

Exam

Name _____

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

- 1) Vanadium has two naturally occurring isotopes, ^{50}V with an atomic mass of 49.9472 amu and ^{51}V with an atomic mass of 50.9440. The atomic weight of vanadium is 50.9415. The percent abundances of the vanadium isotopes are _____% ^{50}V and _____% ^{51}V . 1) _____

A) 1.000, 99.000
B) 49.00, 51.00
C) 0.2500, 99.750
D) 99.000, 1.000
E) 99.750, 0.2500

Answer: C

Explanation: A)
B)
C)
D)
E)

- 2) Which species has 16 protons? 2) _____
A) ^{31}P B) $^{80}\text{Br}^-$ C) $^{34}\text{S}^{2-}$ D) ^{16}O E) ^{36}Cl

Answer: C

Explanation: A)
B)
C)
D)
E)

- 3) The suffix -ide is used _____. 3) _____
A) for monatomic anion names
B) for monoatomic cations
C) for polyatomic cation names
D) for the name of the first element in a molecular compound
E) to indicate binary acids

Answer: A

Explanation: A)
B)
C)
D)
E)

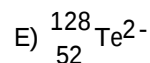
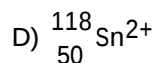
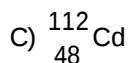
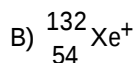
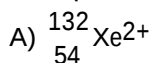
- 4) The atomic number of an atom of ^{80}Br is _____. 4) _____
A) 35 B) 73 C) 115 D) 80 E) 45

Answer: A

Explanation: A)
B)
C)
D)
E)

5) Which species has 54 electrons?

5) _____



Answer: E

Explanation: A)
B)
C)
D)
E)

6) Of the choices below, which one is not an ionic compound?

6) _____



Answer: B

Explanation: A)
B)
C)
D)
E)

7) Isotopes are atoms that have the same number of _____ but differing number of _____.

7) _____

- A) protons, electrons
- B) neutrons, electrons
- C) protons, neutrons
- D) electrons, protons
- E) neutrons, protons

Answer: C

Explanation: A)
B)
C)
D)
E)

8) _____ - rays consist of fast-moving electrons.

8) _____

- A) gamma
- B) beta
- C) X
- D) alpha
- E) none of the above

Answer: B

Explanation: A)
B)
C)
D)
E)

9) Of the three types of radioactivity characterized by Rutherford, which is/are not particles?

9) _____

- A) γ -rays
- B) α -rays, β -rays, and γ -rays
- C) β -rays
- D) α -rays
- E) α -rays and β -rays

Answer: A

Explanation: A)
B)
C)
D)
E)

10) Which pair of elements would you expect to exhibit the greatest similarity in their physical and chemical properties?

10) _____

- A) C, N
- B) K, Ca
- C) H, He
- D) Si, P
- E) O, S

Answer: E

Explanation: A)
B)
C)
D)
E)

11) The elements in groups 1A, 6A, and 7A are called, _____, respectively.

11) _____

- A) alkali metals, chalcogens, and halogens
- B) alkaline earth metals, transition metals, and halogens
- C) alkaline earth metals, halogens, and chalcogens
- D) halogens, transition metals, and alkali metals
- E) alkali metals, halogens, and noble gases

Answer: A

Explanation: A)
B)
C)
D)
E)

12) Which species below is the nitrate ion?

12) _____

- A) NH_4^+
- B) N^{3-}
- C) NO_3^-
- D) NO_2^-
- E) N_3^-

Answer: C

Explanation: A)
B)
C)
D)
E)

13) There are _____ protons, _____ neutrons, and _____ electrons in $^{131}\text{I}^-$.

13) _____

- A) 131, 53, and 54
- B) 78, 53, and 72
- C) 131, 53, and 52
- D) 53, 78, and 54
- E) 53, 131, and 52

Answer: D

Explanation: A)
B)
C)
D)
E)

14) Which formula/name pair is incorrect?

14) _____

- A) FeSO_4 iron(II) sulfate
- B) FeS iron(II) sulfide
- C) $\text{Fe}_2(\text{SO}_3)_3$ iron(III) sulfite
- D) $\text{Fe}_2(\text{SO}_4)_3$ iron(III) sulfide
- E) FeSO_3 iron(II) sulfite

Answer: D

Explanation: A)
B)
C)
D)
E)

15) Which metal does not form cations of differing charges?

15) _____

- A) Fe
- B) Cu
- C) Sn
- D) Co
- E) Na

Answer: E

Explanation: A)
B)
C)
D)
E)

16) An atom of ^{15}N contains _____ neutrons.

16) _____

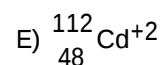
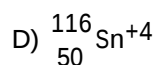
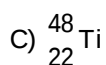
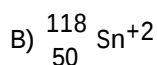
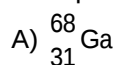
- A) 22
- B) 8
- C) 7
- D) 10
- E) 15

Answer: B

Explanation: A)
B)
C)
D)
E)

17) Which species has 48 electrons?

17) _____



Answer: B

Explanation: A)
B)
C)
D)
E)

18) Cathode rays are deflected away from a negatively charged plate because _____.

18) _____

- A) they are positively charged particles
- B) they are neutral particles
- C) they are emitted by all matter
- D) they are not particles
- E) they are negatively charged particles

Answer: E

Explanation: A)
B)
C)
D)
E)

19) The nucleus of an atom does not contain _____.

19) _____

- A) protons
- B) neutrons
- C) subatomic particles
- D) protons or neutrons
- E) electrons

Answer: E

Explanation: A)
B)
C)
D)
E)

20) An unknown element is found to have three naturally occurring isotopes with atomic masses of 35.9675 (0.337%), 37.9627 (0.063%), and 39.9624 (99.600%). Which of the following is the unknown element?

20) _____

- A) Ar
- B) Ca
- C) K
- D) Cl
- E) None of the above could be the unknown element.

Answer: A

Explanation: A)
B)
C)
D)
E)

21) In the absence of magnetic or electric fields, cathode rays _____.

21) _____

- A) travel in straight lines
- B) do not exist
- C) cannot be detected
- D) bend toward a light source
- E) become positively charged

Answer: A

Explanation: A)
B)
C)
D)
E)

22) Which one of the following is not true concerning cathode rays?

22) _____

- A) They impart a negative charge to metals exposed to them.
- B) They originate from the negative electrode.
- C) They are made up of electrons.
- D) The characteristics of cathode rays depend on the material from which they are emitted.
- E) They travel in straight lines in the absence of electric or magnetic fields.

Answer: D

Explanation: A)
B)
C)
D)
E)

23) The charge on the _____ ion is -3.

23) _____

- A) acetate
- B) sulfate
- C) nitride
- D) oxide
- E) permanganate

Answer: C

Explanation: A)
B)
C)
D)
E)

24) An element in the upper right corner of the periodic table _____.

24) _____

- A) is either a metalloid or a non-metal
- B) is either a metal or metalloid
- C) is definitely a metalloid
- D) is definitely a non-metal
- E) is definitely a metal

Answer: D

Explanation: A)
B)
C)
D)
E)

25) Which species below is the nitride ion?

25) _____

A) N^{3-}

B) Na^+

C) NH_4^+

D) NO_2^-

E) NO_3^-

Answer: A

Explanation: A)
B)
C)
D)
E)

26) A molecule of water contains hydrogen and oxygen in a 1:8 ratio by mass. This is a statement of _____.

