Name: _____ **Class:** _____ **Date:** _____ **ID: A**

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–
b. 1–
c. 0
d. 1+

____ 2. Which of the following is NOT a characteristic of most ionic compounds?
a. They are solids.
b. They have low melting points.
c. When melted, they conduct an electric current.
d. They are composed of metallic and nonmetallic elements.

____ 3. What causes water molecules to have a bent shape, according to VSEPR theory?
a. repulsive forces between unshared pairs of electrons
b. interaction between the fixed orbitals of the unshared pairs of oxygen
c. ionic attraction and repulsion
d. the unusual location of the free electrons

____ 4. What type of substance is malleable and ductile?
a. Metallic compounds
b. Ionic compounds
c. Molecular compounds
d. Noble Gases

____ 5. What compound should dissolve in water?
a. PCl_3
b. Hexane (C_6H_{14})
c. CCl_4
d. SiO_2

____ 6. Some of the molecules found in the human body are NH_2CH_2COOH (glycine), $C_6H_{12}O_6$ (glucose), and $CH_3(CH_2)_{16}COOH$ (stearic acid). The bonds they form are
a. Ionic
b. Covalent
c. Metallic
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
b. B, Li, C, O, F
c. Li, B, F, O, C
d. Li, B, C, O, F

____ 8. What is the correct noble gas electron configuration for a Chloride ion?
a. $[Ar]3s^23p^5$
b. $[Ar]3s^23p^6$
c. $[Ne]3s^23p^5$
d. $[Ne]3s^23p^6$

____ 9. Which of the following elements has the smallest atomic size?
a. Cesium
b. Oxygen
c. Calcium
d. Chlorine

____ 10. Which of the forces below is the weakest?
a. intermolecular
b. electrostatic
c. metallic

____ 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-}
b. K^{+}, Ca^{2+}, Sc^{3+}, S^{2-}, P^{3-}
c. P^{3-}, S^{2-}, K^{+}, Ca^{2+}, Sc^{3+}
d. Sc^{3+}, Ca^{2+}, K^{+}, P^{3-}, S^{2-}

____ 12. How many valence electrons are in an atom of phosphorus?
a. 2
b. 3
c. 4
d. 5

____ 13. What is the electron configuration of the gallium ion?
a. $1s^2 2s^2 2p^6 3s^2 3p^6$
b. $1s^2 2s^2 2p^6 3s^2 3p^5 4s^1$
c. $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 4p^6$
d. $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10}$

____ 14. The electron configuration of a fluoride ion, F^-, is ____.
a. $1s^2 2s^2 2p^5$
b. the same as that of a neon atom
c. $1s^2 2s^2 2p^6 3s^1$
d. the same as that of a potassium ion

____ 15. Which of these elements does not exist as a diatomic molecule?
a. Ne
b. F
c. H
d. I

____ 16. Which of the following will conduct electricity?
a. CO_2
b. LiCl
c. CO
d. N_2

____ 17. What causes dipole interactions?
a. sharing of electron pairs
b. attraction between polar molecules
c. bonding of a covalently bonded hydrogen to an unshared electron pair
d. attraction between ions

____ 18. What causes hydrogen bonding?
a. attraction between ions
b. motion of electrons
c. sharing of electron pairs
d. 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
b. sodium and aluminum
c. nitrogen and sulfur
d. oxygen and chlorine

____ 20. Which of the following compounds would you expect to be the best conductor of electricity?
a. $CH_{4(g)}$
b. $H_2O_{(l)}$
c. $MgCl_{2(aq)}$
d. $N_{2(g)}$

____ 21. Which of the following covalent bonds is the most polar?
a. C---C
b. C---Cl
c. C---Br
d. C---H
e. C---S

____ 22. How many lone pairs of electrons are on the central atom of dihydrogen sulfide?
a. 0
b. 1
c. 2
d. 3
e. 4

____ 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

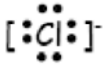
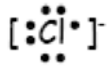
____ 28. According to the octet rule, Sulfur will gain or share _____ electrons.

a. 0
b. 1
c. 2
d. 3
e. 6

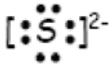
____ 29. How many valence electrons does an atom of any halogen have?

a. 5
b. 8
c. 7
d. 1

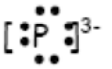
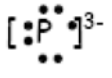
____ 30. Using the electron dot structure, what would a chlorine atom look like?

a. 
b. 
c. 
d. 

