Covalent Bonding & Molecular Compounds Multiple Choice Review PSI Chemistry Name_____

1) Which pair of elements is most apt to form a molecular compound with each other?

- A) aluminum, oxygen
- B) magnesium, iodine
- C) sulfur, fluorine
- D) potassium, lithium
- E) barium, bromine
- 2) Which of the following bonds would be best categorized as covalent?
 - I. H-S
 - II. AI-S
 - III. N-F
 - A) I only
 - B) II only
 - C) III only
 - D) I and III
 - E) I, II, and III

3) Which of the following BEST describes the bonding found within solid Al₂O₃?

- A) Strong covalent bonds between atoms with similar electronegativities
- B) Covalently bound atoms arranged in small individual molecules.
- C) Electrostatic attractions between + and charged ions
- D) Positively charged ions covalently bound with many mobile electrons
- E) None of these

4) Which of the following species below would be considered molecular in nature?

- A) C(diamond)
- B) C(graphite)
- C) Fe
- D) AICI₃
- E) PCI3

5) The substance below BEST characterized as having a high melting point and able to conduct electricity in the liquid state only would be:

- A) CH₄
- B) V₂O₅
- C) CO
- D) HF
- E) C(diamond)

6) A material melts at -77 C, is non-conductive, and consists of small individual molecules held together by inter-molecular forces. Which of the molecules below is this material likely to be?

A) NaCl

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- B) NH₃
- C) C(diamond)
- D) MgO
- E) Cu

7) Which of the following BEST explains the relatively low melting point of covalent molecular substances?

- A) Covalent molecular materials rely on weak electrostatic forces holding the ions together.
- B) The "sea" of electrons between the atoms creates relatively weak bonding
- C) The intermolecular forces between the molecules are weak compared to ionic or covalent bonds.
- D) The metals involved create uneven bonding with the non-metals
- E) The similar electronegativity of the atoms cause repulsions between the molecules

8) Which of the following would be characterized as a molecular compound?

I. CO

II. Zn(OH)2

- III. Fe
 - A) I only
 - B) II only
 - C) III only
 - D) I and II
 - E) I, II, and III

9) Which of the following would contain both covalent and lonic bonding?

- A) CaO
- B) NH₃
- C) C(diamond)
- D) $Ca(NO_3)_2$
- E) CO₂

10) Rank the following bonds from most to least covalent in nature: (C-H, C-O, C-C, Al-O)

- A) C-H , C-O, AI-O, C-C B) C-O, C-H, C-C, AI-O C) C-C, C-H, AI-O, C-O D) AI-O, C-O, C-H, C-C E) C-C, C-H, C-O, AI-O
- 11) The correct name for SO is _____.
 - A) sulfur oxide
 - B) sulfur monoxide
 - C) sulfoxide
 - D) sulfate
 - E) sulfite

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- 12) The correct name for CCl₄ is ______.
 - A) carbon chloride
 - B) carbon tetrachlorate
 - C) carbon perchlorate
 - D) carbon tetrachloride
 - E) carbon chlorate
- 13) The correct name for N₂O₅ is _____.
 - A) nitrous oxide
 - B) nitrogen pentoxide
 - C) dinitrogen pentoxide
 - D) nitric oxide
 - E) nitrogen oxide
- 14) The name of PCI_3 is _____.
 - A) potassium chloride
 - B) phosphorus trichloride
 - C) phosphorous(III) chloride
 - D) monophosphorous trichloride
 - E) trichloro potassium
- 15) The name of the binary compound N₂O₄ is ______.
 - A) nitrogen oxide
 - B) nitrous oxide
 - C) nitrogen(IV) oxide
 - D) dinitrogen tetroxide
 - E) oxygen nitride

16) Which of the following would be nitrogen(I)oxide?

- A) NO
- B) NO₂
- C) N₂O
- D) N₂O₃
- E) N3O2

17) Which of the following is named INCORRECTLY?