26) _____

A) the law of conservation of mass

B) the law of multiple proportions

C) the law of constant composition

D) the law of conservation of energy

E) none of the above

Answer: C

Explanation: A)
B)
C)
D)
E)

27) Of the following, only _____ is not a metalloid.

27) _____

A) Si

B) As

C) B

D) Ge

E) Al

Answer: E

Explanation: A)
B)
C)
D)
E)

28) Cathode rays are _____.

28) _____

A) x-rays

B) atoms

C) neutrons

D) electrons

E) protons

Answer: D

Explanation: A)
B)
C)
D)
E)

29) Which species is an isotope of ^{39}Cl ?

29) _____

A) ^{39}Ar

B) $^{36}\text{Cl}^-$

C) $^{34}\text{S}^{2-}$

D) $^{40}\text{Ar}^+$

E) ^{80}Br

Answer: B

Explanation: A)
B)
C)
D)
E)

30) When a fluorine atom forms the fluoride ion, it has the same charge as the _____ ion.

30) _____

- A) sulfite
- B) sulfide
- C) nitrate
- D) phosphate
- E) ammonium

Answer: C

Explanation: A)
B)
C)
D)
E)

31) The molecular formula of a compound is always _____ the empirical formula.

31) _____

- A) more complex than
- B) different from
- C) simpler than
- D) the same as
- E) an integral multiple of

Answer: E

Explanation: A)
B)
C)
D)
E)

32) Which one of the following is most likely to lose electrons when forming an ion?

32) _____

- A) S
- B) Rh
- C) P
- D) F
- E) N

Answer: B

Explanation: A)
B)
C)
D)
E)

33) The charge on an electron was determined in the _____.

33) _____

- A) atomic theory of matter
- B) Dalton atomic theory
- C) cathode ray tube, by J. J. Thompson
- D) Rutherford gold foil experiment
- E) Millikan oil drop experiment

Answer: E

Explanation: A)
B)
C)
D)
E)

34) Which compounds do not have the same empirical formula?

34) _____

- A) CO, CO₂
- B) C₂H₄, C₃H₆
- C) C₂H₅COOCH₃, CH₃CHO
- D) C₂H₄O₂, C₆H₁₂O₆
- E) C₂H₂, C₆H₆

Answer: A

Explanation: A)
B)
C)
D)
E)

35) Which metal forms cations of differing charges?

35) _____

- A) Ba
- B) Cs
- C) Sn
- D) K
- E) Al

Answer: C

Explanation: A)
B)
C)
D)
E)

36) The gold foil experiment performed in Rutherford's lab _____.

36) _____

- A) utilized the deflection of beta particles by gold foil
- B) led to the discovery of the atomic nucleus
- C) proved the law of multiple proportions
- D) confirmed the plum-pudding model of the atom
- E) was the basis for Thompson's model of the atom

Answer: B

Explanation: A)
B)
C)
D)
E)

37) Predict the charge of the most stable ion of fluorine.

37) _____

- A) -2
- B) +3
- C) +1
- D) +2
- E) -1

Answer: E

Explanation: A)
B)
C)
D)
E)

38) Element X has three naturally occurring isotopes. The masses (amu) and % abundances of the isotopes are given in the table below. The average atomic mass of the element is _____ amu.

38) _____

Isotope	Abundance	Mass
^{38}X	5.07	37.919
^{39}X	15.35	39.017
^{42}X	79.85	42.111

A) 41.54

B) 33.33

C) 39.68

D) 39.07

E) 38.64

Answer: A

Explanation: A)
B)
C)
D)
E)

39) The element X has three naturally occurring isotopes. The masses (amu) and % abundances of the isotopes are given in the table below. The average atomic mass of the element is _____ amu.

39) _____

Isotope	Abundance	Mass
^{221}X	74.22	220.9
^{220}X	12.78	220.0
^{218}X	13.00	218.1

A) 219.7

B) 221.0

C) 220.4

D) 220.42

E) 218.5

Answer: C

Explanation: A)
B)
C)
D)
E)

40) Which of the following compounds would you expect to be ionic?

40) _____

A) SO_2

B) H_2O

C) CO_2

D) H_2S

E) SrCl_2

Answer: E

Explanation: A)
B)
C)
D)
E)

41) A molecular formula always indicates _____.

41) _____

- A) the geometry of a molecule
- B) the simplest whole-number ratio of different atoms in a compound
- C) which atoms are attached to which in a molecule
- D) the isotope of each element in a compound
- E) how many of each atom are in a molecule

Answer: E

Explanation: A)
B)
C)
D)
E)

42) In the symbol below, X = _____.

42) _____



- A) C
- B) N
- C) K
- D) Al
- E) not enough information to determine

Answer: A

Explanation: A)
B)
C)
D)
E)

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

43) _____

- A) barium, bromine
- B) magnesium, iodine
- C) sulfur, fluorine
- D) potassium, lithium
- E) aluminum, oxygen

Answer: C

Explanation: A)
B)
C)
D)
E)

44) Which one of the following basic forces is so small that it has no chemical significance?

44) _____

- A) strong nuclear force
- B) gravity
- C) electromagnetism
- D) Coulomb's law
- E) weak nuclear force

Answer: B

Explanation: A)
B)
C)
D)
E)

45) Which atom has the smallest number of neutrons?

45) _____

- A) oxygen-16
- B) neon-20
- C) carbon-14
- D) fluorine-19
- E) nitrogen-14

Answer: E

Explanation: A)
B)
C)
D)
E)

46) Which isotope has 36 electrons in an atom?

46) _____

- A) $^{34}_{17}\text{Cl}$ B) $^{78}_{34}\text{Se}$ C) $^{80}_{35}\text{Br}$ D) $^{36}_{80}\text{Hg}$ E) $^{80}_{36}\text{Kr}$

Answer: E

Explanation: A)
B)
C)
D)
E)

47) An ion has 8 protons, 9 neutrons, and 10 electrons. The symbol for the ion is _____.

47) _____

- A) $^{19}\text{F}^-$ B) $^{17}\text{Ne}^{2+}$ C) $^{17}\text{O}^{2-}$ D) $^{17}\text{O}^{2+}$ E) $^{19}\text{F}^+$

Answer: C

Explanation: A)
B)
C)
D)
E)

48) Which one of the following species has as many electrons as it has neutrons?

48) _____

- A) ^{14}C B) $^{40}\text{Ca}^{2+}$ C) ^1H D) $^{14}\text{C}^{2+}$ E) $^{19}\text{F}^-$

Answer: E

Explanation: A)
B)
C)
D)
E)

49) Which isotope has 45 neutrons?

49) _____

- A) $^{80}_{36}\text{Kr}$ B) $^{80}_{35}\text{Br}$ C) $^{78}_{34}\text{Se}$ D) $^{103}_{45}\text{Rh}$ E) $^{34}_{17}\text{Cl}$

Answer: B

Explanation: A)
B)
C)
D)
E)

50) The element X has three naturally occurring isotopes. The isotopic masses (amu) and % abundances of the isotopes are given in the table below. The average atomic mass of the element is _____ amu.

50) _____

Isotope	Abundance	Mass
^{159}X	30.60	159.37
^{163}X	15.79	162.79
^{164}X	53.61	163.92

- A) 162.35 B) 163.15 C) 161.75 D) 162.03 E) 33.33

Answer: A

Explanation: A)
B)
C)
D)
E)

51) In the periodic table, the elements are arranged in _____.