____ 31. What is the correct electron dot structure for Sulfur?

a. 
b. 
c. 
d. 

____ 32. Using the electron dot structure, a phosphide ion would most look like _____.

a. 
b. 
c. 
d. 

____ 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 imortant in SiO_2?
a. Dispersion
b. Dipole-Dipole Forces
c. Hydrogen Bonding

____ 37. What type of intermolecular force is the most imortant in NH_3?
a. Hydrogen Bonding
b. Dispersion Forces
c. Dipole-Dipole Forces

____ 38. What type of intermolecular force is the most imortant 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. $NH_4C_2O_4$
b. $(NH_4)_2C_2O_4$
c. $C_2O_4(NH_4)_2$
d. $(NH_4)_2C_2H_3O_2$

____ 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 heptaoxide
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?

$^{56}_{25}\text{Mn} \rightarrow \text{____} + {}^{0}_{-1}\text{e}$

a. $^{58}_{24}\text{Cr}$
b. $^{56}_{27}\text{Co}$
c. $^{56}_{26}\text{Fe}$
d. $^{27}_{25}\text{Mn}$

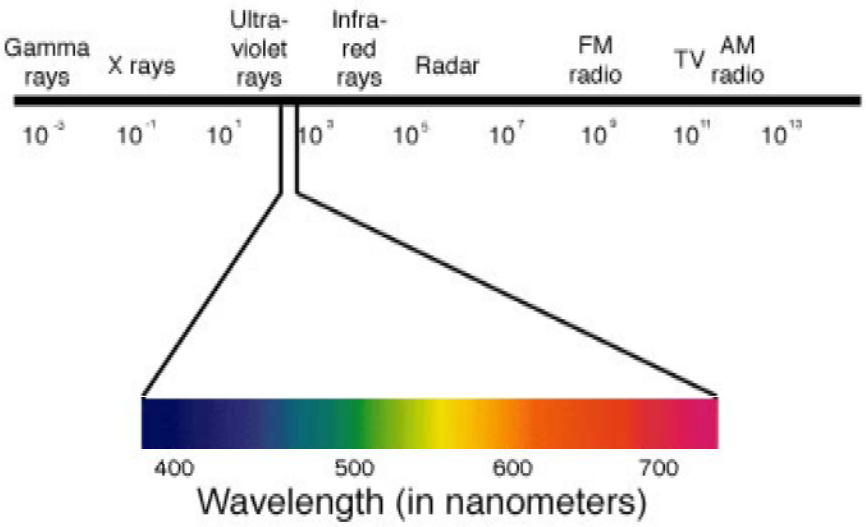
____ 49.

If E is the symbol for an element, which two of the following symbols represent isotopes of the same element?

1. $^{20}_{10}\text{E}$ 2. $^{20}_{11}\text{E}$ 3. $^{21}_{9}\text{E}$ 4. $^{21}_{10}\text{E}$

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
b. high frequency and short wavelengths
c. low 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
b. Then nucleus allows the remaining electrons to attract to the nucleus
c. The atomic orbitals contract all by themselves.
d. The number of principle energy levels has increased

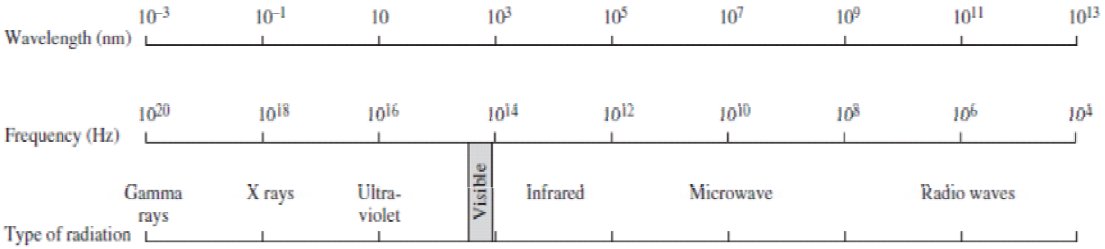
____ 52. Which of the following statements is true about ions?

