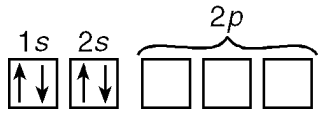
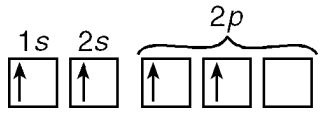
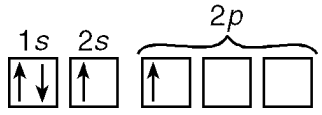
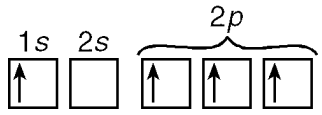
Name: _____

___ 1) Which orbital notation represents an atom of beryllium in the ground state?

1) 

2) 

3) 

4) 

___ 2) What is the first ionization energy of an element that has the electron configuration $1s^2 2s^2 2p^6$?

1) 363 kcal/mol
2) 497 kcal/mol
3) 119 kcal/mol
4) 239 kcal/mol

___ 3) Which electron configuration represents an atom in an excited state?

1) $1s^2 2s^2 2p^6 3s^2$
2) $1s^2 2s^2 2p^6 3s^2 3p^2$
3) $1s^2 2s^2 2p^6 3s^2 3p^1$
4) $1s^2 2s^2 2p^6 3p^1$

___ 4) What is the electron configuration for Be^{2+} ions?

1) $1s^1$
2) $1s^2 2s^2$
3) $1s^2$
4) $1s^2 2s^1$

___ 5) Two atoms will *always* have the same atomic number if they have the same

1) number of protons
2) mass number
3) number of nucleons
4) number of neutrons

___ 6) A region of *most* probable electron location in an atom is called

1) a photon
2) a nucleus
3) a nucleon
4) an orbital

___ 7) Which electron transition represents the release of energy?

1) 2*s* to 2*p*
2) 2*p* to 3*s*
3) 1*s* to 3*p*
4) 3*p* to 1*s*

___ 8) The atomic mass of an element is defined as the weighted average mass of that element's

1) naturally occurring isotopes
2) most abundant isotope
3) radioactive isotopes
4) least abundant isotope

___ 9) A sample of element X contains 90. percent ^{35}X atoms, 8.0 percent ^{37}X atoms, and 2.0 percent ^{38}X atoms. The average isotopic mass is closest to

1) 38
2) 37
3) 32
4) 35

___ 10) In which pair of atoms do *both* nuclei contain the same number of neutrons?

1) $^{40}_{19}K$ and $^{40}_{17}Cl$
2) $^{14}_{7}N$ and $^{16}_{8}O$
3) $^{40}_{20}Ca$ and $^{38}_{18}Ar$
4) $^{7}_{3}Li$ and $^{9}_{4}Be$

___ 11) As an S^{2-} ion is oxidized to an S^0 atom, the number of protons in its nucleus

1) remains the same
2) increases
3) decreases

___ 12) A Ca^{2+} ion differs from a Ca atom in that the Ca^{2+} ion has

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

___ 13) Neutral atoms of ^{35}Cl and ^{37}Cl differ with respect to their number of

1) protons
2) positrons
3) electrons
4) neutrons

___ 14) The total number of calcium atoms in 80.0 grams of calcium is

1) 6.02×10^{23}
2) 24.0×10^{23}
3) 12.0×10^{23}
4) 3.01×10^{23}

___ 15) An atom of an element has the electron configuration 2-4. What is the total number of valence electrons in this atom?

