Name: _____

___ 1) The element in Period 2 with the *largest* atomic radius is

1) an alkaline earth metal
2) a halogen
3) a noble gas
4) an alkali metal

___ 2) Which halogen is a liquid at STP?

1) Cl_2
2) I_2
3) F_2
4) Br_2

___ 3) Which element has an atomic radius that is *greater* than its ionic radius?

1) F
2) K
3) S
4) O

___ 4) As the Group 1 elements of the Periodic Table are considered from top to bottom, the first ionization energy of each successive element decreases. One reason for this is that the

1) nuclear charge is decreasing
2) number of principal energy levels is decreasing
3) number of neutrons is increasing
4) distance between the valence electron and the nucleus is increasing

___ 5) What group of the Periodic Table contains the noble gases?

1) 1
2) 2
3) 17
4) 18

___ 6) What are two properties of *most* nonmetals?

1) high ionization energy and poor electrical conductivity
2) high ionization energy and good electrical conductivity
3) low ionization energy and poor electrical conductivity
4) low ionization energy and good electrical conductivity

___ 7) Compared to atoms of metals, atoms of nonmetals generally have

1) lower electronegativities and higher ionization energies
2) higher electronegativities and lower ionization energies
3) lower electronegativities and lower ionization energies
4) higher electronegativities and higher ionization energies

___ 8) On the Periodic Table, an element classified as a semimetal (metalloid) can be found in

1) Period 6, Group 15
2) Period 4, Group 15
3) Period 3, Group 16
4) Period 2, Group 14

___ 9) What is the electron configuration of an atom of a Period 3 element?

1) 2-1
2) 2-3
3) 2-8-1
4) 2-8-9-2

___ 10) Which period contains the *greatest* number of metals?

1) 1
2) 2
3) 3
4) 4

___ 11) An atom of an element contains 20 protons, 20 neutrons, and 20 electrons. This element is

1) an alkaline earth metal
2) a halogen
3) an alkali metal
4) a noble gas

___ 12) More than two thirds of the elements of the Periodic Table are classified as

1) metals
2) noble gases
3) nonmetals
4) metalloids

___ 13) Compared to a neon atom, a helium atom has a

1) greater number of electrons
2) smaller radius
3) larger atomic number
4) smaller first ionization energy

___ 14) The element in Group 16 whose isotopes are *all* radioactive is

1) S
2) Po
3) O
4) Te

___ 15) The amount of energy required to remove the *most* loosely bound electron from an atom in the gaseous phase is called

1) kinetic energy
2) potential energy
3) ionization energy
4) electron affinity

___ 16) Which element in Group 15 has the *greatest* metallic character?

1) Bi
2) P
3) Sb
4) N

___ 17) In the modern Periodic Table, the elements are arranged according to

1) atomic number
2) mass number
3) oxidation number
4) atomic mass

___ 18) Potassium forms an ion with a charge of

1) 1+ by gaining one electron
2) 1+ by losing one electron
3) 1- by gaining one electron
4) 1- by losing one electron

___ 19) As a sulfur atom gains electrons, its radius

1) remains the same
2) increases
3) decreases

___ 20) As elements in Group 15 of the Periodic Table are considered in order from top to bottom, the metallic character of each successive element generally

1) decreases
2) remains the same
3) increases

___ 21) Atoms of metallic elements tend to

1) lose electrons and form positive ions
2) gain electrons and form negative ions
3) lose electrons and form negative ions
4) gain electrons and form positive ions

___ 22) Which is the *most* active nonmetal in the Periodic Table of Elements?

1) F
2) I
3) Cl
4) Na

___ 23) Which halogen has the *least* attraction for electrons?

1) Br
2) I
3) F
4) Cl

___ 24) The properties of silicon are characteristic of

1) a nonmetal, only
2) a metal, only
3) neither a metal nor a nonmetal
4) both a metal and a nonmetal

