

Ch 7-8 practice test**Multiple Choice**

Choose the correct answer for each question. You may write on the test, however only answers on the scantron will be graded.

**Remember there is no retake for this exam. There is help during tutorials and open library night too.*

**All you will be given on the test is an electronegativity chart and a periodic table. All constants should be memorized or written on your sheet.*

**You will have blast from the past questions.*

- _____ 1. What is the net charge of the ionic compound calcium fluoride?
- | | |
|-------|-------|
| a. 2- | c. 0 |
| b. 1- | d. 1+ |
- _____ 2. Which of the following is NOT a characteristic of most ionic compounds?
- They are solids.
 - They have low melting points.
 - When melted, they conduct an electric current.
 - They are composed of metallic and nonmetallic elements.
- _____ 3. What causes water molecules to have a bent shape, according to VSEPR theory?
- repulsive forces between unshared pairs of electrons
 - interaction between the fixed orbitals of the unshared pairs of oxygen
 - ionic attraction and repulsion
 - the unusual location of the free electrons
- _____ 4. What type of substance is malleable and ductile?
- | | |
|-----------------------|------------------------|
| a. Metallic compounds | c. Molecular compounds |
| b. Ionic compounds | d. Noble Gases |
- _____ 5. What compound should dissolve in water?
- | | |
|---|-------------------|
| a. PCl_3 | c. CCl_4 |
| b. Hexane (C_6H_{14}) | d. SiO_2 |
- _____ 6. Some of the molecules found in the human body are $\text{NH}_2\text{CH}_2\text{COOH}$ (glycine), $\text{C}_6\text{H}_{12}\text{O}_6$ (glucose), and $\text{CH}_3(\text{CH}_2)_{16}\text{COOH}$ (stearic acid). The bonds they form are
- | | |
|-------------|-------------|
| a. Ionic | c. Metallic |
| b. Covalent | d. Nuclear |
- _____ 7. List the following atoms in order of decreasing first ionization energy: B, Li, C, F, O.
- | | |
|-------------------|-------------------|
| a. F, O, C, B, Li | c. Li, B, F, O, C |
| b. B, Li, C, O, F | d. Li, B, C, O, F |
- _____ 8. What is the correct noble gas electron configuration for a Chloride ion?
- | | |
|--------------------------|--------------------------|
| a. $[\text{Ar}]3s^23p^5$ | c. $[\text{Ne}]3s^23p^5$ |
| b. $[\text{Ar}]3s^23p^6$ | d. $[\text{Ne}]3s^23p^6$ |
- _____ 9. Which of the following elements has the smallest atomic size?
- | | |
|-----------|-------------|
| a. Cesium | c. Calcium |
| b. Oxygen | d. Chlorine |
- _____ 10. Which of the forces below is the weakest?
- | | |
|-------------------|-------------|
| a. intermolecular | c. metallic |
| b. electrostatic | |

- _____ 11. Arrange the following elements: P^{3-} , S^{2-} , K^+ , Ca^{2+} , Sc^{3+} , in order of increasing ionic size.
- | | |
|--|--|
| a. Sc^{3+} , Ca^{2+} , K^+ , S^{2-} , P^{3-} | c. P^{3-} , S^{2-} , K^+ , Ca^{2+} , Sc^{3+} |
| b. K^+ , Ca^{2+} , Sc^{3+} , S^{2-} , P^{3-} | d. Sc^{3+} , Ca^{2+} , K^+ , P^{3-} , S^{2-} |
- _____ 12. How many valence electrons are in an atom of phosphorus?
- | | |
|------|------|
| a. 2 | c. 4 |
| b. 3 | d. 5 |
- _____ 13. What is the electron configuration of the gallium ion?
- | | |
|------------------------------------|---|
| a. $1s^2 2s^2 2p^6 3s^2 3p^6$ | c. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 4p^6$ |
| b. $1s^2 2s^2 2p^6 3s^2 3p^5 4s^1$ | d. $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10}$ |
- _____ 14. The electron configuration of a fluoride ion, F^- , is _____.
- | | |
|------------------------------------|--|
| a. $1s^2 2s^2 2p^5$ | c. $1s^2 2s^2 2p^6 3s^1$ |
| b. the same as that of a neon atom | d. the same as that of a potassium ion |
- _____ 15. Which of these elements does not exist as a diatomic molecule?
- | | |
|-------|------|
| a. Ne | c. H |
| b. F | d. I |
- _____ 16. Which of the following will conduct electricity?
- | | |
|-----------|----------|
| a. CO_2 | c. CO |
| b. LiCl | d. N_2 |
- _____ 17. What causes dipole interactions?
- sharing of electron pairs
 - attraction between polar molecules
 - bonding of a covalently bonded hydrogen to an unshared electron pair
 - attraction between ions
- _____ 18. What causes hydrogen bonding?
- attraction between ions
 - motion of electrons
 - sharing of electron pairs
 - bonding of a covalently bonded hydrogen atom with an unshared electron pair
- _____ 19. Which of the following pairs of elements is most likely to form an ionic compound?
- | | |
|---------------------------|------------------------|
| a. magnesium and fluorine | c. nitrogen and sulfur |
| b. sodium and aluminum | d. oxygen and chlorine |
- _____ 20. Which of the following compounds would you expect to be the best conductor of electricity?
- | | |
|-----------------|-------------------|
| a. $CH_{4(g)}$ | c. $MgCl_{2(aq)}$ |
| b. $H_2O_{(l)}$ | d. $N_{2(g)}$ |
- _____ 21. Which of the following covalent bonds is the most polar?
- | | | | |
|-----------|----------|----|----|
| b. | c. | d. | e. |
| a. C---C | d. C---H | | |
| b. C---Cl | e. C---S | | |
| c. C---Br | | | |
- _____ 22. How many lone pairs of electrons are on the central atom of dihydrogen sulfide?
- | | |
|------|------|
| a. 0 | d. 3 |
| b. 1 | e. 4 |
| c. 2 | |