51) _____

- A) alphabetical order
B) order of increasing neutron content
C) reverse alphabetical order
D) order of increasing metallic properties
E) order of increasing atomic number

Answer: E

Explanation: A)
B)
C)
D)
E)

52) Of the three types of radioactivity characterized by Rutherford, which are particles?

52) _____

- A) α -rays and γ -rays
- B) α -rays and β -rays
- C) α -rays, β -rays, and γ -rays
- D) β -rays
- E) γ -rays

Answer: B

Explanation: A)
B)
C)
D)
E)

53) Which pair of elements would you expect to exhibit the greatest similarity in their physical and chemical properties?

53) _____

- A) Cs, Ba
- B) C, O
- C) Ca, Sr
- D) Ga, Ge
- E) H, Li

Answer: C

Explanation: A)
B)
C)
D)
E)

54) An element that appears in the lower left corner of the periodic table is _____.

54) _____

- A) definitely a non-metal
- B) definitely a metal
- C) either a metalloid or a non-metal
- D) definitely a metalloid
- E) either a metal or metalloid

Answer: B

Explanation: A)
B)
C)
D)
E)

55) Which metal does not require to have its charge specified in the names of ionic compounds it forms?

55) _____

- A) Ca
- B) Cu
- C) Fe
- D) Pb
- E) Mn

Answer: A

Explanation: A)
B)
C)
D)
E)

56) Which of the following compounds would you expect to be ionic? 56) _____

- A) H_2O_2 B) CaO C) NH_3 D) SF_6 E) H_2O

Answer: B

Explanation: A)
B)
C)
D)
E)

57) Of the three types of radioactivity characterized by Rutherford, which is/are electrically charged? 57) _____

- A) α -rays, β -rays, and γ -rays
B) α -rays
C) α -rays and γ -rays
D) β -rays
E) α -rays and β -rays

Answer: E

Explanation: A)
B)
C)
D)
E)

58) How many protons does the Br^- ion possess? 58) _____

- A) 36 B) 35 C) 8 D) 34 E) 6

Answer: B

Explanation: A)
B)
C)
D)
E)

59) In the symbol below, x is _____. 59) _____



- A) the isotope number
B) the mass number
C) the atomic number
D) the elemental symbol
E) the number of neutrons

Answer: B

Explanation: A)
B)
C)
D)
E)

- 60) Of the three types of radioactivity characterized by Rutherford, which is/are not electrically charged? 60) _____
- A) α -rays and β -rays
 B) α -rays and γ -rays
 C) α -rays
 D) γ -rays
 E) α -rays, β -rays, and γ -rays
- Answer: D
 Explanation: A)
 B)
 C)
 D)
 E)
- 61) Which one of the following is the formula of hydrochloric acid? 61) _____
- A) HClO B) HCl C) HClO₃ D) HClO₄ E) HClO₂
- Answer: B
 Explanation: A)
 B)
 C)
 D)
 E)
- 62) The species _____ contains 16 neutrons. 62) _____
- A) ³⁶Cl B) ³¹P C) ⁸⁰Br⁻ D) ³⁴S²⁻ E) ¹⁶O
- Answer: B
 Explanation: A)
 B)
 C)
 D)
 E)
- 63) Which combination of protons, neutrons, and electrons is correct for the isotope of copper, ⁶³₂₉Cu? 63) _____
- A) 29 p⁺, 34 n[°], 29 e⁻
 B) 63 p⁺, 29 n[°], 63 e⁻
 C) 34 p⁺, 34 n[°], 29 e⁻
 D) 34 p⁺, 29 n[°], 34 e⁻
 E) 29 p⁺, 29 n[°], 63 e⁻
- Answer: A
 Explanation: A)
 B)
 C)
 D)
 E)

64) Which one of the following is not one of the postulates of Dalton's atomic theory?

64) _____

- A) All atoms of a given element are identical; the atoms of different elements are different and have different properties.
- B) Atoms are composed of protons, neutrons, and electrons.
- C) Each element is composed of extremely small particles called atoms.
- D) Atoms of an element are not changed into different types of atoms by chemical reactions: atoms are neither created nor destroyed in chemical reactions.
- E) Compounds are formed when atoms of more than one element combine; a given compound always has the same relative number and kind of atoms.

Answer: B

Explanation: A)
B)
C)
D)
E)

65) Which atom has the largest number of neutrons?

65) _____

- A) calcium-40
- B) argon-40
- C) phosphorous-30
- D) chlorine-37
- E) potassium-39

Answer: B

Explanation: A)
B)
C)
D)
E)

66) The element X has three naturally occurring isotopes. The isotopic masses (amu) and % abundances of the isotopes are given in the table below. The average atomic mass of the element is _____ amu.

66) _____

Isotope	Abundance	Mass
^{53}X	19.61	52.62
^{56}X	53.91	56.29
^{58}X	26.48	58.31

- A) 57.23 B) 56.11 C) 33.33 D) 56.29 E) 55.74

Answer: B

Explanation: A)
B)
C)
D)
E)

67) In the symbol shown below, x = _____.



- A) 13
- B) 7
- C) 6
- D) 12
- E) not enough information to determine

Answer: C

Explanation: A)
B)
C)
D)
E)

67) _____

68) The atomic mass unit is presently based on assigning an exact integral mass (in amu) to an isotope of _____.

- A) helium
- B) sodium
- C) carbon
- D) hydrogen
- E) oxygen

Answer: C

Explanation: A)
B)
C)
D)
E)

68) _____

69) The element X has three naturally occurring isotopes. The masses (amu) and % abundances of the isotopes are given in the table below. The average atomic mass of the element is _____ amu.

Isotope	Abundance (%)	Mass (amu)
^{15}X	28.6	15.33
^{17}X	13.3	17.26
^{16}X	58.1	18.11

- A) 17.65
- B) 17.11
- C) 17.20
- D) 16.90
- E) 16.90

Answer: C

Explanation: A)
B)
C)
D)
E)

69) _____

70) Which one of the following polyatomic ions has the same charge as the hydroxide ion?

70) _____

- A) carbonate
- B) ammonium
- C) phosphate
- D) nitrate
- E) sulfate

Answer: D

Explanation: A)
B)
C)
D)
E)

71) An atom of ^{17}O contains _____ protons.

71) _____

- A) 17
- B) 11
- C) 9
- D) 25
- E) 8

Answer: E

Explanation: A)
B)
C)
D)
E)

72) There are _____ electrons, _____ protons, and _____ neutrons in an atom of

72) _____

$^{132}_{54}\text{Xe}$.

- A) 78, 78, 132
- B) 54, 54, 78
- C) 54, 54, 132
- D) 78, 78, 54
- E) 132, 132, 54

Answer: B

Explanation: A)
B)
C)
D)
E)

73) Silver has two naturally occurring isotopes with the following isotopic masses:

73) _____

$^{107}_{47}\text{Ag}$	$^{107}_{47}\text{Ag}$
106.90509	108.9047

The average atomic mass of silver is 107.8682 amu. The fractional abundance of the lighter of the two isotopes is _____.

A) 0.7578

B) 0.9047

C) 0.5184

D) 0.2422

E) 0.4816

Answer: C

Explanation: A)
B)
C)
D)
E)

74) Consider the following selected postulates of Dalton's atomic theory:

74) _____

- (i) Each element is composed of extremely small particles called atoms.
- (ii) Atoms are indivisible.
- (iii) Atoms of a given element are identical.
- (iv) Atoms of different elements are different and have different properties.

Which of the postulates is(are) no longer valid?