___ 25) Which element is so active chemically that it occurs naturally only in compounds?

1) silver
2) copper
3) potassium
4) sulfur

___ 26) As the elements of Group 16 are considered from top to bottom on the Periodic Table, the atomic radii

1) decrease and the ionization energies decrease
2) increase and the ionization energies increase
3) increase and the ionization energies decrease
4) decrease and the ionization energies increase

___ 27) Which group of elements in the Periodic Table contain a semimetal (metalloid)?

1) 1
2) 13
3) 7
4) 18

___ 28) Which element is a member of the halogen family?

1) I
2) S
3) B
4) K

___ 29) Which element has the *highest* first ionization energy?

1) Rb
2) Na
3) K
4) Li

___ 30) Which two elements have chemical properties that are *most* similar?

1) C and N
2) Li and Na
3) Cl and Ar
4) K and Ca

___ 31) Which part of the Periodic Table contains elements with the *greatest* metallic properties?

1) upper left
2) lower right
3) upper right
4) lower left

___ 32) The elements that have the *most* pronounced nonmetallic properties are located toward which corner of the Periodic Table?

1) lower right
2) upper left
3) upper right
4) lower left

___ 33) What is the first ionization energy of an element that has the electron configuration 2-8?

1) 496 kJ/mol
2) 1,681 kJ/mol
3) 1,402 kJ/mol
4) 2,081 kJ/mol

___ 34) According to the *Properties of Selected Elements* chemistry reference table, which element has the *smallest* atomic radius?

1) cobalt
2) potassium
3) calcium
4) nickel

___ 35) Beryllium is classified as

1) an alkaline earth metal
2) a transition element
3) an alkali metal
4) a noble gas

___ 36) Which element in Period 3 is the *most* active metal?

1) chlorine
2) magnesium
3) sodium
4) sulfur

___ 37) As the elements are considered from top to the bottom of Group 15, which sequence in properties occurs?

1) metal ⟶ nonmetal ⟶ metalloid
2) metal ⟶ metalloid ⟶ nonmetal
3) metalloid ⟶ metal ⟶ nonmetal
4) nonmetal ⟶ metalloid ⟶ metal

___ 38) Which element is in Group 2 and Period 7 of the Periodic Table?

1) radon
2) manganese
3) radium
4) magnesium

___ 39) Which period of the Periodic table contains three elements that commonly exist as diatomic molecules?

1) Period 1
2) Period 2
3) Period 3
4) Period 4

___ 40) Which element exists as a monatomic gas molecule at STP?

1) barium
2) nitrogen
3) neon
4) bromine

___ 41) How many halogens are in Period 3 of the Periodic Table?

1) 1
2) 2
3) 3
4) 4

___ 42) The radius of a calcium ion is *smaller* than the radius of a calcium atom because the calcium ion contains the same nuclear charge and

1) fewer protons
2) fewer electrons
3) more electrons
4) more protons

___ 43) Which element is considered malleable?

1) sulfur
2) radon
3) hydrogen
4) gold

___ 44) Which substance is the *best* conductor of electricity?

1) $Br_2(\ell)$
2) $H_2O(\ell)$
3) Cu(s)
4) NaCl(s)

___ 45) Which element is brittle and does *not* conduct heat or electricity?

1) Al(s)
2) Mg(s)
3) S(s)
4) K(s)

___ 46) Which pair of Group 15 elements are nonmetals?

1) phosphorus and bismuth
2) arsenic and antimony
3) nitrogen and arsenic
4) nitrogen and phosphorus

___ 47) In the Periodic Table of the Elements, *all* the elements within Group 16 have the same number of

1) protons
2) neutrons
3) energy levels
4) valence electrons

___ 48) Which group contains elements composed of diatomic molecules at STP?

1) 2
2) 11
3) 17
4) 7

___ 49) Which represents the correct electron configuration of a Group 14 element in the ground state?

1) 2-8-8-1
2) 2-3
3) 2-4
4) 2-7-5

___ 50) The pair of elements with the *most* similar chemical properties are

1) Ca and Br
2) S and Ar
3) Mg and S
4) Mg and Ca