- _____ 23. What is the shape of a molecule of NI_3 ?
- a. Bent
b. Linear
c. Trigonal Planar
d. Trigonal Pyramidal
e. Tetrahedral
- _____ 24. What is the shape of a molecule of CHCl_3 ?
- a. Linear
b. Bent
c. Trigonal Planar
d. Trigonal Pyramidal
e. Tetrahedral
- _____ 25. What is the shape of a molecule of NBrO ?
- a. Linear
b. Bent
c. Trigonal Planar
d. Trigonal Pyramidal
- _____ 26. Which of the following is the shape of C_2H_2 ?
- a. Linear
b. Bent
c. Trigonal Tetrahedral
d. Trigonal Planar
- _____ 27. What intermolecular force holds together molecules of SiO_2 ?
- a. Dispersion
b. Dipole-Dipole
c. Hydrogen Bonding
d. Ionic Bonding
- _____ 28. According to the octet rule, Sulfur will gain or share _____ electrons.
- a. 0
b. 1
c. 2
d. 3
e. 6
- _____ 29. How many valence electrons does an atom of any halogen have?
- a. 5
b. 8
c. 7
d. 1
- _____ 30. Using the electron dot structure, what would a chlorine atom look like?
- a. $\cdot\overset{\cdot}{\underset{\cdot}{\text{Cl}}}\cdot$
b. $\overset{\cdot}{\underset{\cdot}{\text{Cl}}}\cdot$
c. $[\overset{\cdot}{\underset{\cdot}{\text{Cl}}}]^-$
d. $[\overset{\cdot}{\underset{\cdot}{\text{Cl}}}\cdot]^-$
- _____ 31. What is the correct electron dot structure for Sulfur?
- a. $\cdot\overset{\cdot}{\underset{\cdot}{\text{S}}}\cdot$
b. $\overset{\cdot}{\underset{\cdot}{\text{S}}}$
c. $[\overset{\cdot}{\underset{\cdot}{\text{S}}}]^{2-}$
d. $\overset{\cdot}{\underset{\cdot}{\text{S}}}$
- _____ 32. Using the electron dot structure, a phosphide ion would most look like _____.
- a. $\overset{\cdot}{\underset{\cdot}{\text{P}}}$
b. $\overset{\cdot}{\underset{\cdot}{\text{P}}}$
c. $[\overset{\cdot}{\underset{\cdot}{\text{P}}}]^{3-}$
d. $[\overset{\cdot}{\underset{\cdot}{\text{P}}}]^{3-}$