A) (iii) and (iv)

B) (i) and (ii)

C) (ii) only

D) (iii) only

E) (ii) and (iii)

Answer: E

Explanation: A)
B)
C)
D)
E)

75) The mass number of an atom of ^{118}Xe is _____.

75) _____

A) 64

B) 118

C) 110

D) 172

E) 54

Answer: B

Explanation: A)
B)
C)
D)
E)

76) Gravitational forces act between objects in proportion to their

76) _____

- A) charges
- B) masses
- C) volumes
- D) densities
- E) polarizability

Answer: B

Explanation: A)
B)
C)
D)
E)

77) Different isotopes of a particular element contain the same number of _____.

77) _____

- A) neutrons
- B) subatomic particles
- C) protons and neutrons
- D) protons, neutrons, and electrons
- E) protons

Answer: E

Explanation: A)
B)
C)
D)
E)

78) All atoms of a given element have the same _____.

78) _____

- A) density
- B) number of protons
- C) number of electrons and neutrons
- D) mass
- E) number of neutrons

Answer: B

Explanation: A)
B)
C)
D)
E)

79) In the Rutherford nuclear-atom model, _____.

79) _____

- A) the light subatomic particles, protons and neutrons, reside in the nucleus
- B) the three principal subatomic particles (protons, neutrons, and electrons) all have essentially the same mass and mass is spread essentially uniformly throughout the atom
- C) the three principal subatomic particles (protons, neutrons, and electrons) all have essentially the same mass
- D) mass is spread essentially uniformly throughout the atom
- E) the heavy subatomic particles, protons and neutrons, reside in the nucleus

Answer: E

Explanation: A)
B)
C)
D)
E)

80) Which pair of elements below should be the most similar in chemical properties?

80) _____

- A) I and Br
- B) Cs and He
- C) B and As
- D) C and O
- E) K and Kr

Answer: A

Explanation: A)
B)
C)
D)
E)

81) Different isotopes of a particular element contain different numbers of _____.

81) _____

- A) protons
- B) protons, neutrons, and electrons
- C) neutrons
- D) protons and neutrons
- E) None of the above is correct.

Answer: C

Explanation: A)
B)
C)
D)
E)

82) Which element forms an ion with the same charge as the ammonium ion?

82) _____

- A) nitrogen
- B) oxygen
- C) potassium
- D) chlorine
- E) calcium

Answer: C

Explanation: A)
B)
C)
D)
E)

83) The correct name for $\text{Ni}(\text{CN})_2$ is _____.

83) _____

- A) nickel cyanate
- B) nickel (I) cyanide
- C) nickel (II) cyanide
- D) nickel carbonate
- E) nickel (I) nitride

Answer: C

Explanation: A)
B)
C)
D)
E)

84) The formula for the compound formed between aluminum ions and phosphate ions is _____.

84) _____

- A) AlPO_4
- B) $\text{Al}(\text{PO}_4)_3$
- C) $\text{Al}_3(\text{PO}_4)_3$
- D) $\text{Al}_2(\text{PO}_4)_3$
- E) AlP

Answer: A

Explanation: A)
B)
C)
D)
E)

85) An empirical formula always indicates _____.

85) _____

- A) the geometry of a molecule
- B) the isotope of each element in a compound
- C) the simplest whole-number ratio of different atoms in a compound
- D) how many of each atom are in a molecule
- E) which atoms are attached to which in a molecule

Answer: C

Explanation: A)
B)
C)
D)
E)

86) Which pair of elements is most apt to form an ionic compound with each other?

86) _____

- A) calcium, sodium
- B) sulfur, fluorine
- C) oxygen, fluorine
- D) barium, bromine
- E) nitrogen, hydrogen

Answer: D

Explanation: A)
B)
C)
D)
E)

87) An atom of the most common isotope of gold, ^{197}Au , has _____ protons, _____ neutrons, and _____ electrons.

87) _____

- A) 79, 118, 79
- B) 79, 118, 118
- C) 79, 197, 197
- D) 197, 79, 118
- E) 118, 79, 39

Answer: A

Explanation: A)
B)
C)
D)
E)

88) Elements in the same group of the periodic table typically have _____.

88) _____

- A) similar chemical properties only
- B) similar physical and chemical properties
- C) similar physical properties only
- D) similar mass numbers
- E) similar atomic masses

Answer: B

Explanation: A)
B)
C)
D)
E)

89) Of the following, _____ contains the greatest number of electrons.

89) _____

- A) P
- B) P^{3-}
- C) P^{2-}
- D) P^{2+}
- E) P^{3+}

Answer: B

Explanation: A)
B)
C)
D)
E)

90) Elements _____ exhibit similar physical and chemical properties.

90) _____

- A) with similar chemical symbols
- B) in the same period of the periodic table
- C) with similar atomic masses
- D) in the same group of the periodic table
- E) on opposite sides of the periodic table

Answer: D

Explanation: A)
B)
C)
D)
E)

- 91) Which one of the following does not occur as diatomic molecules in elemental form? 91) _____
 A) sulfur B) oxygen C) nitrogen D) hydrogen E) bromine
 Answer: A
 Explanation: A)
 B)
 C)
 D)
 E)
- 92) Of the following, the smallest and lightest subatomic particle is the _____. 92) _____
 A) electron
 B) proton
 C) nucleus
 D) alpha particle
 E) neutron
 Answer: A
 Explanation: A)
 B)
 C)
 D)
 E)
- 93) Which type of formula provides the most information about a compound? 93) _____
 A) simplest B) empirical C) chemical D) molecular E) structural
 Answer: E
 Explanation: A)
 B)
 C)
 D)
 E)
- 94) Which one of the following molecular formulas is also an empirical formula? 94) _____
 A) C_6H_6 B) C_2H_6SO C) H_2O_2 D) $C_6H_6O_2$ E) $H_2P_4O_6$
 Answer: B
 Explanation: A)
 B)
 C)
 D)
 E)
- 95) How many electrons does the Al^{3+} ion possess? 95) _____
 A) 10 B) 0 C) 16 D) 13 E) 6
 Answer: A
 Explanation: A)
 B)
 C)
 D)
 E)

96) Which formula/name pair is incorrect?

96) _____

- A) $\text{Mn}(\text{NO}_2)_2$ manganese(II) nitrite
- B) Mg_3N_2 magnesium nitrite
- C) $\text{Mg}(\text{NO}_3)_2$ magnesium nitrate
- D) $\text{Mn}(\text{NO}_3)_2$ manganese(II) nitrate
- E) $\text{Mg}(\text{MnO}_4)_2$ magnesium permanganate

Answer: B

Explanation: A)
B)
C)
D)
E)

97) In the symbol below, x = _____.

97) _____



- A) 6
- B) 7
- C) 19
- D) 13
- E) not enough information to determine

Answer: E

Explanation: A)
B)
C)
D)
E)

98) Which pair of substances could be used to illustrate the law of multiple proportions?

98) _____

- A) CO , CO_2
- B) SO_2 , H_2SO_4
- C) NaCl , KCl
- D) CH_4 , $\text{C}_6\text{H}_{12}\text{O}_6$
- E) H_2O , O_2

Answer: A

Explanation: A)
B)
C)
D)
E)

99) Which one of the following compounds is chromium(III) oxide?

99) _____

- A) Cr_3O
- B) Cr_2O_4
- C) Cr_2O_3
- D) Cr_3O_2
- E) CrO_3

Answer: C

Explanation: A)
B)
C)
D)
E)

100) The average atomic weight of copper, which has two naturally occurring isotopes, is 63.5. One of the isotopes has an atomic weight of 62.9 amu and constitutes 69.1% of the copper isotopes. The other isotope has an abundance of 30.9%. The atomic weight (amu) of the second isotope is _____ amu.