- I. CO carbon(II)oxide
- II. OF₂ diflourine oxide
- III. H₃P trihydrogen phosphide

| A) I only | B) II only | C) III only | D) I and II | E) I, II, and III |
|-----------|------------|-------------|-------------|-------------------|
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18) The correct name for H₂O is _____.A) hydrogen oxide

- B) hydrogen(II) oxide
- C) dihydrogen oxide
- D) dihydrogen monoxide
- E) hydrogen dioxide
- 19) The correct name for XeF4 is _____.
 - A) monoxenon pentafluoride
 - B) xenon pentafluoride
 - C) xenon tetrafluoride
 - D) monoxenon tetrafluoride
 - E) xenon fluorate
- 20) The correct name for P₂O₅ is _____.
 - A) phosphorus oxide
 - B) phosphorus pentoxide
 - C) diphosphorus oxide
 - D) phosphate
 - E) diphosphorus pentoxide

21) The name of BCl₃ is _____.

- A) boron chloride
- B) boron trichloride
- C) monoboron chloride
- D) trichloro boron
- E) monoboron trichloride

22) The name of the binary compound CS₂ is _____.

- A) carbon sulfide
- B) monocarbon disulfide
- C) carbon disulfide
- D) carbon sulfate
- E) carbon disulfate

Lewis Dot Structures

23) The type of compound that is most likely to contain a covalent bond is _____.

- A) one that is composed of a metal and a nonmetal
- B) a solid metal
- C) one that is composed of only nonmetals
- D) held together by the electrostatic forces between oppositely charged ions
- E) There is no general rule to predict covalency in bonds.

24) There are ______ paired and ______ unpaired electrons in the Lewis symbol for a Nitrogen atom.

- A) 4, 2
- B) 2, 4
- C) 2, 3
- D) 4, 3

E) 0, 3

25) In the Lewis symbol for a sulfur atom, there are ______ paired and ______ unpaired electrons.

- A) 2, 2
- B) 4, 2
- C) 2, 4
- D) 0, 6
- E) 5, 1

26) In the Lewis symbol for an lodine atom, there are ______ paired and ______ unpaired electrons.

- A) 4, 2
- B) 4,1
- C) 2, 5
- D) 6, 1
- E) 0, 5

27) There are ______ unpaired electrons in the Lewis symbol for an oxygen atom.

- A) 0
- B) 1
- C) 2
- D) 4 E) 3

28) The only noble gas without eight valence electrons is

- A) Ar
- B) Ne
- C) He
- D) Kr
- E) All noble gases have eight valence electrons.

29) Which of the following would have all of it's valance electrons paired in it's lewis structure representation?

- A) Al
- B) P
- C) S D) F
- D) F
- E) Xe

30) How many single covalent bonds must a silicon atom form to have a complete octet in its valence shell?

- A) 3
- B) 4
- C) 1
- D) 2

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E) 0

31) How many hydrogen atoms must bond to silicon to give it an octet of valence electrons?

- A) 1
- B) 2
- C) 3
- D) 4 E) 5

32) Which of the following atoms is without lone electrons to be shared?

- A) Al
- B) Be
- C) B
- D) He
- E) H

33) A double bond (1 sigma and 1 pi bond) consists of ______ pairs of electrons shared between two atoms.

- A) 1
- B) 2
- C) 3
- D) 4
- E) 6

34) A ______ covalent bond between the same two atoms is the longest.

A) single

- B) double
- C) triple
- D) they are all the same length.
- E) strong

35) As the number of covalent bonds between two atoms increases, the distance between the atoms ______ and the strength of the bond between them ______.

A) increases, increases

- B) decreases, decreases
- C) increases, decreases
- D) decreases, increases
- E) is unpredictable

36) What is the maximum number of double (pi) bonds that a hydrogen atom can form?

- A) 0
- B) 1
- C) 2
- D) 3
- E) 4

37) What is the maximum number of double (pi) bonds that a carbon atom can form?

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- A) 4
- B) 1
- C) 0
- D) 2
- E) 3

38) In which of the molecules below is the carbon-carbon distance the shortest?

- A) $H_2C = CH_2$ B) H -- C = C -- H C) $H_3C - CH_3$
- $D) H_2C = C = CH_2$
- $E) H_{3}C CH_{2} CH_{3}$

39) Of the bonds C - N, C = N, $C \equiv N$ the C - N bond is _____.

