of s, p, and d orbitals. TOP: atomic theory | quantum mechanics
KEY: atomic orbital shape MSC: general chemistry

Exam 2 sample 2 (possible)

Multiple Choice

Identify the choice that best completes the statement or answers the question.

- _____ 1. Which compounds will not dissolve in water in large amounts at 20°C?
- | | | | |
|----------------------------|-----------------|----------------|-------------------------|
| $\text{Ca}(\text{NO}_3)_2$ | MgCO_3 | PbI_2 | K_2SO_4 |
| I. | II. | III. | IV. |
- a. II & III
b. III & IV
c. III & IV
d. I & II
e. I & IV
- _____ 2. Which substance is oxidized in the reaction below?
- $$\text{NaNO}_3 + \text{Pb} \rightarrow \text{NaNO}_2 + \text{PbO}$$
- a. Na^+
b. NaNO_2
c. NaNO_3
d. PbO
e. none of these choices
- _____ 3. In which of the following compounds does the sulfur atom have the highest (i.e., most positive) oxidation number?
- a. Na_2SO_4
b. H_2S
c. SO_2
d. H_2SO_3
e. S_8
- _____ 4. How many moles of NaOH are present in 25.0 mL of a 0.1000 M NaOH solution?
- a. 100 mol
b. 2.50 mol
c. 2.50×10^{-3} mol
d. 25.0 mol
e. 0.100 mol
- _____ 5. Determine the ammonium ion concentration of a solution that results when 4.53 g of $(\text{NH}_4)_2\text{SO}_4$ is dissolved in water and diluted to exactly 100.0 mL.
- a. 1.37 M
b. 0.686 M
c. 2.51 M
d. 1.03 M
e. 0.343 M

Name: _____

ID: A

- _____ 6. If a 45.0 mL sample of 2.20 M Na_2SO_4 is diluted to yield a final solution that is 0.110 M in sodium ions, what is the volume of the final solution?
- 4500 mL
 - 900 mL
 - 450 mL
 - 1800 mL
 - 110 mL
- _____ 7. How many grams of KCl are in 125.0 mL of 0.375 M KCl?
- 3.49×10^{-3} g
 - 46.9 g
 - 0.938 g
 - 3.49 g
 - 0.0469 g
- _____ 8. A solution is prepared by dissolving 20.0 g of NaI in enough water to make 300.0 mL of solution. How many moles of ions are in 25.0 mL of this solution?
- 0.0222 mol
 - 0.445 mol
 - 0.0445 mol
 - 0.111 mol
 - 0.0111 mol
- _____ 9. A solution is made by dissolving 60.0 g of AlCl_3 in enough water to make 250.0 mL of solution. How many moles of chloride ions are in 5.00 mL of solution?
- 1.25×10^{-3} mol
 - 9.00×10^{-3} mol
 - 3.00×10^{-3} mol
 - 1.80×10^{-2} mol
 - 2.70×10^{-2} mol
- _____ 10. A 25.00 mL sample of HCl solution is neutralized by exactly 31.22 mL of 0.08152 M $\text{Ca}(\text{OH})_2$. What is the molarity of the HCl solution?
- 0.08152 M
 - 0.1018 M
 - 0.09453 M
 - 0.1021 M
 - 0.2036 M
- _____ 11. A 25.00 mL sample of H_3PO_4 solution is neutralized by exactly 54.93 mL of 0.04345 M $\text{Ca}(\text{OH})_2$. What is the molarity of the H_3PO_4 solution?
- 0.09546 M
 - 0.2897 M
 - 0.2148 M
 - 0.0636 M
 - 0.1432 M

- _____ 12. Which of the following is an example of potential energy?
- a rock rolling down a mountain
 - atoms vibrating back and forth around a specific location
 - electrons flowing through an electrical conductor
 - a fat molecule stored in the body
 - the sound of a dog barking
- _____ 13. A 20.0 g sample of aluminum (specific heat = $0.902 \text{ J g}^{-1} \text{ }^{\circ}\text{C}^{-1}$) with an initial temperature of 48.6°C is heated with 427 J of energy. What is the final temperature of the sample?
- 23.7°C
 - 74.8°C
 - 72.3°C
 - 26.2°C
 - 24.9°C
- _____ 14. What is the enthalpy change when 175 g of C_3H_8 are burned in excess O_2 ?
- $$\text{C}_3\text{H}_8(\text{g}) + 5 \text{O}_2(\text{g}) \rightarrow 3 \text{CO}_2(\text{g}) + 4 \text{H}_2\text{O}(\text{l}) \quad \Delta H^{\circ} = -2220 \text{ kJ}$$
- $-3.89 \times 10^5 \text{ kJ}$
 - $-1.79 \times 10^{-3} \text{ kJ}$
 - $-3.47 \times 10^0 \text{ kJ}$
 - $-1.71 \times 10^7 \text{ kJ}$
 - $-8.82 \times 10^3 \text{ kJ}$
- _____ 15. Determine the heat of reaction for the process
- $$\text{C}_2\text{H}_4(\text{g}) + 6\text{HCl}(\text{g}) \rightarrow 2\text{CHCl}_3(\text{g}) + 4\text{H}_2(\text{g})$$
- using the information given below:
- $$2\text{C}(\text{s}) + 2\text{H}_2(\text{g}) \rightarrow \text{C}_2\text{H}_4(\text{g}) \quad \Delta H^{\circ} = 52.3 \text{ kJ}$$
- $$\text{H}_2(\text{g}) + \text{Cl}_2(\text{g}) \rightarrow 2\text{HCl}(\text{g}) \quad \Delta H^{\circ} = -184.6 \text{ kJ}$$
- $$\text{C}(\text{s}) + 1/2\text{H}_2(\text{g}) + 3/2\text{Cl}_2(\text{g}) \rightarrow \text{CHCl}_3(\text{g}) \quad \Delta H^{\circ} = -103.1 \text{ kJ}$$
- 29.2 kJ
 - 295.3 kJ
 - +398.4 kJ
 - +295.3 kJ
 - +29.2 kJ
- _____ 16. Light has a wavelength of 582 nm. What is its frequency? The speed of light is $3.00 \times 10^8 \text{ m/s}$.
- $1.94 \times 10^3 \text{ Hz}$
 - $5.15 \times 10^{14} \text{ Hz}$
 - $1.75 \times 10^2 \text{ Hz}$
 - $1.75 \times 10^{20} \text{ Hz}$
 - $1.94 \times 10^{13} \text{ Hz}$