- A) 63.2 B) 64.8 C) 64.1 D) 63.8 E) 28.1

Answer: B

Explanation: A)
B)
C)
D)
E)

101) The element X has two naturally occurring isotopes. The masses (amu) and % abundances of the isotopes are given in the table below. The average atomic mass of the element is _____ amu.

Isotope	Abundance (%)	Mass (amu)
^{31}X	35.16	31.16
^{34}X	64.84	34.30

- A) 34.02 B) 30.20 C) 35.22 D) 32.73 E) 33.19

Answer: E

Explanation: A)
B)
C)
D)
E)

102) Which one of the following is a nonmetal? _____

- A) W B) Br C) Sr D) Ir E) Os

Answer: B

Explanation: A)
B)
C)
D)
E)

103) Which species below is the sulfite ion? _____

- A) H_2S B) S^{2-} C) SO_2^- D) H_2SO_4 E) SO_3^-

Answer: C

Explanation: A)
B)
C)
D)
E)

104) An atom of ^{131}I contains _____ electrons. 104) _____
 A) 184 B) 78 C) 53 D) 131 E) 124
 Answer: C
 Explanation: A)
 B)
 C)
 D)
 E)

105) Which one of the following compounds is copper(I) chloride? 105) _____
 A) CuCl_2 B) Cu_2Cl_3 C) Cu_3Cl_2 D) CuCl E) Cu_2Cl
 Answer: D
 Explanation: A)
 B)
 C)
 D)
 E)

106) Predict the charge of the most stable ion of potassium. 106) _____
 A) -1 B) +2 C) +3 D) -2 E) +1
 Answer: E
 Explanation: A)
 B)
 C)
 D)
 E)

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

107) The formula for potassium sulfide is _____. 107) _____
 Answer: K_2S
 Explanation:

108) Which element in Group 1A is the most metallic? 108) _____
 Answer: francium
 Explanation:

109) Carbon can exist in different forms called _____. 109) _____
 Answer: allotropes
 Explanation:

110) Which element in the halogen family would require the greatest ionization energy? 110) _____
 Answer: fluorine
 Explanation:

111) What group in the periodic table would the fictitious element : $\ddot{\text{X}}$: be found? 111) _____
 Answer: VIIA
 Explanation:

112) What is the name of an alcohol derived from hexane _____ ?

112) _____

Answer: hexanol

Explanation:

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

113) The correct name for CaH_2 is _____.

113) _____

- A) hydrocalcium
- B) calcium dihydroxide
- C) calcium dihydride
- D) calcium hydride
- E) calcium hydroxide

Answer: D

Explanation: A)
B)
C)
D)
E)

114) Elements in Group 2A are known as the _____.

114) _____

- A) noble gases
- B) halogens
- C) chalcogens
- D) alkali metals
- E) alkaline earth metals

Answer: E

Explanation: A)
B)
C)
D)
E)

115) Aluminum reacts with a certain nonmetallic element to form a compound with the general formula AlX_3 . Element X is a diatomic gas at room temperature. Element X must be _____.

115) _____

- A) fluorine
- B) nitrogen
- C) chlorine
- D) sulfur
- E) oxygen

Answer: B

Explanation: A)
B)
C)
D)
E)

116) Fluorine forms an ion with a charge of _____.

116) _____

- A) +2
- B) -1
- C) -3
- D) +1
- E) +3

Answer: B

Explanation: A)
B)
C)
D)
E)

- 117) Oxygen forms an ion with a charge of _____. 117) _____
 A) +6 B) -2 C) +3 D) +2 E) -3
 Answer: B
 Explanation: A)
 B)
 C)
 D)
 E)
- 118) The formula of a salt is XCl_2 . The X-ion in this salt has 28 electrons. The metal X is _____. 118) _____
 A) V B) Pd C) Fe D) Zn E) Ni
 Answer: D
 Explanation: A)
 B)
 C)
 D)
 E)
- 119) Element M reacts with fluorine to form an ionic compound with the formula MF_3 . The M-ion has 18 electrons. Element M is _____. 119) _____
 A) Ca B) Ar C) P D) Sc E) Cr
 Answer: D
 Explanation: A)
 B)
 C)
 D)
 E)
- 120) Oxygen is a _____ and nitrogen is a _____. 120) _____
 A) nonmetal, metalloid
 B) metal, metalloid
 C) metalloid, metalloid
 D) nonmetal, nonmetal
 E) nonmetal, metal
 Answer: D
 Explanation: A)
 B)
 C)
 D)
 E)

121) Lithium is a _____ and magnesium is a _____.

121) _____

- A) metal, metalloid
- B) nonmetal, metal
- C) nonmetal, nonmetal
- D) metalloid, metalloid
- E) metal, metal

Answer: E

Explanation: A)
B)
C)
D)
E)

122) The correct name for N_2O_5 is _____.

122) _____

- A) dinitrogen pentoxide
- B) nitric oxide
- C) nitrogen oxide
- D) nitrogen pentoxide
- E) nitrous oxide

Answer: A

Explanation: A)
B)
C)
D)
E)

123) Vertical columns of the periodic table are known as _____.

123) _____

- A) periods
- B) metalloids
- C) groups
- D) metals
- E) nonmetals

Answer: C

Explanation: A)
B)
C)
D)
E)

124) The ions Ca^{2+} and PO_4^{3-} form a salt with the formula _____.

124) _____

- A) $\text{Ca}_2(\text{PO}_4)_3$
- B) $\text{Ca}_3(\text{PO}_4)_2$
- C) $\text{Ca}(\text{PO}_4)_2$
- D) CaPO_4
- E) Ca_2PO_4

Answer: B

Explanation: A)
B)
C)
D)
E)

125) When calcium reacts with sulfur the compound formed is _____. 125) _____

- A) Ca_3S_2 B) Ca_2S_3 C) CaS D) Ca_2S_2 E) CaS_2

Answer: C

Explanation: A)
B)
C)
D)
E)

126) Magnesium and sulfur form an ionic compound with the formula _____. 126) _____

- A) MgS_2 B) Mg_2S C) MgS D) Mg_2S_3 E) Mg_2S_2

Answer: C

Explanation: A)
B)
C)
D)
E)

127) Predict the empirical formula of the ionic compound that forms from aluminum and oxygen. 127) _____

- A) AlO B) AlO_2 C) Al_2O D) Al_2O_3 E) Al_3O_2

Answer: D

Explanation: A)
B)
C)
D)
E)

128) Sulfur forms an ion with a charge of _____. 128) _____

- A) -2 B) +2 C) +3 D) -6 E) +6

Answer: A

Explanation: A)
B)
C)
D)
E)

129) Sodium forms an ion with a charge of _____. 129) _____

- A) -1 B) +1 C) -2 D) 0 E) +2

Answer: B

Explanation: A)
B)
C)
D)
E)

130) Elements in Group 8A are known as the _____.

130) _____

- A) chalcogens
- B) noble gases
- C) alkali metals
- D) alkaline earth metals
- E) halogens

Answer: B

Explanation: A)
B)
C)
D)
E)

131) Predict the empirical formula of the ionic compound that forms from sodium and fluorine.

131) _____

- A) Na_2F
- B) NaF
- C) Na_2F_3
- D) NaF_2
- E) Na_3F_2

Answer: B

Explanation: A)
B)
C)
D)
E)

132) The empirical formula of a compound with molecules containing 12 carbon atoms, 14 hydrogen atoms, and 6 oxygen atoms is _____.