- _____ 33. Which of these is **not** a characteristic of most ionic compounds?
- a. They have low melting points.
 - b. They are composed of metallic and nonmetallic elements.
 - c. When melted they conduct an electric current.
 - d. They are crystalline solids with repeating patterns.
- _____ 34. What force is found between all molecules?
- a. dipole-dipole
 - b. dispersion
 - c. hydrogen bonding
 - d. ionic bonding
- _____ 35. Which of the forces of molecular attraction is the weakest?
- a. Dispersion
 - b. Hydrogen bonding
 - c. dipole interactions
 - d. ionic bonding
- _____ 36. What type of intermolecular force is the most important in SiO_2 ?
- a. Dispersion
 - b. Dipole-Dipole Forces
 - c. Hydrogen Bonding
- _____ 37. What type of intermolecular force is the most important in NH_3 ?
- a. Hydrogen Bonding
 - b. Dispersion Forces
 - c. Dipole-Dipole Forces
- _____ 38. What type of intermolecular force is the most important in CHCl_3 ?
- a. Hydrogen Bonding
 - b. Dispersion Forces
 - c. Dipole-Dipole Forces
- _____ 39. According to the octet rule, Sulfur will gain or share _____ electrons
- a. 0
 - b. 4
 - c. 2
 - d. 6
- _____ 40. What is the correct name for this compound: HNO_3 ?
- a. Hydronitric Acid
 - b. Hydronitrous Acid
 - c. Nitric Acid
 - d. Nitrous Acid
- _____ 41. Which compound represents a molecular compound?
- a. S_2Br_6
 - b. KF
 - c. HBr
 - d. NaNO_3
- _____ 42. Choose the correct formula for Ammonium oxalate.
- a. $\text{NH}_4\text{C}_2\text{O}_4$
 - b. $(\text{NH}_4)_2\text{C}_2\text{O}_4$
 - c. $\text{C}_2\text{O}_4(\text{NH}_4)_2$
 - d. $(\text{NH}_4)_2\text{C}_2\text{H}_3\text{O}_2$
- _____ 43. Name the following SnCl_4
- a. Tin tetrachloride
 - b. Tin chloride
 - c. Tin (II) chloride
 - d. Tin (IV) chloride
- _____ 44. Name the following Cl_2O_7
- a. Perchlorate
 - b. dichlorine heptoxide
 - c. dichlorine hexoxide
 - d. dichlorine heptoxide

____ 45.

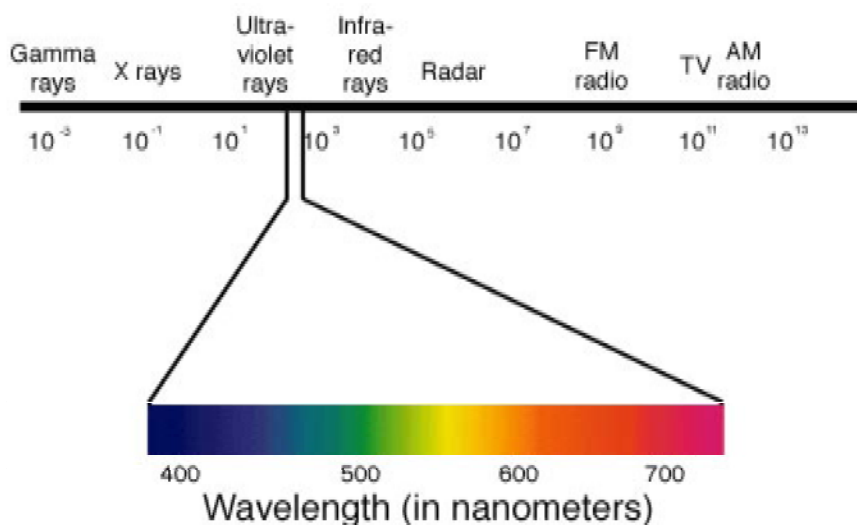
Results of Firing Alpha Particles at Gold Foil

Observation:	Proportion:
Alpha particles went straight through gold foil.	> 98%
Alpha particles went through gold foil but were deflected at large angles.	≈ 2%
Alpha particles bounced off gold foil.	≈ 0.01%

What information do the experimental results above reveal about the nucleus of the gold atom?

- a. The nucleus contains less than half the mass of the atom.
- b. The nucleus is small and is the densest part of the atom.
- c. The nucleus contains small positive and negative particles.
- d. The nucleus is large and occupies most of the atom's space.
- ____ 46. How do the isotopes carbon-12 and carbon-14 differ?
- a. Carbon-12 has no protons; Carbon-14 has six.
- b. Carbon-12 has no neutrons; Carbon-14 has two.
- c. Carbon-12 has six neutrons; Carbon-14 has eight neutrons.
- d. Carbon-12 has two more electrons than Carbon-14.
- ____ 47. How many protons and electrons are in a Calcium **ion**?
- a. 20, 20
- b. 20, 36
- c. 18, 18
- d. 20, 18
- ____ 48. What particle is needed to complete the following nuclear equation?
- $${}_{25}^{56}\text{Mn} \rightarrow \text{_____} + {}_{-1}^0\text{e}$$
- a. ${}_{24}^{58}\text{Cr}$
- b. ${}_{27}^{56}\text{Co}$
- c. ${}_{26}^{56}\text{Fe}$
- d. ${}_{25}^{27}\text{Mn}$
- ____ 49. If E is the symbol for an element, which two of the following symbols represent isotopes of the same element?
1. ${}_{10}^{20}\text{E}$
2. ${}_{11}^{20}\text{E}$
3. ${}_{9}^{21}\text{E}$
4. ${}_{10}^{21}\text{E}$
- a. 1 and 2
- b. 3 and 4
- c. 1 and 4
- d. 2 and 3