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.

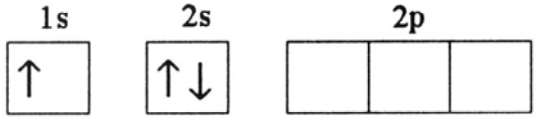
a. $n = 6 \rightarrow n = 4$
b. $n = 2 \rightarrow n = 7$
c. $n = 4 \rightarrow n = 6$
d. $n = 1 \rightarrow n = 4$
e. All transitions emit photons of equivalent energy.

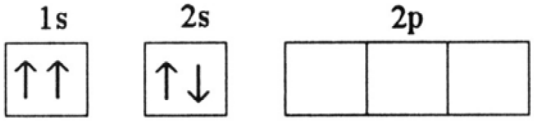
____ 54. Using the figure below, which radiation has the highest frequency?

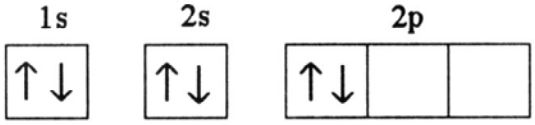


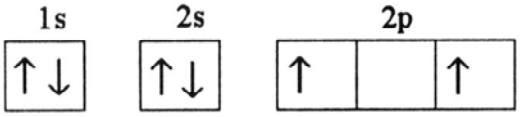
a. Gamma rays
b. X rays
c. Ultraviolet
d. Microwave

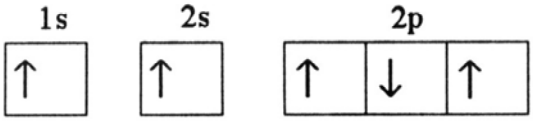
____ 55. Which electron configuration denotes an atom in its ground state?

a. 

b. 

c. 

d. 

e. 

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?
a. Dispersion
b. Dipole-Dipole
c. Hydrogen Bonding
d. Ionic Bonding

____ 57. Which of the following molecules are nonpolar?
a. $CHCl_3$
b. SCl_2
c. HNO
d. F_2
e. CO_2

____ 58. Which of the following molecules are polar?
a. NH_3
b. HF
c. CCl_4
d. HCOOH

____ 59. Which of the following molecules would have a high volatility?

a. NH_3
b. HF
c. CCl_4
d. C_2H_4

____ 60. Which of the following molecules would have a low volatility?

a. NH_3
b. HF
c. CCl_4
d. C_2H_4

Ch 7-8 practice test
Answer Section

MULTIPLE CHOICE

1. ANS: C PTS: 1 DIF: L1 REF: p. 194
   OBJ: 7.2.1 STA: Ch.3.a
2. ANS: B PTS: 1 DIF: L1 REF: p. 196 | p. 198
   OBJ: 7.2.2 STA: Ch.2.a
3. ANS: A PTS: 1 DIF: L2 REF: p. 233
   OBJ: 8.3.2 STA: Ch.2.a
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 PTS: 1 DIF: L1 REF: p. 187
    OBJ: 7.1.1 STA: Ch.1.c | Ch.2.a | Ch.1.d
13. ANS: D PTS: 1 DIF: L2 REF: p. 190
    OBJ: 7.1.1 STA: Ch.1.g
14. ANS: B PTS: 1 DIF: L1 REF: p. 192
    OBJ: 7.1.4 STA: Ch.1.g
15. ANS: A PTS: 1 DIF: L1 REF: p. 217
    OBJ: 8.2.1 STA: Ch.2.a
16. ANS: B PTS: 1 DIF: L2 REF: p. 222
    OBJ: 8.2.1 | 8.2.4 STA: Ch.2.a
17. ANS: B PTS: 1 DIF: L1 REF: p. 240
    OBJ: 8.1.1 | 8.4.3 STA: Ch.2.a
18. ANS: D PTS: 1 DIF: L2 REF: p. 241
    OBJ: 8.4.3 STA: Ch.2.a
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