132) _____

- A) CHO
- B) $\text{C}_6\text{H}_7\text{O}_3$
- C) CH_2O
- D) $\text{C}_2\text{H}_4\text{O}$
- E) $\text{C}_{12}\text{H}_{14}\text{O}_6$

Answer: B

Explanation: A)
B)
C)
D)
E)

133) In the periodic table, the rows are called _____ and the columns are called _____.

133) _____

- A) octaves, groups
- B) staffs, families
- C) periods, groups
- D) rows, groups
- E) cogeners, families

Answer: C

Explanation: A)
B)
C)
D)
E)

134) The formula of bromic acid is _____.

A) HBrO_4

B) HBrO_2

C) HBrO_3

D) HBrO

E) HBr

134) _____

Answer: C

Explanation: A)
B)
C)
D)
E)

135) The correct name for HIO_2 is _____.

A) periodous acid

B) periodic acid

C) hypoiodic acid

D) hydriodic acid

E) iodic acid

135) _____

Answer: E

Explanation: A)
B)
C)
D)
E)

136) Barium forms an ion with a charge of _____.

A) +1

B) +2

C) +3

D) -2

E) -3

136) _____

Answer: B

Explanation: A)
B)
C)
D)
E)

137) The name of the ionic compound KBrO_4 is _____.

A) potassium perbromite

B) potassium bromide

C) potassium hypobromate

D) potassium bromate

E) potassium perbromate

137) _____

Answer: E

Explanation: A)
B)
C)
D)
E)

- 138) What is the molecular formula for propane _____? 138) _____
 A) C_4H_8 B) C_2H_8 C) C_4H_{10} D) C_3H_6 E) C_3H_8
 Answer: E
 Explanation: A)
 B)
 C)
 D)
 E)
- 139) What is the molecular formula for heptane _____? 139) _____
 A) C_6H_{14} B) C_7H_{16} C) C_7H_{14} D) C_7H_{18} E) C_6H_{12}
 Answer: B
 Explanation: A)
 B)
 C)
 D)
 E)
- 140) The charge on the manganese in the salt MnF_3 is _____. 140) _____
 A) -2 B) -1 C) +1 D) +3 E) +2
 Answer: D
 Explanation: A)
 B)
 C)
 D)
 E)
- 141) The correct name for SrO is _____. 141) _____
 A) strontium monoxide
 B) strontium dioxide
 C) strontium peroxide
 D) strontium hydroxide
 E) strontium oxide
 Answer: E
 Explanation: A)
 B)
 C)
 D)
 E)
- 142) What is the formula of the compound formed between strontium ions and nitrogen ions? 142) _____
 A) Sr_2N_3 B) SrN_3 C) SrN_2 D) SrN E) Sr_3N_2
 Answer: E
 Explanation: A)
 B)
 C)
 D)
 E)

143) The correct name for HClO_2 is _____.

143) _____

- A) chlorous acid
- B) chloric acid
- C) hypochloric acid
- D) hypochlorous acid
- E) perchloric acid

Answer: A

Explanation: A)
B)
C)
D)
E)

144) The correct name of the compound Na_3N is _____.

144) _____

- A) sodium azide
- B) sodium(IX) nitride
- C) trisodium nitride
- D) sodium nitride
- E) sodium trinitride

Answer: D

Explanation: A)
B)
C)
D)
E)

145) Calcium is a _____ and silver is a _____.

145) _____

- A) metal, metalloid
- B) metalloid, metal
- C) metal, metal
- D) nonmetal, metalloid
- E) nonmetal, metal

Answer: C

Explanation: A)
B)
C)
D)
E)

146) Horizontal rows of the periodic table are known as _____.

146) _____

- A) periods
- B) metals
- C) metalloids
- D) nonmetals
- E) groups

Answer: A

Explanation: A)
B)
C)
D)
E)

- 147) The formula for aluminum hydroxide is _____.
 A) Al_2O_3 B) Al_3OH C) $\text{Al}(\text{OH})_3$ D) $\text{Al}_2(\text{OH})_3$ E) AlOH 147) _____
- Answer: C
 Explanation: A)
 B)
 C)
 D)
 E)
- 148) The correct name for SO is _____.
 A) sulfite
 B) sulfur oxide
 C) sulfur monoxide
 D) sulfate
 E) sulfoxide
 Answer: C
 Explanation: A)
 B)
 C)
 D)
 E)
- 149) The name of the ionic compound V_2O_3 is _____.
 A) divanadium trioxide
 B) vanadium(III) oxide
 C) vanadium(III) trioxide
 D) vanadium oxide
 E) vanadium(II) oxide
 Answer: B
 Explanation: A)
 B)
 C)
 D)
 E)
- 150) The correct formula of iron(III) bromide is _____.
 A) Fe_3Br_3 B) FeBr_3 C) Fe_3Br D) FeBr E) FeBr_2 150) _____
- Answer: B
 Explanation: A)
 B)
 C)
 D)
 E)

- 151) A certain mass of carbon reacts with 13.6 g of oxygen to form carbon monoxide. _____ grams of oxygen would react with that same mass of carbon to form carbon dioxide, according to the law of multiple proportions? 151) _____
- A) 27.2 B) 136 C) 25.6 D) 6.8 E) 13.6

Answer: A

Explanation: A)
B)
C)
D)
E)

- 152) Potassium is a _____ and chlorine is a _____. 152) _____
- A) nonmetal, metal
B) metal, metalloid
C) metalloid, nonmetal
D) metal, nonmetal
E) metal, metal

Answer: D

Explanation: A)
B)
C)
D)
E)

- 153) Elements in Group 7A are known as the _____. 153) _____
- A) noble gases
B) chalcogens
C) alkaline earth metals
D) halogens
E) alkali metals

Answer: D

Explanation: A)
B)
C)
D)
E)

- 154) The atomic number indicates _____. 154) _____
- A) the total number of neutrons and protons in a nucleus
B) the number of atoms in 1 g of an element
C) the number of protons or electrons in a neutral atom
D) the number of neutrons in a nucleus
E) the number of different isotopes of an element

Answer: C

Explanation: A)
B)
C)
D)
E)

155) 420 ppm is the same as _____ Angstroms.

155) _____

- A) 420
- B) 0.42
- C) 42
- D) 4200
- E) 4.2

Answer: E

Explanation: A)
B)
C)
D)
E)

156) Calcium forms an ion with a charge of _____.

156) _____

- A) 0
- B) -1
- C) -2
- D) +2
- E) +1

Answer: D

Explanation: A)
B)
C)
D)
E)

157) Predict the empirical formula of the ionic compound that forms from magnesium and oxygen.

157) _____

- A) MgO_2
- B) MgO
- C) Mg_2O_2
- D) Mg_3O_2
- E) Mg_2O

Answer: B

Explanation: A)
B)
C)
D)
E)

158) The formula for zinc phosphate is $\text{Zn}_3(\text{PO}_4)_2$. What is the formula for cadmium arsenate?

158) _____

- A) $\text{Cd}_3(\text{AsO}_3)_4$
- B) $\text{Cd}_2(\text{AsO}_4)_3$
- C) $\text{Cd}_3(\text{AsO}_4)_2$
- D) $\text{Cd}_2(\text{AsO}_4)_4$
- E) $\text{Cd}_4(\text{AsO}_2)_3$

Answer: C

Explanation: A)
B)
C)
D)
E)

159) The correct name for K_2S is _____.