- _____ 17. What is the phenomenon that occurs when excited gaseous elements emit only a few colored lines?
- Planck's constant
 - photoelectric effect
 - electromagnetic spectrum
 - quantum theory
 - line spectrum
- _____ 18. According to the Bohr model for the hydrogen atom, the energy necessary to excite an electron from $n = 2$ to $n = 3$ is _____ the energy necessary to excite an electron from $n = 3$ to $n = 4$.
- either more than or equal to
 - equal to
 - less than
 - more than
 - either less than or equal to
- _____ 19. If $l = 2$, what value can m_l have?
- $m_l = +1$
 - $m_l = 0, +1, +2$
 - $m_l = +2$
 - $m_l = -1, 0, +1$
 - $m_l = -2, -1, 0, +1, +2$
- _____ 20. How many electrons can the third principal quantum level hold?
- 18
 - 8
 - 2
 - 16
 - 32
- _____ 21. What is the correct electron configuration for beryllium (Be)?
- $1s^2 2s^2 2p^6$
 - $1s^2 2s^2$
 - $1s^2 2s^2 2p^1$
 - $1s^2 2s^2 2p^2$
 - $1s^2 2s^2 2p^4$
- _____ 22. What is the electron configuration of arsenide ion, As^{3-} ?
- $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^2 4p^6$
 - $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 4d^{10}$
 - $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^2$
 - $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10}$
 - $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 4d^{10} 4p^6$
- _____ 23. What is the electron configuration of Li^+ ?
- $1s^1$
 - $1s^2 2s^2 2p^1$
 - $1s^2 2s^2$
 - $1s^2$
 - $1s^2 2s^1$

Name: _____

ID: A

- _____ 24. Substances that have the same electron configuration are:
- a. lanthanides.
 - b. paramagnetic.
 - c. isoelectronic.
 - d. diamagnetic.
 - e. ferromagnetic.
- _____ 25. Which statement is false?
- a. Mg^{2+} is smaller than Ca^{2+} .
 - b. Cl^- is smaller than S^{2-} .
 - c. N^{3-} is larger than Ne.
 - d. Br^- is larger than Kr.
 - e. K^+ is smaller than Ar.

Exam 2 sample 2
Answer Section

MULTIPLE CHOICE

- | | | |
|--|--------|--|
| 1. ANS: A | PTS: 1 | |
| TOP: 5.1 Exchange Reactions: Precipitation and Net Ionic Equations | | |
| 2. ANS: E | PTS: 1 | TOP: 5.3 Oxidation-Reduction Reactions |
| 3. ANS: A | PTS: 1 | TOP: 5.4 Oxidation Numbers and Redox Reactions |
| 4. ANS: C | PTS: 1 | TOP: 5.6 Solution Concentration |
| 5. ANS: B | PTS: 1 | TOP: 5.6 Solution Concentration |
| 6. ANS: D | PTS: 1 | TOP: 5.6 Solution Concentration |
| 7. ANS: D | PTS: 1 | TOP: 5.6 Solution Concentration |
| 8. ANS: A | PTS: 1 | TOP: 5.6 Solution Concentration |
| 9. ANS: E | PTS: 1 | TOP: 5.6 Solution Concentration |
| 10. ANS: E | PTS: 1 | TOP: 5.8 Aqueous Solution Titrations |
| 11. ANS: D | PTS: 1 | TOP: 5.8 Aqueous Solution Titrations |
| 12. ANS: D | PTS: 1 | TOP: 6.1 The Nature of Energy |
| 13. ANS: C | PTS: 1 | TOP: 6.3 Heat Capacity |
| 14. ANS: E | PTS: 1 | TOP: 6.6 Enthalpy Changes for Chemical Reactions |
| 15. ANS: D | PTS: 1 | TOP: 6.9 Hess's Law |
| 16. ANS: B | PTS: 1 | TOP: 7.1 Electromagnetic Radiation and Matter |
| 17. ANS: E | PTS: 1 | TOP: 7.2 Planck's Quantum Theory |
| 18. ANS: D | PTS: 1 | TOP: 7.3 The Bohr Model of the Hydrogen Atom |
| 19. ANS: E | PTS: 1 | |
| TOP: 7.5 Quantum Numbers, Energy Levels and Atomic Orbitals | | |
| 20. ANS: A | PTS: 1 | |
| TOP: 7.5 Quantum Numbers, Energy Levels and Atomic Orbitals | | |
| 21. ANS: B | PTS: 1 | TOP: 7.7 Atom Electron Configurations |
| 22. ANS: A | PTS: 1 | TOP: 7.8 Ion Electron Configurations |
| 23. ANS: D | PTS: 1 | TOP: 7.8 Ion Electron Configurations |
| 24. ANS: C | PTS: 1 | TOP: 7.8 Ion Electron Configurations |
| 25. ANS: E | PTS: 1 | TOP: 7.10 Periodic Trends: Ionic Radii |