

# Unit 7 - Topic 2

## Ground vs. Excited States

- When electrons in an atom in the excited state fall back to lower energy levels, energy is
  - absorbed, only
  - released, only
  - neither released nor absorbed
  - both released and absorbed
- What is the total number of valence electrons in a fluorine atom in the ground state?
  - 5
  - 2
  - 7
  - 9
- When the electrons of an excited atom return to a lower energy state, the energy emitted can result in the production of
  - lightening
  - isotopes
  - protons
  - spectra
- The diagram shows the characteristic spectral line patterns of four elements. Also shown are the spectral lines produced by an unknown substance. Which pair of elements is present in the unknown?
 

Li	_____
H	_____
He	_____
Na	_____
Unknown	_____

  - lithium and sodium
  - sodium and hydrogen
  - lithium and helium
  - helium and hydrogen
- Compared to a sodium atom in the ground state, a sodium atom in the excited state must have
  - a greater number of electrons
  - a smaller number of electrons
  - an electron with greater energy
  - an electron with less energy
- Which principal energy level change by the electron of a hydrogen atom will cause the the greatest amount of energy to be absorbed?
  - $n = 2$  to  $n = 4$
  - $n = 2$  to  $n = 5$
  - $n = 4$  to  $n = 2$
  - $n = 5$  to  $n = 2$
- Spectral lines produced from the radiant energy emitted from excited atoms are thought to be due to the movements of electrons
  - from lower to higher energy levels
  - from higher to lower energy levels
  - within their orbitals
  - out of the nucleus
- What is the electron configuration of a sulfur atom in the excited state?
  - 2-4
  - 2-6
  - 2-8-6
  - 2-8-5-1
- Electron X can change to a higher energy level or lower energy level. Which statement is true of electron X?
  - Electron X emits energy when it changes to a higher energy level.
  - Electron X absorbs energy when it changes to a higher energy level.
  - Electron X absorbs energy when it changes to a lower energy level.
  - Electron X neither emits nor absorbs energy when it changes energy level.
- The characteristic bright-line spectrum of an element is produced when its electrons
  - form a covalent bond
  - form an ionic bond
  - move to a higher energy state
  - return to a lower energy state.

Name: \_\_\_\_\_

Date: \_\_\_\_\_

	Draw Bohr diagram of atom in ground state	Draw Bohr diagram of atom in excited state	Draw Bohr diagram of ION
<b>Sodium</b>	Electron Configuration: _____	Electron Configuration: _____	Electron Configuration: _____
<b>Fluorine</b>	Electron Configuration: _____	Electron Configuration: _____	Electron Configuration: _____