159) _____

- A) potassium sulfate
- B) dipotassium sulfate
- C) potassium bisulfide
- D) potassium disulfide
- E) potassium sulfide

Answer: E

Explanation: A)
B)
C)
D)
E)

160) The name of the ionic compound NH_4CN is _____.

160) _____

- A) cyanonitride
- B) nitrogen hydrogen cyanate
- C) ammonium cyanide
- D) ammonium hydrogen cyanate
- E) ammonium carbonitride

Answer: C

Explanation: A)
B)
C)
D)
E)

161) Magnesium reacts with a certain element to form a compound with the general formula MgX . What would the most likely formula be for the compound formed between potassium and element X?

161) _____

- A) K_2X_2
- B) K_2X_3
- C) KX_2
- D) KX
- E) K_2X

Answer: E

Explanation: A)
B)
C)
D)
E)

162) When a metal and a nonmetal react, the _____ tends to lose electrons and the _____ tends to gain electrons.

162) _____

- A) nonmetal, metal
- B) metal, metal
- C) nonmetal, nonmetal
- D) metal, nonmetal
- E) None of the above, these elements share electrons .

Answer: D

Explanation: A)
B)
C)
D)
E)

163) The correct name for $\text{Mg}(\text{ClO}_3)_2$ is _____.

163) _____

- A) magnesium chlorate
- B) manganese perchlorate
- C) magnesium perchlorate
- D) magnesium chloroxide
- E) manganese chlorate

Answer: A

Explanation: A)
B)
C)
D)
E)

164) What is the formula for perchloric acid?

164) _____

- A) HClO_2
- B) HClO_3
- C) HClO
- D) HCl
- E) HClO_4

Answer: E

Explanation: A)
B)
C)
D)
E)

165) The name of PCl_3 is _____.

165) _____

- A) trichloro potassium
- B) potassium chloride
- C) phosphorous(III) chloride
- D) phosphorus trichloride
- E) monophosphorous trichloride

Answer: D

Explanation: A)
B)
C)
D)
E)

166) The name of the binary compound N_2O_4 is _____.

166) _____

- A) nitrous oxide
- B) nitrogen(III) oxide
- C) oxygen nitride
- D) dinitrogen tetroxide
- E) nitrogen oxide

Answer: D

Explanation: A)
B)
C)
D)
E)

167) 200 pm is the same as _____ Å.

A) 2

B) 2000

C) 20

D) 200

E) 2×10^{-12}

167) _____

Answer: A

Explanation: A)
B)
C)
D)
E)

168) The correct name for HClO_3 is _____.

A) perchloric acid

B) hydrochloric acid

C) hydrochlorous acid

D) chlorous acid

E) chloric acid

168) _____

Answer: E

Explanation: A)
B)
C)
D)
E)

169) Which pair of atoms constitutes a pair of isotopes of the same element?

A) ${}^{14}_6\text{X}$ ${}^{12}_6\text{X}$

B) ${}^{17}_9\text{X}$ ${}^{17}_8\text{X}$

C) ${}^{20}_{10}\text{X}$ ${}^{21}_{11}\text{X}$

D) ${}^{19}_{10}\text{X}$ ${}^{19}_9\text{X}$

E) ${}^{14}_6\text{X}$ ${}^{14}_7\text{X}$

169) _____

Answer: A

Explanation: A)
B)
C)
D)
E)

170) What is the correct formula for ammonium sulfide?

170) _____

- A) $(\text{NH}_4)_2\text{SO}_4$
- B) NH_4SO_3
- C) $(\text{NH}_4)_2\text{S}$
- D) N_2S_3
- E) NH_3S

Answer: C

Explanation: A)
B)
C)
D)
E)

171) The correct formula for molybdenum(IV) hypochlorite is _____.

171) _____

- A) $\text{Mo}(\text{ClO}_2)_4$
- B) $\text{Mo}(\text{ClO}_3)_4$
- C) $\text{Mo}(\text{ClO}_4)_4$
- D) MoCl_4
- E) $\text{Mo}(\text{ClO})_4$

Answer: E

Explanation: A)
B)
C)
D)
E)

172) Which group in the periodic table contains only nonmetals?

172) _____

- A) 1A
- B) 2A
- C) 2B
- D) 6A
- E) 8A

Answer: E

Explanation: A)
B)
C)
D)
E)

173) The name of the ionic compound $(\text{NH}_4)_3\text{PO}_4$ is _____.

173) _____

- A) tetrammonium phosphate
- B) ammonia phosphide
- C) triammonium phosphate
- D) nitrogen hydrogen phosphate
- E) ammonium phosphate

Answer: E

Explanation: A)
B)
C)
D)
E)

174) The nucleus of an atom contains _____.

174) _____

- A) protons
- B) protons and neutrons
- C) electrons
- D) protons, neutrons, and electrons
- E) protons and electrons

Answer: B

Explanation: A)
 B)
 C)
 D)
 E)

175) Potassium forms an ion with a charge of _____.

175) _____

- A) +1 B) 0 C) -2 D) -1 E) +2

Answer: A

Explanation: A)
 B)
 C)
 D)
 E)

176) Elements in Group 1A are known as the _____.

176) _____

- A) chalcogens
- B) alkaline earth metals
- C) noble gases
- D) halogens
- E) alkali metals

Answer: E

Explanation: A)
 B)
 C)
 D)
 E)

177) The element _____ is the most similar to strontium in chemical and physical properties.

177) _____

- A) Li B) Cs C) At D) Ba E) Rb

Answer: D

Explanation: A)
 B)
 C)
 D)
 E)

178) Methane and ethane are both made up of carbon and hydrogen. In methane, there are 12.0 g of carbon for every 4.00 g of hydrogen, a ratio of 3:1 by mass. In ethane, there are 24.0 g of carbon for every 6.00 g of hydrogen, a ratio of 4:1 by mass. This is a statement of the law of _____.

178) _____

- A) multiple proportions
- B) conservation of matter
- C) octaves
- D) conservation of mass
- E) constant composition

Answer: A

Explanation: A)
B)
C)
D)
E)

179) The formula of the chromate ion is _____.

179) _____

- A) CrO_2^{3-}
- B) CrO_3^{2-}
- C) CrO^-
- D) CrO^{2-}
- E) CrO_4^{2-}

Answer: E

Explanation: A)
B)
C)
D)
E)

180) Iodine forms an ion with a charge of _____.

180) _____

- A) +2
- B) -7
- C) -1
- D) +1
- E) -2

Answer: C

Explanation: A)
B)
C)
D)
E)

181) Which statement below correctly describes the responses of alpha, beta, and gamma radiation to an electric field?

181) _____

- A) Both alpha and beta are deflected in the same direction, while gamma shows no response.
- B) Only alpha is deflected, while beta and gamma show no response.
- C) Alpha and beta are deflected in opposite directions, while gamma shows no response.
- D) Both beta and gamma are deflected in the same direction, while alpha shows no response.
- E) Both alpha and gamma are deflected in the same direction, while beta shows no response.

Answer: C

Explanation: A)
B)
C)
D)
E)

182) The correct name for H_2SO_3 is _____.

182) _____

- A) sulfuric acid
- B) sulfur hydroxide
- C) hydrosulfuric acid
- D) sulfurous acid
- E) hydrosulfic acid

Answer: D

Explanation: A)
B)
C)
D)
E)

183) Predict the empirical formula of the ionic compound that forms from magnesium and fluorine.