____ 50.



Radio and radar waves are examples of

- a. low frequency and long wavelengths c. low frequency and short wavelengths
 b. high frequency and short wavelengths d. high frequency and long wavelengths

____ 51. Why is the radius of a positive ion smaller than the radius of its neutral atom?

- a. The nucleus pulls the remaining electrons in closer because of a loss of an energy level c. The atomic orbitals contract all by themselves.
 b. The nucleus allows the remaining electrons to attract to the nucleus d. The number of principle energy levels has increased

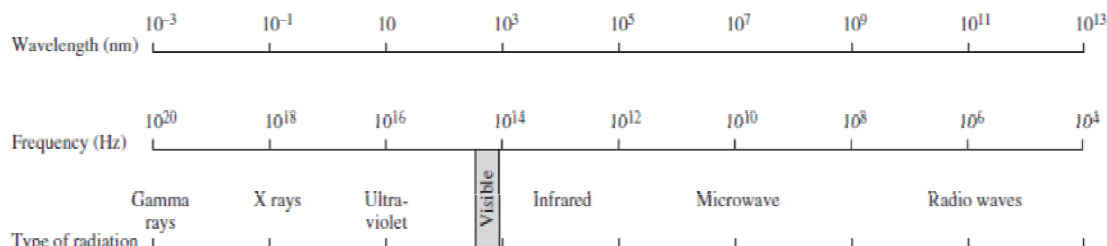
____ 52. Which of the following statements is true about ions?

- a. Anions form when an atom loses protons.
 b. Anions form when an atom gains protons.
 c. Cations form when an atom loses electrons.
 d. Cations form when an atom gains electrons.

____ 53. Of the following transitions in the Bohr hydrogen atom, the _____ transition results in the emission of the highest-energy photon.

- a. $n = 6 \rightarrow n = 4$
 b. $n = 2 \rightarrow n = 7$
 c. $n = 4 \rightarrow n = 6$
 d. $n = 1 \rightarrow n = 4$
 e. All transitions emit photons of equivalent energy.

___ 54. Using the figure below, which radiation has the highest frequency?



- Gamma rays
- X rays
- Ultraviolet
- Microwave

___ 55. Which electron configuration denotes an atom in its ground state?

- | | | |
|----|----|-------|
| 1s | 2s | 2p |
| ↑ | ↑↓ | □ □ □ |
- | | | |
|----|----|-------|
| 1s | 2s | 2p |
| ↑↑ | ↑↓ | □ □ □ |
- | | | |
|----|----|--------|
| 1s | 2s | 2p |
| ↑↓ | ↑↓ | ↑↓ □ □ |
- | | | |
|----|----|-------|
| 1s | 2s | 2p |
| ↑↓ | ↑↓ | ↑ □ ↑ |
- | | | |
|----|----|-------|
| 1s | 2s | 2p |
| ↑ | ↑ | ↑ ↓ ↑ |

Multiple Response

Identify one or more choices that best complete the statement or answer the question.

- ___ 56. What intermolecular forces are present between molecules of water?

 - Dispersion
 - Dipole-Dipole
 - Hydrogen Bonding
 - Ionic Bonding
- ___ 57. Which of the following molecules are nonpolar?

 - CHCl_3
 - SCl_2
 - HNO
 - F_2
 - CO_2
- ___ 58. Which of the following molecules are polar?