- A) strongest/shortest
- B) strongest/longest
- C) weakest/shortest
- D) weakest/longest
- E) intermediate in both strength and length

40) Of the possible bonds between carbon atoms (single, double, and triple), _____.

- A) a triple (sigma +2pi) bond is longer than a single bond
- B) a double (sigma + pi)bond is stronger than a triple bond
- C) a single (sigma) bond is stronger than a triple bond
- D) a double (sigma + pi) bond is longer than a triple bond
- E) a single (sigma) bond is stronger than a double bond

41) The ion ICl₄⁻ has ______ valence electrons.

- A) 34
- B) 35
- C) 36
- D) 28
- E) 8

42) The ion NO⁻ has ______ valence electrons.

- A) 15
- B) 14
- C) 16
- D) 10
- E) 12

43) The Lewis structure of AsH₃ shows _____ nonbonding electron pair(s) on As.

- A) 0
- B) 1
- C) 2
- D) 3

E) This cannot be determined from the data given.

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44) The Lewis structure of PF₃ shows that the central phosphorus atom has _____ nonbonding and _____ bonding electron pairs. A) 2, 2 B) 1, 3 C) 3, 1 D) 1, 2 E) 3, 3 45) The Lewis structure of HCN (H – C≡N) shows that _____ has _____ nonbonding electron pairs. A) C, 1 B) N, 1 C) H, 1 D) N, 2 E) C, 2 46) Of the following, _____ cannot accommodate more than an octet of electrons. A) P B) As C) O D) S E) I 47) A valid Lewis structure of ______ cannot be drawn without violating the octet rule. A) NH₃ B) IF₃ C) PF₃ D) SbCl₃ E) NO₃¹⁻ 48) A valid Lewis structure of _____ cannot be drawn without violating the octet rule. A) PO₄³⁻ B) PF₃ C) CCl₄ D) SeF₄ E) NF₃ 49) The central atom in does not violate the octet rule. A) SF₄ B) KrF₂ C) CF₄ D) XeF₄ E) ICl₄⁻ 50) The central atom in ______ violates the octet rule. www.njctl.org Chemistry **Covalent Bonding**

- A) NH₃
- B) SeF₂
- C) BF₃
- D) AsF₃
- E) CH₄

51) A valid Lewis structure of ______ cannot be drawn without violating the octet rule.

- A) CIF₃
- B) PCl₃
- C) SO₃
- D) CCl₄
- E) CO₂

52) A valid Lewis structure of ______ cannot be drawn without violating the octet rule.

- A) NI₃
- B) SO₂
- C) ICI5
- D) SiF₄
- E) CO₂

53) A valid Lewis structure of ______ cannot be drawn without violating the octet rule.

- A) NF₃
- B) BeH₂
- C) SO₂
- D) CF₄
- E) SO₃²⁻

54) The central iodine atom in the ICl₄⁻ ion has ______ non-bonded electron pairs and ______ bonded electron pairs in its valence shell.

- A) 2, 2
- B) 3, 4
- C) 1, 3
- D) 3, 2
- E) 2, 4

55) The central iodine atom in IF₅ has _____ non-bonded electron pairs and _____ bonded electron pairs in its valence shell.

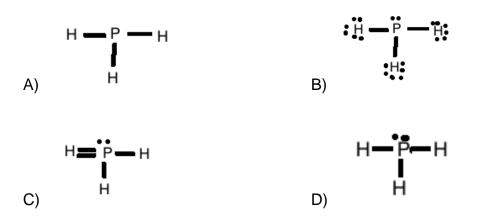
- A) 1, 5
- B) 0, 5
- C) 5, 1
- D) 4, 1
- E) 1, 4

56) The central Xe atom in the XeF₄ molecule has ______ non-bonded electron pairs and ______ bonded electron pairs in its valence shell.

A) 1, 4

B) 2, 4
C) 4, 0
D) 4, 1
E) 4, 2

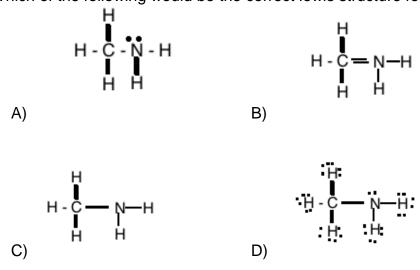
57) Which of the following correctly represents the lewis structure for PH₃?