183) _____

- A) MgF_2
- B) Mg_2F_3
- C) Mg_3F_2
- D) MgF
- E) Mg_2F

Answer: A

Explanation: A)
B)
C)
D)
E)

184) Aluminum forms an ion with a charge of _____.

184) _____

- A) -1
- B) +1
- C) +2
- D) +3
- E) -3

Answer: D

Explanation: A)
B)
C)
D)
E)

185) _____ typically form ions with a 2+ charge.

185) _____

- A) Halogens
- B) Alkali metals
- C) Alkaline earth metals
- D) Chalcogens
- E) Transition metals

Answer: C

Explanation: A)
B)
C)
D)
E)

186) _____ are found uncombined, as monatomic species in nature.

- A) Alkaline earth metals
- B) Halogens
- C) Noble gases
- D) Alkali metals
- E) Chalcogens

Answer: C

Explanation: A)
B)
C)
D)
E)

186) _____

187) What is the molecular formula for nonane _____?

- A) C₁₀H₂₂
- B) C₉H₂₀
- C) C₁₀H₂₄
- D) C₁₀H₂₀
- E) C₉H₁₈

Answer: B

Explanation: A)
B)
C)
D)
E)

187) _____

188) The formula of the carbonate ion is _____.

- A) CO₃³⁻
- B) CO⁻
- C) CO₃²⁻
- D) CO₂⁻
- E) CO₂²⁻

Answer: C

Explanation: A)
B)
C)
D)
E)

188) _____

189) The formula of ammonium carbonate is _____.

- A) N₂(CO₃)₃
- B) (NH₃)₂CO₃
- C) NH₄CO₂
- D) (NH₃)₂CO₄
- E) (NH₄)₂CO₃

Answer: E

Explanation: A)
B)
C)
D)
E)

189) _____

190) What is the molecular formula for n-hexanol _____?

A) $C_7H_{14}OH$

B) $C_6H_{12}OH$

C) $C_7H_{13}OH$

D) $C_6H_{13}OH$

E) $C_6H_{14}OH$

190) _____

Answer: D

Explanation: A)
B)
C)
D)
E)

191) Elements in Group 6A are known as the _____.

191) _____

A) halogens

B) alkali metals

C) noble gases

D) chalcogens

E) alkaline earth metals

Answer: D

Explanation: A)
B)
C)
D)
E)

192) The correct name for Al_2O_3 is _____.

192) _____

A) dialuminum oxide

B) aluminum hydroxide

C) aluminum oxide

D) aluminum trioxide

E) dialuminum trioxide

Answer: C

Explanation: A)
B)
C)
D)
E)

193) The correct name for CCl_4 is _____.

193) _____

A) carbon perchlorate

B) carbon tetrachloride

C) carbon tetrachlorate

D) carbon chloride

E) carbon chlorate

Answer: B

Explanation: A)
B)
C)
D)
E)

194) The correct name for H_2CO_3 is _____.

194) _____

- A) hydrocarbonate
- B) carbohydrate
- C) carbonic acid
- D) carbohydric acid
- E) carbonous acid

Answer: C

Explanation: A)
B)
C)
D)
E)

195) Chromium and chlorine form an ionic compound whose formula is CrCl_3 . The name of this compound is _____.

195) _____

- A) chromic trichloride
- B) monochromium trichloride
- C) chromium chlorine
- D) chromium(III) trichloride
- E) chromium(III) chloride

Answer: E

Explanation: A)
B)
C)
D)
E)

196) _____ and _____ reside in the atomic nucleus.

196) _____

- A) Protons, electrons
- B) Protons, neutrons
- C) Electrons, neutrons
- D) none of the above
- E) Neutrons, only neutrons

Answer: B

Explanation: A)
B)
C)
D)
E)

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

197) The most metallic halogen is astatine.

197) _____

Answer:  True False

Explanation:

198) H_2SeO_4 is called selenic acid.

198) _____

Answer:  True False

Explanation:

199) the possible oxidation numbers for gold are 1+ and 2+.

199) _____

Answer: True ☒ False

Explanation:

200) The formula for chromium (II) iodide is CrI_2 .

200) _____

Answer: ☒ True False

Explanation:

201) The correct name for Na_3N is sodium azide.

201) _____

Answer: True ☒ False

Explanation:

Answer Key
Testname: C2

- 1) C
- 2) C
- 3) A
- 4) A
- 5) E
- 6) B
- 7) C
- 8) B
- 9) A
- 10) E
- 11) A
- 12) C
- 13) D
- 14) D
- 15) E
- 16) B
- 17) B
- 18) E
- 19) E
- 20) A
- 21) A
- 22) D
- 23) C
- 24) D
- 25) A
- 26) C
- 27) E
- 28) D
- 29) B
- 30) C
- 31) E
- 32) B
- 33) E
- 34) A
- 35) C
- 36) B
- 37) E
- 38) A
- 39) C
- 40) E
- 41) E
- 42) A
- 43) C
- 44) B
- 45) E
- 46) E
- 47) C
- 48) E
- 49) B
- 50) A

Answer Key
Testname: C2

- 51) E
- 52) B
- 53) C
- 54) B
- 55) A
- 56) B
- 57) E
- 58) B
- 59) B
- 60) D
- 61) B
- 62) B
- 63) A
- 64) B
- 65) B
- 66) B
- 67) C
- 68) C
- 69) C
- 70) D
- 71) E
- 72) B
- 73) C
- 74) E
- 75) B
- 76) B
- 77) E
- 78) B
- 79) E
- 80) A
- 81) C
- 82) C
- 83) C
- 84) A
- 85) C
- 86) D
- 87) A
- 88) B
- 89) B
- 90) D
- 91) A
- 92) A
- 93) E
- 94) B
- 95) A
- 96) B
- 97) E
- 98) A
- 99) C
- 100) B

Answer Key
Testname: C2

- 101) E
- 102) B
- 103) C
- 104) C
- 105) D
- 106) E
- 107) K_2S
- 108) francium
- 109) allotropes
- 110) fluorine
- 111) VIIA
- 112) hexanol
- 113) D
- 114) E
- 115) B
- 116) B
- 117) B
- 118) D
- 119) D
- 120) D
- 121) E
- 122) A
- 123) C
- 124) B
- 125) C
- 126) C
- 127) D
- 128) A
- 129) B
- 130) B
- 131) B
- 132) B
- 133) C
- 134) C
- 135) E
- 136) B
- 137) E
- 138) E
- 139) B
- 140) D
- 141) E
- 142) E
- 143) A
- 144) D
- 145) C
- 146) A
- 147) C
- 148) C
- 149) B
- 150) B

Answer Key

Testname: C2

- 151) A
- 152) D
- 153) D
- 154) C
- 155) E
- 156) D
- 157) B
- 158) C
- 159) E
- 160) C
- 161) E
- 162) D
- 163) A
- 164) E
- 165) D
- 166) D
- 167) A
- 168) E
- 169) A
- 170) C
- 171) E
- 172) E
- 173) E
- 174) B
- 175) A
- 176) E
- 177) D
- 178) A
- 179) E
- 180) C
- 181) C
- 182) D
- 183) A
- 184) D
- 185) C
- 186) C
- 187) B
- 188) C
- 189) E
- 190) D
- 191) D
- 192) C
- 193) B
- 194) C
- 195) E
- 196) B
- 197) TRUE
- 198) TRUE
- 199) FALSE
- 200) TRUE

Answer Key
Testname: C2

201) FALSE