 - NH_3
 - HF
 - CCl_4
 - HCOOH

Name: _____

ID: A

- _____ 59. Which of the following molecules would have a high volatility?
- | | |
|------------------|---------------------------|
| a. NH_3 | c. CCl_4 |
| b. HF | d. C_2H_4 |
- _____ 60. Which of the following molecules would have a low volatility?
- | | |
|------------------|---------------------------|
| a. NH_3 | c. CCl_4 |
| b. HF | d. C_2H_4 |

Ch 7-8 practice test Answer Section

MULTIPLE CHOICE

- | | | | |
|----------------------------------|---|---------|----------------------|
| 1. ANS: C
OBJ: 7.2.1 | PTS: 1
STA: Ch.3.a | DIF: L1 | REF: p. 194 |
| 2. ANS: B
OBJ: 7.2.2 | PTS: 1
STA: Ch.2.a | DIF: L1 | REF: p. 196 p. 198 |
| 3. ANS: A
OBJ: 8.3.2 | PTS: 1
STA: Ch.2.a | DIF: L2 | REF: p. 233 |
| 4. ANS: A | PTS: 1 | | |
| 5. ANS: A | PTS: 1 | | |
| 6. ANS: B | PTS: 1 | | |
| 7. ANS: A
St. 1c | | | |
| | PTS: 1
STA: 1c | | |
| 8. ANS: D | PTS: 1 | | |
| 9. ANS: B
St. 1c | | | |
| | PTS: 1 | | |
| 10. ANS: A | PTS: 1 | | |
| 11. ANS: A | PTS: 1 | | |
| 12. ANS: D
OBJ: 7.1.1 | PTS: 1
STA: Ch.1.c Ch.2.a Ch.1.d | DIF: L1 | REF: p. 187 |
| 13. ANS: D
OBJ: 7.1.1 | PTS: 1
STA: Ch.1.g | DIF: L2 | REF: p. 190 |
| 14. ANS: B
OBJ: 7.1.4 | PTS: 1
STA: Ch.1.g | DIF: L1 | REF: p. 192 |
| 15. ANS: A
OBJ: 8.2.1 | PTS: 1
STA: Ch.2.a | DIF: L1 | REF: p. 217 |
| 16. ANS: B
OBJ: 8.2.1 8.2.4 | PTS: 1
STA: Ch.2.a | DIF: L2 | REF: p. 222 |
| 17. ANS: B
OBJ: 8.1.1 8.4.3 | PTS: 1
STA: Ch.2.a | DIF: L1 | REF: p. 240 |
| 18. ANS: D
OBJ: 8.4.3 | PTS: 1
STA: Ch.2.a | DIF: L2 | REF: p. 241 |
| 19. ANS: A | PTS: 1 | | |
| 20. ANS: C | PTS: 1 | | |
| 21. ANS: B | PTS: 1 | | |
| 22. ANS: C | PTS: 1 | | |
| 23. ANS: D | PTS: 1 | | |
| 24. ANS: E | PTS: 1 | | |
| 25. ANS: B | PTS: 1 | | |
| 26. ANS: A | PTS: 1 | | |

27. ANS: A PTS: 1
28. ANS: C PTS: 1
29. ANS: C PTS: 1
30. ANS: A PTS: 1
31. ANS: D PTS: 1
32. ANS: C PTS: 1
33. ANS: A PTS: 1
34. ANS: B PTS: 1
35. ANS: A PTS: 1
36. ANS: A PTS: 1
37. ANS: A PTS: 1
38. ANS: C PTS: 1
39. ANS: C PTS: 1
40. ANS: C
ST 2A, 2B
- PTS: 1
41. ANS: A
ST 2A, 2B
- PTS: 1
42. ANS: B PTS: 1
43. ANS: D PTS: 1
44. ANS: D PTS: 1
45. ANS: B
St. 1.E
ST. 1.H
- PTS: 1
46. ANS: C PTS: 1
47. ANS: D PTS: 1
48. ANS: C PTS: 1 DIF: L3 REF: p. 803 | p. 804
OBJ: 25.2.1 STA: Ch.11.d
49. ANS: C
ST.11.c
- PTS: 1
50. ANS: A PTS: 1
51. ANS: A PTS: 1
52. ANS: C PTS: 1 DIF: L2 REF: p. 172
OBJ: 6.3.2 STA: Ch.1.c
53. ANS: A PTS: 1 DIF: 1 REF: Page Ref: 6.3
OBJ: 6.3; G2
54. ANS: A PTS: 1 DIF: Medium REF: Section: 7.1
OBJ: EK.1.D.3

55. ANS: D PTS: 1 DIF: 2 REF: Page Ref: 6.8
OBJ: 6.8; G2

MULTIPLE RESPONSE

56. ANS: A, B, C PTS: 1
57. ANS: D, E PTS: 1
58. ANS: A, B PTS: 1
59. ANS: C, D PTS: 1
60. ANS: A, B PTS: 1