58) How many double (pi) bonds would be present in a CS2 molecule?

- A) 0
- B) 1
- C) 2
- D) 3 E) 4

59) Which of the following would be the correct lewis structure for methyl amine (CH₃NH₂)?



Resonance

60) Resonance structures differ by ____

A) number and placement of electrons

B) number of electrons only

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- C) placement of atoms only
- D) number of atoms only
- E) placement of electrons only

61) How many equivalent resonance forms can be drawn for CO_3^{2-} (carbon is the central atom)?

- A) 1
- B) 2
- C) 3
- D) 4
- E) 0

62) How many equivalent resonance forms can be drawn for SO₂ without expanding octet on the sulfur atom (sulfur is the central atom)?

- A) 0
- B) 2
- C) 3
- D) 4
- E) 1

63) How many equivalent resonance structures can be drawn for the molecule of SO₃ without having to violate the octet rule on the sulfur atom?

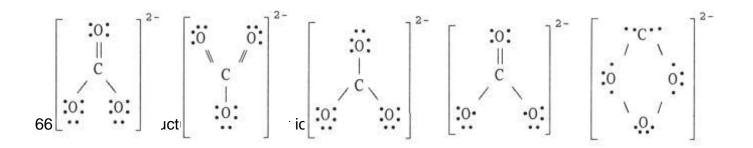
- A) 5
- B) 2
- C) 1
- D) 4
- E) 3

64) How many different types of resonance structures can be drawn for the ion SO_3^{2-} where all atoms satisfy the octet rule?

- A) 1
- B) 2
- C) 3
- D) 4
- E) 5

65) In the nitrite ion NO₂-, _____

- A) both bonds are single bonds
- B) both bonds are double bonds
- C) one bond is a double bond and the other is a single bond
- D) both bonds are the same
- E) there are 20 valence electrons



D

Е

67) To convert from one resonance structure to another,

A) only atoms can be moved

А

B) electrons and atoms can both be moved

В

- C) only electrons can be moved
- D) neither electrons nor atoms can be moved
- E) electrons must be added

68) For resonance forms of a molecule or ion, _____

- A) one always corresponds to the observed structure
- B) all the resonance structures are observed in various proportions
- C) the observed structure is an average of the resonance forms
- D) the same atoms need not be bonded to each other in all resonance forms

С

E) there cannot be more than two resonance structures for a given species

VSEPR Numbers, Geometry, Hybridization, and Bond Angles

69) The basis of the VSEPR model of molecular bonding is _____

A) regions of electron density on an atom will organize themselves so as to maximize s-character

B) regions of electron density in the valence shell of an atom will arrange themselves so as to maximize overlap

C) atomic orbitals of the bonding atoms must overlap for a bond to form

D) electron domains in the valence shell of an atom will arrange themselves so as to minimize repulsions

E) hybrid orbitals will form as necessary to, as closely as possible, achieve spherical symmetry

70) According to VSEPR theory, if there are three electron domains in the valence shell of an atom, they will be arranged in a(n) ______ geometry.

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- A) octahedral
- B) linear
- C) tetrahedral
- D) trigonal planar
- E) trigonal bipyramidal
- 71) An electron domain could consist of _____.
 - I. a nonbonding pair of electrons
 - II. a single sigma bond
 - III. the pi bond component of a double or triple bond
 - A) I only
 - B) II only
 - C) III only
 - D) I, II, and III
 - E) II and III only

72) According to VSEPR theory, if there are five electron domains in the valence shell of an atom, they will be arranged in a(n) ______ geometry.

- A) octahedral
- B) linear
- C) tetrahedral
- D) trigonal planar
- E) trigonal bipyramidal

73) According to VSEPR theory, if there are four electron domains in the valence shell of an atom, they will be arranged in a(n) ______ geometry.

- A) octahedral
- B) linear
- C) tetrahedral
- D) trigonal planar
- E) trigonal bipyramidal

74) In the valence shell of an atom there are six electron domains. They will be arranged in a (an) ______ geometry.