1) 6
2) 2
3) 8
4) 4

___ 16) An atom has the electron configuration $1s^2 2s^2 2p^6 3s^2 3p^5$. The electron dot symbol for this element is

1) 
2) 
3) 
4) 

___ 17) Which particle has a negative charge?

1) beta particle
2) proton
3) neutron
4) alpha particle

___ 18) What is the mass of 3.0×10^{23} atoms of neon?

1) 0.50 g
2) 20. g
3) 10. g
4) 1.0 g

___ 19) What is the total number of atoms contained in 2.00 moles of nickel?

1) 6.02×10^{23}
2) 1.20×10^{24}
3) 118
4) 58.9

___ 20) Which is the electron configuration of a neutral atom in the ground state with a total of six valence electrons?

1) $1s^2 2s^2 2p^2$
2) $1s^2 2s^2 2p^6$
3) $1s^2 2s^2 2p^6 3s^2 3p^6$
4) $1s^2 2s^2 2p^4$

___ 21) Which is the atomic number of an atom with six valence electrons?

1) 8
2) 10
3) 12
4) 6

___ 22) The maximum number of electrons that may be found in the third principal energy level is

1) 32
2) 8
3) 18
4) 2

___ 23) What is the mass number of an atom which contains 21 electrons, 21 protons, and 24 neutrons?

1) 42
2) 21
3) 45
4) 66

___ 24) Experimental evidence indicates that the nucleus of an atom

1) contains a small percentage of the mass of the atom
2) has a negative charge
3) contains most of the mass of the atom
4) has no charge

___ 25) What is the total number of valence electrons in an atom with the electron configuration $1s^2 2s^2 2p^6 3s^2 3p^3$?

1) 5
2) 2
3) 3
4) 6

___ 26) A sample of Nitrogen contains 95% ^{14}N atoms, 3% ^{15}N atoms and 2% ^{16}N atoms. What is the average atomic mass of this sample?

1) 15 amu
2) 14 amu
3) 16 amu
4) 13 amu

___ 27) An atom of carbon-14 contains

1) 6 protons, 6 neutrons, and 8 electrons
2) 6 protons, 8 neutrons, and 8 electrons
3) 6 protons, 8 neutrons, and 6 electrons
4) 8 protons, 6 neutrons, and 6 electrons

___ 28) Which is the correct electron dot symbol for an aluminum atom in the ground state?

1) :Al·
2) Al:
3) ·Al:
4) Al:

___ 29) The nucleus of an atom consists of 8 protons and 6 neutrons. The total number of electrons present in a neutral atom of this element is

1) 14
2) 6
3) 8
4) 2

___ 30) What is the total number of protons in an atom of ^{36}Cl?

1) 17
2) 35
3) 36
4) 18

___ 31) Which two particles have approximately the same mass?

1) proton and electron
2) neutron and deuteron
3) neutron and electron
4) proton and neutron

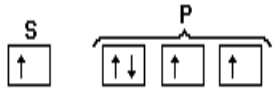
___ 32) If 50.0% of the isotopes of an element have a mass of 196 amu and 50.0% of the isotopes have a mass of 198 amu, what is the average atomic mass of the element?

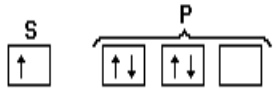
1) 98.5 amu
2) 196 amu
3) 197 amu
4) 198 amu

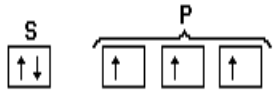
___ 33) Which of the following elements has the *highest* first ionization energy?

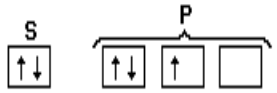
1) Li
2) K
3) Rb
4) Na

___ 34) Which orbital notation represents the outermost principal energy level of a phosphorus atom in the ground state?

1) 

2) 

3) 

4) 

___ 35) The characteristic bright-line spectrum of sodium is produced when its electrons

1) jump to higher energy levels
2) are gained by the neutral atoms
3) are lost by the neutral atoms
4) return to lower energy levels

___ 36) What is the electron configuration of a chloride ion (Cl^-) in the ground state?

1) 2-8-7
2) 2-8
3) 2-8-6
4) 2-8-8

___ 37) Which of the following nuclei is an isotope of 

?

1) 

2) 

3) 

4) 

___ 38) What is the mass number of a $^{3}_{1}H$ atom?

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

___ 39) If the nucleus of an atom is represented as $^{24}_{11}X$, the atom is

1) Na 2) Br 3) Al 4) Mg

___ 40) What is the total number of nucleons (protons and neutrons) in an atom of $^{79}_{34}Se$?

1) 79 2) 113 3) 45 4) 34