- A) hexagonal
- B) tetrahedral
- C) octahedral
- D) trigonal bipyramidal
- E) see-saw

75. Using the VSEPR model, the electron-domain geometry of the central atom in BF_3 is ______ while the molecular geometry would be described as ______

A) linear, bent

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- B) trigonal planar, bent
- C) trigonal planar, trigonal planar
- D) trigonal bipyramidal, bent
- E) octahedral, square pyramidal

76. The electron-domain geometry of the central atom in OF₂ is ______ while the molecular geometry would be described as ______.

- A) linear, bent
- B) trigonal planar, bent
- C) tetrahedral, bent
- D) trigonal bipyramidal, linear
- E) octahedral, square pyramidal

77) The electron-domain geometry of the central atom in BrF₃ is _____, while the molecular geometry would be described as _____.

- A) linear, linear
- B) trigonal planar, trigonal planar
- C) tetrahedral, triangular pyramidal
- D) trigonal bipyramidal, T shaped
- E) octahedral, octahedral

78) Using the VSEPR model, the electron-domain geometry of the central atom in BrF₄⁻ is ______ while the molecular geometry would be described as______.

- A) linear, bent
- B) trigonal planar, bent

C) tetrahedral, bent

- D) trigonal bipyramidal, square planar
- E) octahedral, square planar

79) Which of the following would have an electron-domain geometry that is tetrahedral in nature?

- I. CH₄
- II. PH₃
- III. XeF₄
- A) I only
- B) II only
- C) III only
- D) I and II only
- E) I and III only

80) The electron-domain geometry and the molecular geometry of a molecule of the general formula AB_n are _____.

- A) never the same
- B) always the same
- C) sometimes the same
- D) not related

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E) mirror images of one another

81) The electron-domain geometry and the molecular geometry of a molecule of the general formula AB_n will always be the same if _____.

- A) there are no lone pairs on the central atom
- B) there is more than one central atom
- C) n is greater than four
- D) n is less than four
- E) the octet rule is obeyed

82) For a molecule with the formula AB₂ the molecular shape is ______.

- A) linear or bent
- B) linear or trigonal planar
- C) linear or T-shaped
- D) T-shaped
- E) trigonal planar

83) PCI₅ has ______ electron domains and a ______ molecular arrangement.

- A) 6, trigonal bipyramidal
- B) 6, tetrahedral
- C) 5, square pyramidal
- D) 5, trigonal bipyramidal
- E) 6, seesaw

84) The electron-domain geometry and molecular geometry of iodine trichloride are

_____, respectively.

A) trigonal bipyramidal, trigonal planar

B) tetrahedral, trigonal pyramidal

C) trigonal bipyramidal, T-shaped

- D) octahedral, trigonal planar
- E) T-shaped, trigonal planar

85) Using the VSEPR model, the molecular geometry of the central atom in XeF₂ is

- A) linear
- B) trigonal planar
- C) tetrahedral
- D) bent
- E) trigonal pyramidal

86) Using the VSEPR model, the molecular geometry of the central atom in BCI3 is

- A) linear
- B) trigonal planar
- C) tetrahedral
- D) bent

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E) trigonal pyramidal

87) Using the VSEPR model, the molecular geometry of the central atom in CF4 is

A) linear

- B) trigonal planar
- C) tetrahedral

D) bent

E) trigonal pyramidal

88) Using the VSEPR model, the molecular geometry of the central atom in SO2 is

A) linear

- B) trigonal planar
- C) tetrahedral

D) bent

E) trigonal pyramidal

89) Using the VSEPR model, the molecular geometry of the central atom in NCI3 is

A) linear

- B) trigonal planar
- C) tetrahedral
- D) bent
- E) trigonal pyramidal

90) Using the VSEPR model, the molecular geometry of the central atom in PF5 is

- A) tetrahedral
- B) square planar
- C) trigonal bipyramidal
- D) seesaw
- E) square pyramidal

91) The molecular geometry of ______ is square planar.

- A) CCl₄
- B) XeF4
- Ć) PH₃
- D) XeF₂
- E) ICl₃

92) The molecular geometry of the CS2 molecule is _____.

- A) linear
- B) bent
- C) tetrahedral
- D) trigonal planar

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| E) T-shaped |
|-------------|
|-------------|

93) The molecular geometry of the SiH₂Cl₂ molecule is ______.

- A) trigonal planar
- B) tetrahedral
- C) trigonal pyramidal
- D) octahedral
- E) T-shaped

94) The molecular geometry of the PHCl₂ molecule is ______.

- A) bent
- B) trigonal planar
- C) trigonal pyramidal
- D) tetrahedral
- E) T-shaped

95) The molecular geometry of the CHI₃ molecule is ______.

- A) bent
- B) trigonal planar
- C) trigonal pyramidal
- D) tetrahedral
- E) T-shaped

96) The molecular geometry of the SF₂ molecule is ______.

- A) linear
- B) bent
- C) trigonal planar
- D) tetrahedral
- E) octahedral

97) The molecular geometry of the H_3O^+ ion is _____.

- A) linear
- B) tetrahedral
- C) bent
- D) trigonal pyramidal
- E) octahedral

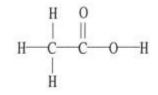
98) CIF₃ has "T-shaped" geometry. There are ______ non-bonding domains in this molecule.

- A) 0
- В́) 1
- C) 2
- D) 3
- E) 4

99) The electron domain and molecular geometry of BrO₂ is ______.A) tetrahedral, trigonal planar

- B) trigonal planar, trigonal planar
- C) trigonal pyramidal, linear
- D) tetrahedral, bent
- E) trigonal pyramidal, seesaw
- 100) The molecular geometry of the BrO₃⁻ ion is ______.
 - A) trigonal pyramidal
 - B) trigonal planar
 - C) bent
 - D) tetrahedral
 - E) T-shaped

Questions 101-104 refer to the molecule below:



101) The molecular geometry of the left-most carbon atom in the molecule below is _____

- A) trigonal planar
- B) trigonal bipyramidal
- C) tetrahedral
- D) octahedral
- E) T-shaped

102) The hybridization of the left-most and right most carbon atoms would be_____and ____respectively.

- A) sp, sp2
- B) sp2, sp
- C) sp3, sp
- D) sp3, sp2 E) sp2, sp3

103) The H-C-H bond angle would most closely approximate _____

- A) 180 degrees
- B) 120 degrees
- C) 117 degrees
- D) 109.5 degrees
- E) 107 degrees

104) The molecular geometry of the right-most carbon in the molecule below is _____.

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- A) trigonal planar
- B) trigonal bipyramidal
- C) tetrahedral
- D) octahedral
- E) T-shaped

105) What is the molecular geometry of a molecule that has three bonding and two nonbonding domains?

A) T-shaped

- B) Tetrahedral
- C) See-saw
- D) Square pyramidal
- E) Trigonal bipyramidal

Consider the following species when answering the following questions:

(i) PCI_3 (ii) CCI_4 (iii) $TeCI_4$ (iv) XeF_4 (v) SF_6

106) For which of the molecules is the molecular geometry (shape) the same as the VSEPR electron domain arrangement (electron domain geometry)?

- A) (i) and (ii) B) (i) and (iii) C) (ii) and (v)
- D) (iv) and (v)
- E) (v) only

107) Which of the molecules has a see-saw shape?

- A) (i)
- B) (ii)
- C) (iii)
- D) (iv)
- E) (v)

Choose from the following for questions #106-109

- A) CH₃Cl
- B) H₂O
- C) N2
- D) H₂CCH2
- E) H2NNH2

108) Contains the shortest bond length

109) Contains sp2 hybridized atom

110) Demonstrates a bent molecular geometry www.njctl.org Chemistry

111) Contains bond angles of 109.5 degrees

Polarity

112) The ability of an atom in a molecule to attract electrons is best quantified by the

- A) paramagnetism
- B) diamagnetism
- C) electronegativity
- D) electron change-to-mass ratio
- E) first ionization potential

113) Electronegativity ______ from left to right within a period and ______ from top to bottom within a group.

- A) decreases, increases
- B) increases, increases
- C) increases, decreases
- D) stays the same, increases
- E) increases, stays the same

114) Which covalent single bond is most polar?

- A) C H
- B) N H
- C) O— H
- D) O— C
- E) O— N

115) A nonpolar bond will form between two ______ atoms of ______ electronegativity.

- A) different, opposite
- B) identical, different
- C) different, different
- D) similar, different
- E) identical, equal

116) Of the molecules below, the bond in _____ is the most polar.

- A) HBr
- B) HI
- C) HCI
- D) HF
- E) H₂

117) Of the bonds below, _____ is the least polar.

- A) Na, S
- B) P, S

- C) C, F D) Si, Cl
- E) Na, Cl

118) Which of the following has the bonds correctly arranged in order of increasing polarity?

- A) Be F, Mg F, N F, O F B) O— F, N — F, Be — F, Mg — F
- C) O— F, Be F, Mg F, N F
- D) N F, Be F, Mg F, O F
- E) Mg F, Be F, N F, O F

119) Which two bonds are most similar in polarity?

- A) O— F and CI F
- B) B F and Cl F
- C) AI CI and I Br
- D) I Br and Si CI
- E) CI CI and Be CI

120) Of the molecules below, only _____ is polar.

- A) SbF5
- B) AsH₃
- C) I₂
- D) SF₆
- E) CH₄

121) Of the molecules below, only _____ is nonpolar.

- A) CO₂
- B) H₂O
- C) NH₃
- D) HCI
- E) TeCl₂

122) Of the molecules below, only _____ is polar.

- A) CCl₄
- B) CH₄
- C) SeF4
- D) SiCl₄
- E) CO₂

123) Of the molecules below, only ______ is nonpolar.

- A) BF₃
- B) NF₃
- C) IF₃
- D) PBr₃
- E) BrCl₃

124) The molecular geometry of the BeCl₂ molecule is _____, and this molecule is

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| A) linear, nonpola |
|--|
|--|

- B) linear, polar
- C) bent, nonpolar
- D) bent, polar
- E) trigonal planar, polar

125) The molecular geometry of the PF₃ molecule is _____, and this molecule is

- A) trigonal planar, polar
- B) trigonal planar, nonpolar
- C) trigonal pyramidal, polar
- D) trigonal pyramidal, nonpolar
- E) tetrahedral, unipolar

126) Of the following molecules, only _____ is polar.

- A)BeCl₂
- B) BF₃
- C) CBr₄
- D) SiH₂Cl₂
- E) Cl₂

127) Of the following molecules, only _____ is polar.

- A)CCl₄
- B) BCl₃
- C) NCl₃
- D) BeCl₂
- E) Cl₂

128) The molecular geometry of the CHF₃ molecule is _____, and the molecule is

- A) trigonal pyramidal, polar
- B)tetrahedral, nonpolar
- C) seesaw, nonpolar
- D) tetrahedral, polar
- E) seesaw, polar

129) The molecular geometry of the BCl₃ molecule is _____, and this molecule is

- A) trigonal pyramidal, polar
- B) trigonal pyramidal, nonpolar
- C) trigonal planar, polar
- D) trigonal planar, nonpolar
- E) trigonal bipyramidal, polar

<u>Answers</u>

| 1. C 2. D 3. C 4. E 5. B 6. B 7. C 8. A 9. D 10. E 11. B 12. D 13. C 14. B 15. D 16. C 17. B 18. D 19. C 20. E 21. B 22. C 23. C 24. C 25. B 26. D 27. C 28. C 29. E 30. B 31. D 32. D 33. B 34. A 35. D 36. A 37. D | 44. B 45. B 46. C 47. B 48. D 49. C 50. C 51. A 52. C 53. B 54. E 55. A 56. B 57. D 58. C 59. A 60. E 61. C 62. B 63. E 64. A 65. D 66. A 67. C 68. C 69. D 70. D 71. E 72. E 73. C 74. C 75. C 76. C 76. C 76. C 77. D 78. E 79. D 80. C | $\begin{array}{cccccccccccccccccccccccccccccccccccc$ |
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| | | |
| | | |
| | | 123. A |
| 38. B | 81. A | 124. A |
| 39. D 40. D | 82. A 83. D | 125. C 126. D |
| 40. D 41. C | 84. C | 120. D 127. C |
| 42. E | 85. A | 128. D |
| 43. B | 86. B | 129. D |

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